Memorandum

January 19, 2017

To:	Richard Conforti/MDEQ	Ref. No.:	012636
From:	Michael Tomka/Richard Chatfield/kf/92		
cc:	Joe Rogers, John McCabe/MDEQ Dave Favero/RACER		

Subject: **MW-17-13 Area Investigation Results, RACER Trust, Coldwater Road Industrial Lands Genesee Township, Michigan**

1. Introduction

Additional groundwater investigation activities were completed in the vicinity of MW-17-13 in accordance with recommendations in the August 18th, 2016 memorandum to the Michigan Department of Environmental Quality (MDEQ) regarding elevated metals concentrations in groundwater samples from monitoring well MW-17-13 at the RACER Trust Coldwater Road Industrial Lands. A groundwater investigation using a Geoprobe® was completed on October 3, 2016. This memorandum summarizes the results of the investigation.

2. Investigation Summary

2.1 Boring Locations

Six Geoprobe® borings (BH1-16, BH2-16, BH3-16, BH4-16, BH5-16, and BH6-16) were advanced on October 3, 2016 in the vicinity of MW-17-13 in an attempt to delineate the saturated sand seam in which MW-17-13 is screened (774.28 to 780.38 feet above mean sea level [ft AMSL]). Two locations were completed on-Site north of Coldwater Road, one location was completed north of Coldwater Road within the road allowance, and three locations were completed south of Coldwater Road within the road allowance. The boring locations are presented on Figure 1. Once completed, all locations were backfilled with soil cuttings and the ground surface was restored to original grade. Boreholes were completed to depths of 30ft below ground surface or 5 ft into native clay; whichever was less. A Right-of-Way permit was received from the Genesee County Road Commission prior to completing the work.

The boring locations were surveyed on October 31, 2016.

2.2 Stratigraphy

Stratigraphy was recorded at all six locations. Stratigraphic logs are presented in Attachment A. At the four locations where water was encountered, a sand seam was identified at or near to the elevation of the sand

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seam in which MW-17-13 is screened. Figure 2 and Figure 3 present east/west and north/south cross-sections in the vicinity of MW-17-13, respectively.

2.3 Borehole Water Sampling

Borehole water samples were collected at four of six borehole location (BH1-16, BH2-16, BH5-16, and BH6-16), field filtered, and submitted for laboratory dissolved metals analysis (arsenic, iron, manganese, and lead). Due to high turbidities total metals analysis was not completed. Two of the six locations were dry or did not produce sufficient water to collect a sample; therefore, no water samples were collected. Samples were submitted to TestAmerica Laboratories, Inc. in North Canton, Ohio under chain of custody procedures. The laboratory analytical report is presented in Attachment B.

3. Evaluation

3.1 Borehole Water Sample Results

Dissolved metals (arsenic, iron, lead, and manganese) were detected in all four of the samples collected. A summary of the analytical results is presented on Figure 1.

3.1.1 Dissolved Arsenic

Historic concentrations of dissolved arsenic at MW-17-13 range from 0.012 to 0.028 milligrams per litre (mg/L) across eight unique sampling events. The most recent sampling of MW-17-13 (September 28, 2016) had the highest dissolved arsenic concentration reported at MW-17-13 (0.028 mg/L). Borehole water concentrations at BH1-16 and BH2-16 (located north of Coldwater Road) were 0.018 and 0.012 mg/L, respectively. Borehole water concentrations at BH5-16 and BH6-16 (located south of Coldwater Road) were 0.056 and 0.12 mg/L, respectively.

Historic Site-wide groundwater sampling has not identified arsenic as a Site constituent of concern (COC), other than at location MW-17-13. A summary of recent groundwater monitoring results (2014 to 2016) is presented in Attachment C. It is noted that regional groundwater analyses completed by the MDEQ, Michigan Department of Community Health (MDCH), and the U. S. Geological Survey (USGS) have identified naturally occurring arsenic concentration within groundwaters throughout Genesee County above the MDEQ residential drinking water criterion of 0.01 mg/L[1].

A generally increasing trend in dissolved arsenic concentrations observed at MW-17-13 and both borehole water results from south of Coldwater Road having significantly higher results than the results north of Coldwater Road support an off-Site source of arsenic.

3.1.2 Dissolved Iron

Historic concentrations of dissolved iron at MW-17-13 range from 5.9 to 24 mg/L across eight unique sampling events. In general, dissolved iron concentrations show an increasing trend over the 4 year of monitoring data. Borehole water concentrations at BH1-16 and BH2-16 (located north of Coldwater Road)

[1] USGS, October 2000. Arsenic in Ground Water in Genesee County, Michigan, USGS Fact Sheet FS-127-00

reported 19.0 and 7.6 mg/L, respectively. Borehole water concentrations at BH5-16 and BH6-16 (located south of Coldwater Road) were 93.0 and 150 mg/L, respectively.

Historic Site-wide groundwater sampling has not identified iron as a Site COC, other than at location MW-17-13.

A generally increasing trend in dissolved iron concentrations observed at MW-17-13 and both borehole water results from south of Coldwater Road reporting significantly higher results than the results north of Coldwater Road support an off-Site source of iron.

