

*ATTACHMENT S*

*SITE CHARACTERIZATION DATA SUMMARY REPORT  
EROSION SCAR SAMPLING*

*GEOMORPH<sup>®</sup> SITE CHARACTERIZATION  
UPPER TITABAWASSEE RIVER*

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 Michigan Laboratory ID: 9604  
 Wisconsin Laboratory ID: 998321720

## GeoMorph Site Characterization Data Summary

### Upper Tittabawassee River: Reach L

### Midland, Michigan

Transect Location/Sample Identification	Collection Date	Horz Depth <sup>1</sup> Interval (ft)	Geomorphic Setting	Physical Description	Soil Horizon	USCS	Moisture Content (%)	2,3,7,8-TCDD (ng/kg)	2,3,7,8-TCDF (ng/kg)	1,2,3,7,8-PeCDF (ng/kg)	2,3,4,7,8-PeCDF (ng/kg)	1,2,3,4,7,8 + 1,2,3,6,7,8-HxCDF (ng/kg)	Aggregate Indicator Congener Concentration (ng/kg)	Estimated Total TEQ (ppt)	Laboratory
RL-246+00-SW-ES	11/29/2006	0.0-0.2	erosion scar		--	--	23.5	22	1700	840	810	750	4100	590	Dow
RL-246+00-SW-ES	12/6/2006	0.0-1.4	erosion scar	10YR 4/2 dark grayish brown and 10YR 5/3 brown fine sandy loam, moist, structureless, moist, friable, slightly plastic, few fine roots	--	SM	20.5	18	2600	970	1300	1900	6800	980	Dow
RL-246+00-SW-ES	12/6/2006	1.4-1.8	erosion scar	10YR 5/3 brown fine sand, moist, single grain, moist, loose, Non-plastic	--	SP	11	<4	200	85	130	230	640	95	Dow
RL-246+00-SW-ES	12/6/2006	1.8-2.7	erosion scar	10YR 3/1 very dark gray and 10YR 4/3 brown loamy fine sand, few 10YR 3/4 dark yellowish brown mottle, moist, structureless, moist, very friable, Non-plastic, very few very fine roots	--	SM	30.4	8	1500	770	1500	3000	6700	1000	Dow
RL-246+00-SW-ES	12/6/2006	2.7-4.2	erosion scar	10YR 4/2 dark grayish brown loamy fine sand, few 10YR 4/6 dark yellowish brown mottle, moist, structureless, moist, very friable, Non-plastic, very few very fine roots	--	SM	20	9	9600	5900	4300	4700	24000	3200	Dow
RL-246+00-SW-ES	12/6/2006	4.2-4.5	erosion scar	10YR 5/2 grayish brown fine sand, many 7.5YR 4/6 strong brown mottle, moist, single grain, moist, loose, Non-plastic, interval dominated by color of mottles, not color of matrix	--	SP	17.5	17	13000	5300	4600	3600	26000	3500	Dow
RL-246+00-SW-ES	12/6/2006	4.5-5.0	erosion scar	10YR 4/2 dark grayish brown and 10YR 5/3 brown fine sandy loam, few 10YR 4/6 dark yellowish brown mottle, moist, structureless, moist, very friable, slightly plastic, very few very fine roots, decomposing wood (10YR 2/1, black) from 4.9-5.0'	--	SM	23.7	36	29000	11000	12000	9900	62000	8700	Dow

**NOTES:**

All concentrations are expressed on a dry weight basis.  
 "Estimated Total TEQ" is aggregate indicator congener TEQ multiplied by correlation factor of 1.1x.  
 "--" indicates data that was not collected for the given soil sample  
 "1" indicates horizontal depth measured from face of erosion scar.

**DATA FLAGS:**

Asterisk (\*) indicates estimated concentration.  
 "LSV" indicates elevated reporting limit due to limited sample volume.  
 "LSR" indicates elevated reporting limit due to low internal standard recovery.  
 "MI" indicates elevated reporting limit due to matrix interference.  
 "SL" indicates sample lost during laboratory analysis.