3.1.3 Dissolved Manganese

Historic concentrations of dissolved manganese at MW-17-13 range from 0.15 to 1.7 mg/L across eight unique sampling events. In general, dissolved manganese concentrations at MW-17-13 remain consistent although variable over the 4 year of monitoring data. Borehole water concentrations at BH1-16 and BH2-16 (located north of Coldwater Road) were 2.8 and 6.3 mg/L, respectively. Borehole water concentrations at BH5-16 and BH6-16 (located south of Coldwater Road) were 3.4 and 2.4 mg/L, respectively.

Historic Site-wide groundwater sampling has identified manganese as a Site COC.

No discernable trend in dissolved manganese concentrations observed at MW-17-13 and all borehole water results from south and north of Coldwater Road reporting similar dissolved manganese concentrations support the presence of consistent manganese concentrations in groundwater both on- and off-Site.

3.1.4 Dissolved Lead

Historic concentrations of dissolved lead at MW-17-13 have been non-detect at a reporting limit of 0.003 mg/L or estimated below this reporting limit, across eight unique sampling events. Borehole water concentrations at BH1-16 and BH2-16 (located north of Coldwater Road) were 0.020 and 0.0036 mg/L, respectively. Borehole water concentrations at BH5-16 and BH6-16 (located south of Coldwater Road) were 0.071 and 0.053 mg/L, respectively.

Historic Site-wide groundwater sampling has identified lead as a Site COC; however, with historical results at MW-17-13 at/or below the reporting limit over the previous 4 years of groundwater monitoring, dissolved lead has not been a COC at MW-17-13. In addition, both borehole water results from south of Coldwater Road having higher results than the results to the north of Coldwater Road support an off-site source of lead.

3.2 Groundwater Observations

Shallow perched groundwater exists across the Site in limited and discontinuous sand seams. No distinct groundwater flow is anticipated within these zones. As presented in the borehole logs, shallow perched groundwater was encountered in four of six boreholes completed. Locations where groundwater was encountered are presented on Figure 1. Consistent with previous Site investigations shallow groundwater flow at in the vicinity of MW-17-13 is limited due to the discontinuous and perched conditions.

4. Conclusions

The following conclusions can be made based on an evaluation of the available data:

1) Off-site borehole water concentrations of dissolved arsenic, iron and lead are higher than those observed on-Site in both borehole water and historic groundwater samples.

2) Groundwater concentrations of dissolved arsenic and iron have been increasing at MW-17-13 since the well installation in 2013.

3) Historic Site-wide groundwater monitoring has not identified arsenic or iron as Site COCs.

4) Naturally occurring arsenic, within groundwater throughout Genesee County, has been detected above the MDEQ residential drinking water criterion of 0.01 mg/L.

5) Shallow groundwater flow in the vicinity of MW-17-13 is limited due to the discontinuous and perched conditions.

chemical_name	Background	A	B	C	D	E
Aluminum	10.5	0.05	0.3	0.05	4.1	-
Aluminum (dissolved)	3.52	0.05	0.3	0.05	4.1	-
Arsenic	0.01	0.01	-	0.01	-	0.01
Arsenic (dissolved)	0.0072	0.01	-	0.01	-	0.01
Iron	32.58	0.3	2.0	0.3	5.6	-
Iron (dissolved)	4.0	0.3	2.0	0.3	5.6	-
Lead	0.0035	0.004	-	0.004	-	-
Lead (dissolved)	0.003 U	0.004	-	0.004	-	-
Manganese	0.963	0.05	0.86	0.05	2.5	-
Manganese (dissolved)	0.547	0.05	0.86	0.05	2.5	-

Background	Background - Shallow Water Bearing Zone
A	Residential Drinking Water Criteria
B	Residential Drinking Water Criteria - Health Based Criteria
C	Nonresidential Drinking Water Criteria
D	Nonresidential Drinking Water Criteria - Health Based Criteria
E	Groundwater/Surface Water Interface (GSI) Criteria

MW-17-13	3/26/2014	6/10/2014	9/10/2014	12/10/2014	3/26/2015	6/22/2015	9/14/2015	12/15/2015	3/21/2016	6/20/2016	9/28/2016
Arsenic	0.01	-	-	-	0.015 (ACE)	0.011 (ACE)/0.011 (ACE)	0.019 (ACE)/0.017 (ACE)	0.023 (ACE)	-	0.015 (ACE)/0.014 (ACE)	0.022 (ACE)
Arsenic (dissolved)	0.012 (ACE)	-	-	-	0.014 (ACE)	0.012 (ACE)/0.013 (ACE)	0.017 (ACE)/0.017 (ACE)	0.022 (ACE)	0.019 (ACE)	0.015 (ACE)/0.016 (ACE)	0.028 (ACE)
Iron	5.8	-	-	-	9.2	7.5/7.6	11/10	11	-	14/14	12
Iron (dissolved)	5.9 (ABCD)	-	-	-	9.2 (ABCD)	7.5 (ABCD)/7.2 (ABCD)	10 (ABCD)/10 (ABCD)	10 (ABCD)	24 (ABCD)	14 (ABCD)/14 (ABCD)	13 (ABCD)
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U/0.003 U	0.003 U/0.003 U	0.0021 J	-	0.003 U/0.0022 J	0.0029 J
Lead (dissolved)	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U/0.003 U	0.003 U/0.003 U	0.0019 J	0.003 U	0.003 U/0.003 U	0.003 U
Manganese	0.6	1.6 (ABC)	1.1 (ABC)	0.65	0.37	0.54/0.55	0.21/0.2	0.15	-	1.2 (ABC)/1.2 (ABC)	0.76
Manganese (dissolved)	0.58 (AC)	1.7 (ABC)	1.2 (ABC)	0.66 (AC)	0.39	0.55 (AC)/0.53	0.21/0.21	0.15	1.1 (ABC)	1.2 (ABC)/1.2 (ABC)	0.69 (AC)

BH2-16	10/3/2016
Arsenic (dissolved)	0.012 (ACE)
Iron (dissolved)	7.6 (ABCD)
Lead (dissolved)	0.0036
Manganese (dissolved)	6.3 (ABCD)

BH6-16	10/3/2016
Arsenic (dissolved)	0.12 (ACE)
Iron (dissolved)	150 (ABCD)
Lead (dissolved)	0.053 (AC)
Manganese (dissolved)	2.4 (ABC)

BH1-16	10/3/2016
Arsenic (dissolved)	0.018 (ACE)
Iron (dissolved)	19 (ABCD)
Lead (dissolved)	0.02 (AC)
Manganese (dissolved)	2.8 (ABCD)

BH5-16	10/3/2016
Arsenic (dissolved)	0.056 (ACE)
Iron (dissolved)	93 (ABCD)
Lead (dissolved)	0.071 (AC)
Manganese (dissolved)	3.4 (ABCD)

0 50 100ft

A A' B B'

PFW-1 PFW-10 MW-16-10 MW-17-13 BH-103 BH1-16 BH2-16 BH3-16 BH4-16 BH5-16 BH6-16

EAST COLDWATER ROAD

HARRY STREET

LEGEND

- FACILITY BOUNDARY
- MONITORING WELL LOCATION
- BOREHOLE LOCATION
- BOREHOLE LOCATION (GROUNDWATER ENCOUNTERED)

MW-17-13	3/26/2014
Arsenic	0.01
Arsenic (dissolved)	0.012 (ABC)
Iron (dissolved)	5.9 (AB)
Lead (dissolved)	-
Manganese	0.6