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## GeoMorph Site Characterization Data Summary

### Upper Tittabawassee River: Reach M

### Midland, Michigan

Transect Location/Sample Identification	Collection Date	Horz Depth Interval (ft) <sup>1</sup>	Geomorphic Setting	Physical Description	Soil Horizon	USCS	Moisture Content (%)	2,3,7,8-TCDD (ng/kg)	2,3,7,8-TCDF (ng/kg)	1,2,3,7,8-PeCDF (ng/kg)	2,3,4,7,8-PeCDF (ng/kg)	1,2,3,4,7,8 + 1,2,3,6,7,8-HxCDF (ng/kg)	Aggregate Indicator Congener Concentration (ng/kg)	Estimated Total TEQ (ppt)	Laboratory
RM-268+00-SW-ES	11/29/2006	0.0-0.2	erosion scar		--	--	19.3	33	22000	8400	8500	7100	46000	6300	Dow
RM-268+00-SW-ES	12/6/2006	0.0-0.6	erosion scar	10YR 3/2 very dark grayish br loam, moist, granular, moist, very friable, slightly plastic, common very fine roots	--	ML/CL	20.2	12	9100	3800	3700	3100	20000	2700	Dow
RM-268+00-SW-ES	12/6/2006	0.6-1.0	erosion scar	10YR 4/2 dark grayish brown fine sandy loam, wet, structureless, moist, friable, slightly plastic, very few medium roots	--	SM	17.9	33	42000	17000	15000	12000	86000	11000	Dow
RM-268+00-SW-ES	12/6/2006	1.0-2.0	erosion scar	10YR 4/2 dark grayish brown silt loam, wet, structureless, moist, friable, slightly plastic, horizon divided for sample analysis, grades to fine sandy loam in some areas	--	ML	23.1	46	79000	31000	32000	28000	170000	23000	Dow
RM-268+00-SW-ES	12/6/2006	2.0-2.8	erosion scar	10YR 4/2 dark grayish brown silt loam, wet, structureless, moist, friable, slightly plastic, horizon divided for sample analysis, grades to fine sandy loam in some areas	--	ML	24.5	57	63000	23000	24000	18000	130000	18000	Dow
RM-268+00-SW-ES	12/6/2006	2.8-4.0	erosion scar	10YR 4/2 dark grayish brown fine sand, wet, single grain, moist, loose, Non-plastic, intermittent thin layers of silt loam, layer divided for sample analysis	--	SP	19.7	24	19000	5600	6400	3900	35000	4800	Dow
RM-268+00-SW-ES	12/6/2006	4.0-5.0	erosion scar	10YR 4/2 dark grayish brown fine sand, wet, single grain, moist, loose, Non-plastic, intermittent thin layers of silt loam layer divided for sample analysis	--	SP	18.8	11	11000	3800	4000	2900	22000	3000	Dow
RM-272+00-NE-ES	11/29/2006	0.0-0.2	erosion scar		--	--	6	<4	28	12	10	10	62	10	Dow
RM-272+00-NE-ES	12/6/2006	0.0-1.0	erosion scar	10YR 4/4 dark yellowish brown fine sand, moist, single grain, moist, loose, Non-plastic, layer divided for sample analysis	--	SP	6.9	<4	13	4	4	4	25*	<10*	Dow
RM-272+00-NE-ES	12/6/2006	1.0-2.0	erosion scar	10YR 4/4 dark yellowish brown fine sand, moist, single grain, moist, loose, Non-plastic, layer divided for sample analysis	--	SP	2.2	<4	5	<4	<4	<4	<20*	<10*	Dow
RM-272+00-NE-ES	12/6/2006	2.0-3.0	erosion scar	10YR 4/4 dark yellowish brown fine sand, moist, single grain, moist, loose, Non-plastic, layer divided for sample analysis	--	SP	4.5	<4	15	4	4	<4	22*	<10*	Dow
RM-272+00-NE-ES	12/6/2006	3.0-4.0	erosion scar	10YR 4/4 dark yellowish brown fine sand, moist, single grain, moist, loose, Non-plastic, layer divided for sample analysis	--	SP	6	<4	14	4	<4	<4	<20*	<10*	Dow
RM-272+00-NE-ES	12/6/2006	4.0-4.7	erosion scar	10YR 4/4 dark yellowish brown fine sand, moist, single grain, moist, loose, Non-plastic, layer divided for sample analysis	--	SP	4.6	<4	14	4	4	<4	22*	<10*	Dow
RM-272+00-NE-ES	12/6/2006	4.7-5.0	erosion scar	10YR 3/3 dark brown loamy fine sand, moist, subangular blocky, moist, very friable, Non-plastic	--	SP	10.1	<4	20	7	6	<4	33*	<10*	Dow