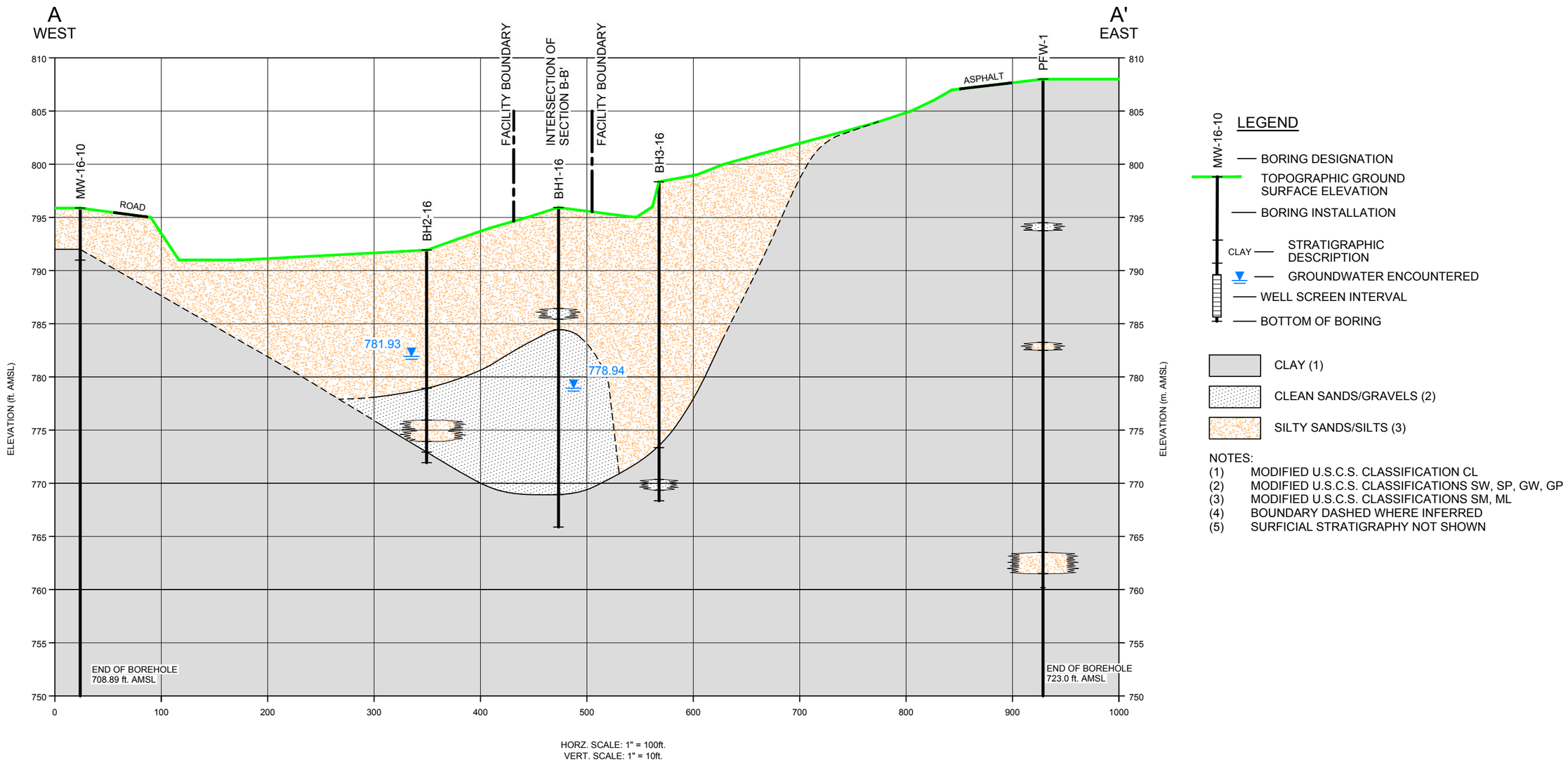
SAMPLE LOCATION; SAMPLE DATE; RESULT (mg/L); PARAMETER NOT ANALYZED; PARAMETER

NOTES:
1. THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.
2. RESULTS ARE FIRST SCREENED AGAINST SITE-SPECIFIC BACKGROUND VALUES (BACKGROUND); THOSE CONSTITUENTS EXCEEDING BACKGROUND ARE THEN SCREENED AGAINST MDEQ PART 201 CRITERIA.

figure 1

MW-17-13 GROUNDWATER INVESTIGATION
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

12636-T05(MEMO092)GN-WA002 JAN 13, 2017



HORZ. SCALE: 1" = 100ft.
VERT. SCALE: 1" = 10ft.

LEGEND

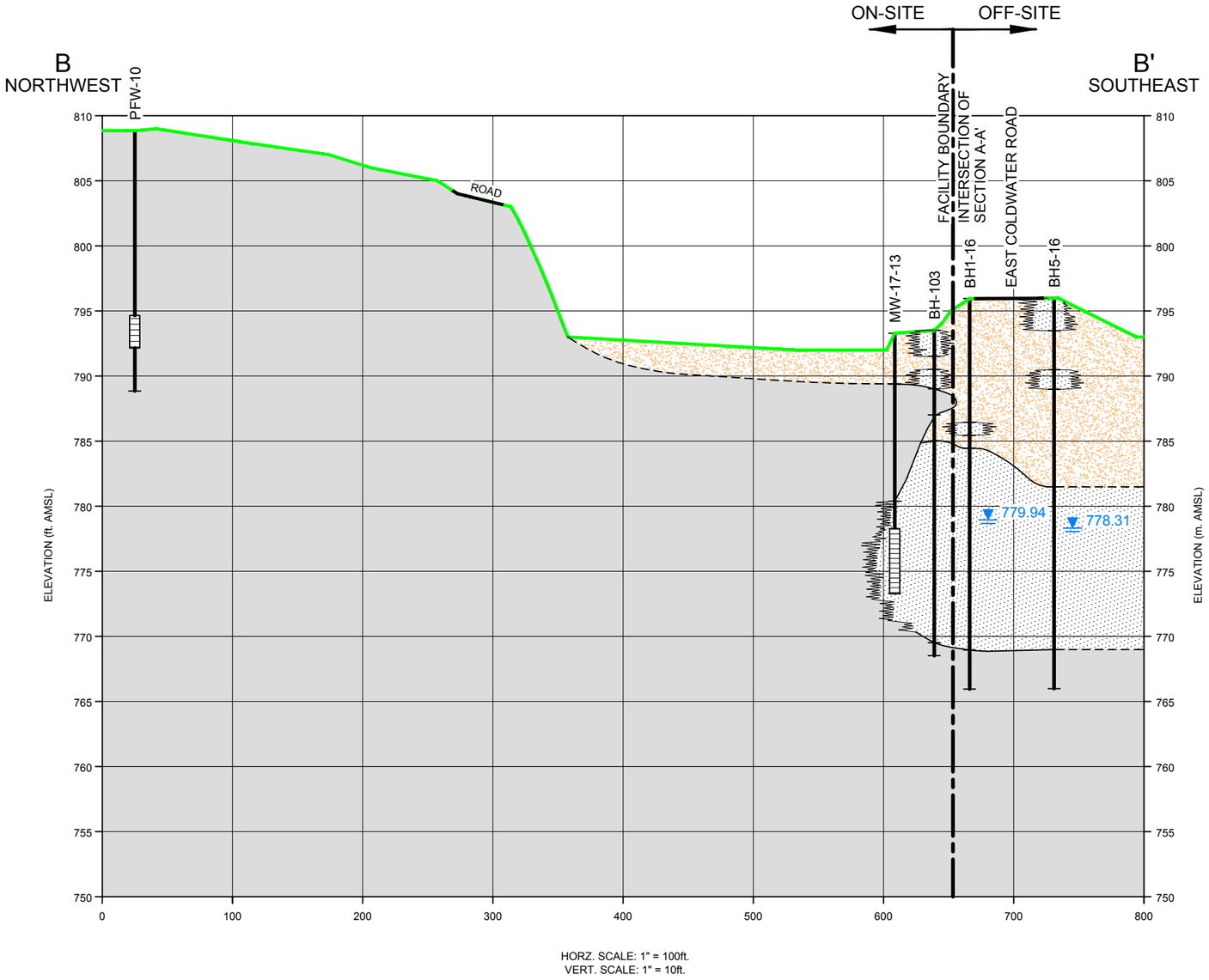
MW-16-10 — BORING DESIGNATION
TOPOGRAPHIC GROUND SURFACE ELEVATION
BORING INSTALLATION
CLAY — STRATIGRAPHIC DESCRIPTION
GROUNDWATER ENCOUNTERED
WELL SCREEN INTERVAL
BOTTOM OF BORING

CLAY (1)
CLEAN SANDS/GRAVELS (2)
SILTY SANDS/SILTS (3)

NOTES:
(1) MODIFIED U.S.C.S. CLASSIFICATION CL
(2) MODIFIED U.S.C.S. CLASSIFICATIONS SW, SP, GW, GP
(3) MODIFIED U.S.C.S. CLASSIFICATIONS SM, ML
(4) BOUNDARY DASHED WHERE INFERRED
(5) SURFICIAL STRATIGRAPHY NOT SHOWN

figure 2

GEOLOGIC CROSS-SECTION A-A'
MW-17-13 GROUNDWATER INVESTIGATION
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan



HORZ. SCALE: 1" = 100ft.
VERT. SCALE: 1" = 10ft.

LEGEND

MW-16-10 — BORING DESIGNATION

TOPOGRAPHIC GROUND SURFACE ELEVATION

BORING INSTALLATION

CLAY — STRATIGRAPHIC DESCRIPTION

GROUNDWATER ENCOUNTERED

WELL SCREEN INTERVAL

BOTTOM OF BORING

CLAY (1)

CLEAN SANDS/GRAVELS (2)

SILTY SANDS/SILTS (3)

NOTES:
(1) MODIFIED U.S.C.S. CLASSIFICATION CL
(2) MODIFIED U.S.C.S. CLASSIFICATIONS SW, SP, GW, GP
(3) MODIFIED U.S.C.S. CLASSIFICATIONS SM, ML
(4) BOUNDARY DASHED WHERE INFERRED
(5) SURFICIAL STRATIGRAPHY NOT SHOWN

figure 3

GEOLOGIC CROSS-SECTION B-B'
MW-17-13 GROUNDWATER INVESTIGATION
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

Attachment A
Stratigraphic Logs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: COLDWATER ROAD INDUSTRIAL LANDS
HOLE DESIGNATION: BH1-16

PROJECT NUMBER: 12636
DATE COMPLETED: 3 October 2016

CLIENT: RACER TRUST
DRILLING METHOD: Geoprobe

LOCATION: Genesee Township, MI
FIELD PERSONNEL: S. Hoevemeyer

COORDINATE SYSTEM:: SPCS MI S NAD 83/ NAVD 88, US Survey Feet

NORTHING: 580487.7
EASTING: 13306649.83

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	795.94					
0	Topsoil, vegetation	795.19					
2	SM - SILTY SAND, silt, fine to medium grained sand, moist, trace fine gravel, brown	793.94					
	ML - SILT, clay, trace fine grained sand and gravel, medium plasticity, grey, moist						
4							
6							
	SM - SILTY SAND, soft, grey, trace gravel	788.94					
8	- woody debris at 9.0ft BGS						
10	SW - SAND (well graded), trace silt, moist	786.44					
	ML - SILT (gray), clay, trace sand and gravel (mottled brown)	785.44					
12	SW - SAND (well graded), trace silt, trace gravel, tan	784.44					
	SP - SAND (poorly graded), medium gravel, gray	782.94					
14							
16			Backfilled with bentonite and native soil cuttings				
	- wet (at 778.94 ft AMSL) at 17.0ft BGS		▽				
18							
20	- brown, wet at 19.5ft BGS						
22							
24	- trace gravel at 24.0ft BGS						
26							
	CL - CLAY, silty, trace sand, gray	768.94					
28							
30	END OF BOREHOLE @ 30.0ft BGS	765.94					
32	NOTES: - Groundwater sampled from temporary screen at 26 ft bgs. Sample GW-12636-100316-SSH-4116. - Borehole abandoned same day using bentonite and native soil cuttings.						
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ▽ 10/3/2016

OVERBURDEN LOG 12636 GEOPROBES (OCT 2016).GPJ CRA_CORP.GDT 13/1/17

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: COLDWATER ROAD INDUSTRIAL LANDS
HOLE DESIGNATION: BH2-16

PROJECT NUMBER: 12636
DATE COMPLETED: 3 October 2016

CLIENT: RACER TRUST
DRILLING METHOD: Geoprobe

LOCATION: Genesee Township, MI
FIELD PERSONNEL: S. Hoevemeyer

COORDINATE SYSTEM:: SPCS MI S NAD 83/ NAVD 88, US Survey Feet

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	NORTHING: 580461.69 EASTING: 13306528.75 GROUND SURFACE	791.93					
0	Topsoil, vegetation	791.27					
2	SM - SILTY SAND, trace gravel, dry, hard, brown						
4		787.93					
6	ML - SILT, clay, little sand, mottled brown/gray, medium plasticity - small 2-inch sand seams at 6.0ft BGS						
8		783.93					
10	ML - SILT, clay, trace sand and gravel, moist, soft	781.93	Backfilled with bentonite and native soil cuttings				
12	SM - SILTY SAND, wet, brown to tan, fine to medium grained, trace gravel						
14		778.93					
16	SP - SAND (poorly graded), gray, wet, fine to medium grained grained, trace silt	775.93					
18	SM - SILTY SAND, wet, trace gravel, brown/tan	773.93					
20	GW - GRAVEL (well graded), sand, trace silt, wet	772.93					
22	CL - CLAY, silty, trace sand/gravel, moist	771.93					
24	END OF BOREHOLE @ 20.0ft BGS NOTES: - Groundwater sampled from temporary screen. Sample GW-12636-100316-SSH-4216. - Borehole abandoned same day using bentonite and native soil cuttings.						
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: COLDWATER ROAD INDUSTRIAL LANDS
HOLE DESIGNATION: BH3-16