**NOTES:**

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 \*Estimated Total TEQ\* is aggregate indicator congener TEQ multiplied by correlation factor of 1.1x.  
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## GeoMorph Site Characterization Data Summary

### Upper Tittabawassee River: Reach M

### Midland, Michigan

Transect Location/Sample Identification	Collection Date	Horz Depth <sup>1</sup> Interval (ft)	Geomorphic Setting	Physical Description	Soil Horizon	USCS	Moisture Content (%)	2,3,7,8-TCDD (ng/kg)	2,3,7,8-TCDF (ng/kg)	1,2,3,7,8-PeCDF (ng/kg)	2,3,4,7,8-PeCDF (ng/kg)	1,2,3,4,7,8 + 1,2,3,6,7,8-HxCDF (ng/kg)	Aggregate Indicator Congener Concentration (ng/kg)	Estimated Total TEQ (ppt)	Laboratory
RM-284+00-NE-ES	11/29/2006	0.0-0.2	erosion scar		--	--	15.5	5	1600	600	660	490	3300	470	Dow
RM-284+00-NE-ES	12/6/2006	0.0-0.8	erosion scar	2.5Y 3/2 very dark grayish br loamy fine sand, moist, subangular blocky, weak, moist, very friable, Non-plastic, very few fine roots	--	SP	13.7	17	28000	17000	14000	15000	73000	9700	Dow
RM-284+00-NE-ES	12/6/2006	0.8-2.0	erosion scar	10YR 6/3 pale brown fine sand, moist, single grain, moist, loose, Non-plastic, very few fine roots, layer divided for sample analysis	--	SP	7.4	47	54000	18000	19000	15000	110000	14000	Dow
RM-284+00-NE-ES	12/6/2006	0.8-2.0 Lab Duplicate	erosion scar	10YR 6/3 pale brown fine sand, moist, single grain, moist, loose, Non-plastic, very few fine roots, layer divided for sample analysis	--	SP	7	39	51000	22000	21000	19000	110000	15000	Dow
RM-284+00-NE-ES	12/6/2006	2.0-3.0	erosion scar	10YR 6/3 pale brown fine sand, moist, single grain, moist, loose, Non-plastic, very few fine roots, layer divided for sample analysis decaying wood fragment from 2.9-3.0'	--	SP	8	77	180000	57000	73000	45000	350000	50000	Dow
RM-284+00-NE-ES	12/6/2006	3.0-4.0	erosion scar	10YR 6/3 pale brown fine sand, moist, single grain, moist, loose, Non-plastic, very few fine roots, layer divided for sample analysis	--	SP	2.8	16	18000	6300	5900	4200	34000	4600	Dow
RM-284+00-NE-ES	12/6/2006	4.0-5.0	erosion scar	10YR 6/3 pale brown fine sand, moist, single grain, moist, loose, Non-plastic, very few fine roots, layer divided for sample analysis	--	SP	2.3	49	49000	16000	17000	12000	94000	13000	Dow