PROJECT NUMBER: 12636
DATE COMPLETED: 3 October 2016

CLIENT: RACER TRUST
DRILLING METHOD: Geoprobe

LOCATION: Genesee Township, MI
FIELD PERSONNEL: S. Hoevemeyer

COORDINATE SYSTEM:: SPCS MI S NAD 83/ NAVD 88, US Survey Feet

NORTHING: 580561.75
EASTING: 13306708.56

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	798.36					
0	Topsoil, vegetation	797.86					
	GW - GRAVEL, sand, fine to medium grained, trace silt, dry	796.36					
2	SM - SILTY SAND, mottled brown/gray, hard, dry						
4	- trace gravel, brown, moist at 4.0ft BGS						
6							
8	- trace gravel, gray, moist at 8.0ft BGS						
10							
12	- black and red spots of color at 12.0ft BGS						
14							
16	- trace gravel, trace clay, mottled brown/gray, hard, dry at 16.0ft BGS		Backfilled with bentonite and native soil cuttings				
18							
20	- trace gravel, trace clay, brown, dry at 20.0ft BGS						
22							
24							
	CL - CLAY, silty, trace sand and gravel, gray, moist	773.36					
26							
28		770.36					
	SP - SAND (poorly graded), trace silt, fine to medium grained, moist to wet	769.36					
	CL - CLAY, silty, gray, moist	768.36					
30	END OF BOREHOLE @ 30.0ft BGS						
32	NOTES: - Borehole abandoned same day using bentonite and native soil cuttings.						
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12636 GEOPROBES (OCT 2016).GPJ CRA_CORP.GDT 13/1/17

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: COLDWATER ROAD INDUSTRIAL LANDS
HOLE DESIGNATION: BH4-16

PROJECT NUMBER: 12636
DATE COMPLETED: 3 October 2016

CLIENT: RACER TRUST
DRILLING METHOD: Geoprobe

LOCATION: Genesee Township, MI
FIELD PERSONNEL: S. Hoevemeyer

COORDINATE SYSTEM:: SPCS MI S NAD 83/ NAVD 88, US Survey Feet

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	NORTHING: 580377.7 EASTING: 13306564 GROUND SURFACE	793.81					
0	Topsoil, vegetation	793.15					
	FILL - gravel, sandy						
2	SM - SILTY SAND, trace gravel, fine to medium grained, mottled brown/gray, hard, dry	791.81					
4							
6	- moist, more sand, less silt at 6.0ft BGS						
8	- more silty, with trace clay at 8.0ft BGS						
10	- trace clay and gravel, brown, dry at 10.0ft BGS		Backfilled with bentonite and native soil cuttings				
12	CL - CLAY, silty, trace gravel, medium plasticity, gray, dry	781.81					
14							
16							
18							
20	END OF BOREHOLE @ 20.0ft BGS	773.81					
22	NOTES: - Borehole abandoned same day using bentonite and native soil cuttings.						
24							
26							
28							
30							
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: COLDWATER ROAD INDUSTRIAL LANDS
HOLE DESIGNATION: BH5-16
PROJECT NUMBER: 12636
DATE COMPLETED: 3 October 2016
CLIENT: RACER TRUST
DRILLING METHOD: Geoprobe
LOCATION: Genesee Township, MI
FIELD PERSONNEL: S. Hoevemeyer
COORDINATE SYSTEM:: SPCS MI S NAD 83/ NAVD 88, US Survey Feet

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	NORTHING: 580431.1 EASTING: 13306681.59 GROUND SURFACE	795.97					
0	Topsoil, vegetation	795.31					
	FILL - gravel, sand, dry						
2		793.47					
	SM - SILTY SAND, trace gravel, gray, dry						
4							
		790.47					
6	SP - SAND (poorly graded), trace silt and gravel, dark almost black, dry						
		788.97					
8	ML - SILT, trace sand and gravel, mottled brown/gray, hard, dry						
10							
12							
14							
		781.47					
16	SP - SAND (poorly graded), trace silt, fine grained, gray, wet to moist - wet (at 779.97 ft AMSL) at 16.0ft BGS		▽ Backfilled with bentonite and native soil cuttings				
18		777.97					
	SW - SAND (well graded), sand with gravel, brown, wet						
20							
22	- gray, wet at 23.0ft BGS						
24							
26							
		768.97					
28	CL - CLAY, silty, trace sand, medium plasticity, gray, moist						
30		765.97					
	END OF BOREHOLE @ 30.0ft BGS						
32	NOTES: - Groundwater sampled from temporary screen at 26 ft bgs. Sample GW-12636-100316-SSH-4316. - Borehole abandoned same day using bentonite and native soil cuttings.						
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽ 10/3/2016

OVERBURDEN LOG 12636 GEOPROBES (OCT 2016).GPJ CRA_CORP.GDT 13/1/17

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: COLDWATER ROAD INDUSTRIAL LANDS
HOLE DESIGNATION: BH6-16

PROJECT NUMBER: 12636
DATE COMPLETED: 3 October 2016

CLIENT: RACER TRUST
DRILLING METHOD: Geoprobe

LOCATION: Genesee Township, MI
FIELD PERSONNEL: S. Hoevemeyer

COORDINATE SYSTEM:: SPCS MI S NAD 83/ NAVD 88, US Survey Feet

NORTHING: 580470.21
EASTING: 13306765.4

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	796.53					
0	Topsoil, vegetation	796.03					
	FILL - gravel, sand						
2		794.03					
	SM - SILTY SAND, fine grained, mottled brown/gray, firm, moist						
4							
6							
	ML - SILT, trace gravel, little sand (fine grained), soft, moist	789.53					
8							
10	SP - SAND (poorly graded), trace silt and gravel, fine to medium grained, dry	786.53					
12							
	SM - SILTY SAND, trace clay and gravel, gray, firm, dry	783.53					
14							
	SP - SAND (poorly graded), trace silt, gray, moist to wet	781.53	Backfilled with bentonite and native soil cuttings				
16							
	SM - SILTY SAND, fine grained, gray, moist to wet	779.53					
18		778.53					
	SP - SAND (poorly graded), trace silt, brown/tan, wet						
20							
22							
	CL - CLAY, silty, trace gravel, medium plasticity, gray, moist	773.53					
24							
26							
28							
30	END OF BOREHOLE @ 30.0ft BGS	766.53					
	NOTES: - Groundwater sampled from temporary screen at 23 ft bgs. Sample GW-12636-100316-SSH-4416. - Borehole abandoned same day using bentonite and native soil cuttings.						
32							
34							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 12636 GEOPROBES (OCT 2016).GPJ CRA_CORP.GDT 13/1/17

STRATIGRAPHY LOG (OVERBURDEN)

PAGE ___ OF ___

PROJECT NAME _____ DRILLING CONTRACTOR _____ HOLE DESIGNATION BH103
PROJECT NUMBER 12636 DRILLER _____ DATE/TIME STARTED 12/5/11
CLIENT _____ SURFACE ELEVATION _____ DATE/TIME COMPLETED _____
LOCATION _____ WEATHER (A.M.) _____ DRILLING METHOD _____
(P.M.) _____ CRA SUPERVISOR _____

STRATIGRAPHIC INTERVALS (DEPTHS IN ft/m BGS) FROM	AT	TO	SAMPLE DESCRIPTION — ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) – PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS. NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	SAMPLE #	SAMPLING METHOD	PENETRATION RECORD SPLIT SPOON BLOWS (RECORD N-VALUES & RECOVERIES) 6"	6"	6"	6"	N	R	SAMPLE INTERVAL	PID / FID (ppm)	CHEMICAL ANALYSIS	GRAIN SIZE
0		.25	topsoil														
.25		2	SP - sand (f.m), fine grained, poorly graded, trace fine gravel, brown, dry														
2		3	SM - silty sand, trace fine gravel, fine grained (f.m), brown, moist to dry														
3		4.5	SP - sand (f.m)														
4.5		6.5	CL - silty clay, organics, grey to black, trace fine sand + gravel, moist to dry														
6.5		8.5	SM - silty sand, fine grained, trace gravel, grey, moist to dry														
8.5		10.5	SW - sand, fine to med grained, trace silt, trace fine gravel, dry, light brown														
10.5			GP - gravel sand, trace silt, med grained, moist														
	12		wet, grey/brown														
	18	~~18~~	tan, wet														
~~18~~		20															
20		24	SW - sand, grey, med grained, well graded, wet, trace gravel														
24		25	CL - sandy clay, grey, moist, low plasticity														

DEPTH OF BOREHOLE CAVING _____ / DEPTH OF FIRST GROUNDWATER ENCOUNTER _____ TOPSOIL THICKNESS _____
WATER LEVEL IN OPEN BOREHOLE ON COMPLETION _____, AFTER ____ HOURS ____
COMPLETION DETAILS: _____

NOTES AND COMMENTS

NOTE: FOR EACH SPLIT-SPOON SAMPLE, RECORD BLOW COUNTS, N-VALUE, SAMPLE RECOVERY LENGTH, AND SAMPLE INTERVAL.
NOTES:

collect H_2O sample at 1520, screen set at 14'-18' bgs, turb. 31 NTUs

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: FORMER PEREGRINE FACILITY
PROJECT NUMBER: 012636
CLIENT: MOTORS LIQUIDATION COMPANY
LOCATION: GENESEE TOWNSHIP, MICHIGAN