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## GeoMorph Site Characterization Data Summary

### Upper Tittabawassee River: Reach N

### Midland, Michigan

Transect Location/Sample Identification	Collection Date	Horz Depth Interval (ft) <sup>1</sup>	Geomorphic Setting	Physical Description	Soil Horizon	USCS	Moisture Content (%)	2,3,7,8-TCDD (ng/kg)	2,3,7,8-TCDF (ng/kg)	1,2,3,7,8-PeCDF (ng/kg)	2,3,4,7,8-PeCDF (ng/kg)	1,2,3,4,7,8 + 1,2,3,6,7,8-HxCDF (ng/kg)	Aggregate Indicator Congener Concentration (ng/kg)	Estimated Total TEQ (ppt)	Laboratory
RN-297+00-NE-ES	11/29/2006	0.0-0.2	erosion scar		--	--	16.8	21	1300	510	540	520	2900	420	Dow
RN-297+00-NE-ES	12/1/2006	0.0-1.7	erosion scar	10YR 3/2 very dark grayish br loamy fine sand, moist, structureless, moist, very friable, Non-plastic	--	SP	16.6	100	2900	1200	1100	1500	6700	990	Dow
RN-297+00-NE-ES	12/1/2006	1.7-3.0	erosion scar	10YR 4/3 brown and 10YR 6/3 pale brown fine sand, dry, single grain, dry, loose, Non-plastic, Interval divided for sample analysis. Alternating layers of lighter and darker fine sand.	--	SP	6.4	28	40000	15000	14000	12000	82000	11000	Dow
RN-297+00-NE-ES	12/1/2006	3.0-4.0	erosion scar	10YR 4/3 brown and 10YR 6/3 pale brown fine sand, dry, single grain, dry, loose, Non-plastic, Interval divided for sample analysis. Alternating layers of lighter and darker fine sand.	--	SP	3.1	45	46000	14000	18000	14000	92000	13000	Dow
RN-297+00-NE-ES	12/1/2006	4.0-5.0	erosion scar	10YR 4/3 brown and 10YR 6/3 pale brown fine sand, moist, single grain, moist, loose, Non-plastic, Interval divided for sample analysis. Alternating layers of lighter and darker fine sand. Small amount of charcoal at 4.8'.	--	SP	8.4	68	68000	20000	27000	17000	130000	19000	Dow
RN-316+00-NE-ES	11/29/2006	0.0-0.2	erosion scar		--	--	13.5	16	2900	1600	1600	2100	8200	1200	Dow
RN-316+00-NE-ES	12/6/2006	0.0-1.0	erosion scar	2.5Y 3/3 dark olive brown fine sandy loam, moist, subangular blocky, weak, moist, very friable, slightly plastic, few medium roots, grades to loamy fine sand layer divided for analysis	--	SM	15.9	20	3000	1500	1500	2500	8400	1200	Dow
RN-316+00-NE-ES	12/6/2006	1.0-2.6	erosion scar	2.5Y 3/3 dark olive brown loamy fine sand, moist, subangular blocky, weak, moist, very friable, slightly plastic, few medium roots, grades to loamy fine sand layer divided for analysis	--	SM	12.2	9	5700	3400	2700	3700	15000	2000	Dow
RN-316+00-NE-ES	12/6/2006	2.6-4.0	erosion scar	10YR 6/3 pale brown loamy fine sand, dry, subangular blocky, weak, dry, soft, Non-plastic, few very fine roots, layer divided for analysis some fine sand	--	SP	5.5	45	60000	21000	26000	20000	130000	18000	Dow
RN-316+00-NE-ES	12/6/2006	4.0-5.0	erosion scar	10YR 6/3 pale brown loamy fine sand, dry, subangular blocky, weak, dry, soft, Non-plastic, few very fine roots, layer divided for analysis some fine sand	--	SP	4.5	58	91000	30000	43000	26000	190000	28000	Dow

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