HOLE DESIGNATION: MW-16-10
DATE COMPLETED: November 24, 2010
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: B. WILLIAMS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
0	TOPSOIL	0.30	CONCRETE					
	SP-SAND (FILL), fine grained, poorly graded, trace fine gravel, brown, moist							
2	SW-SAND (FILL), fine and medium sand, trace fine gravel, well graded, brown, moist	2.20	CEMENT/BENTONITE GROUT					
4				1RS		100		0.1
	CL-SILTY CLAY (FILL), some fine and medium sand, trace fine gravel, mottled, weathered, trace oxidation, brown, moist	4.90	2" PVC WELL CASING					
6			10" BOREHOLE					
8			7" STEEL CASING					
10								
	CL-SILTY CLAY (native), trace fine sand, trace medium grained sand, low to medium plasticity, gray, moist	11.00						
12				2RS		100		0.0
14			6" BOREHOLE					
16	- some silty sand at 16.5ft BGS							
18								
20								
22				3RS		100		0.0
24								
26								
28								
30								
32				4RS		100		0.1
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: FORMER PEREGRINE FACILITY
PROJECT NUMBER: 012636
CLIENT: MOTORS LIQUIDATION COMPANY
LOCATION: GENESEE TOWNSHIP, MICHIGAN

HOLE DESIGNATION: MW-16-10
DATE COMPLETED: November 24, 2010
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: B. WILLIAMS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
36								
38								
40								
42				5RS		100		0.1
44								
46								
	- trace medium sand at 47.2ft BGS							
48								
50								
52				6RS		100		0.0
54								
56								
58								
60								
62				7RS		100		0.0
64								
66	- slight increase in sand content at 66.0ft BGS							
		66.30						
	SP-SAND, fine grained, poorly graded, some silt, compact, brown/gray, moist	67.00						
68	SM-SILTY SAND, trace fine sand, compact, moist to wet							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: FORMER PEREGRINE FACILITY
PROJECT NUMBER: 012636
CLIENT: MOTORS LIQUIDATION COMPANY
LOCATION: GENESEE TOWNSHIP, MICHIGAN

HOLE DESIGNATION: MW-16-10
DATE COMPLETED: November 24, 2010
DRILLING METHOD: ROTOSONIC
FIELD PERSONNEL: B. WILLIAMS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
72	- wet at 72.0ft BGS			8RS		100		0.0
74								
76			BENTONITE CHIPS					
78			6" BOREHOLE					
80			2" PVC WELL SCREEN					
82			SAND PACK	9RS		100		0.0
84	CL-SILTY CLAY, trace fine sand, soft, medium plasticity, gray, moist	84.00						
86			BENTONITE CHIPS					
	END OF BOREHOLE @ 87.0ft BGS	87.00						
88								
90								
92								
94								
96								
98								
100								
102								
104								

WELL DETAILS
Screened Interval:
79.00 to 84.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
76.70 to 77.00ft BGS
Material: BENTONITE CHIPS
Sand Pack:
77.00 to 85.00ft BGS
Material: SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

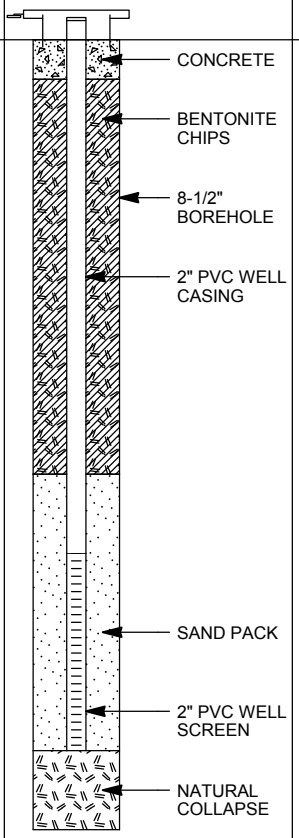
PROJECT NAME: FORMER PEREGRINE FACILITY
PROJECT NUMBER: 012636
CLIENT: MOTORS LIQUIDATION COMPANY
LOCATION: GENESEE TOWNSHIP, MICHIGAN

HOLE DESIGNATION: MW-17-13
DATE COMPLETED: October 24, 2013
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: E. MICKELSON

NORTHING: 580506.51
EASTING: 13306624.38

TOP OF CASING 797.11
TOP OF RISER 796.46
GROUND SURFACE 793.28

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft
0	TOPSOIL, vegetation	793.08
2	ML-SILT, few fine sand, compact, fine grained, brown, moist	
4		789.38
6	CL-SILTY CLAY, trace fine sand, firm, low plasticity, dark gray, moist - increase in sand content, soft, organic rich at 4.8ft BGS - trace fine gravel, light brown to light gray, mottling at 6.2ft BGS	
8		
10		
12	- trace roots from 11.4 to 11.7ft BGS	
14	SP-SAND, trace silt, few fine gravel, compact, fine to medium grained, brown, wet	780.38
16		
18	- no gravel, fine grained, wet from 17.2 to 18.0ft BGS - no gravel, fine grained, wet at 18.5ft BGS	
20	SM-SILTY SAND, compact, fine grained, gray, wet	774.28
	END OF BOREHOLE @ 20.0ft BGS	773.28
22		
24		
26		
28		
30		
32		
34		



WELL DETAILS
Screened interval:
780.28 to 775.28ft
13.00 to 18.00ft BGS
Length: 5ft
Diameter: 2in
Slot Size: 0.010
Material: PVC
Seal:
792.28 to 782.28ft
1.00 to 11.00ft BGS
Material: BENTONITE CHIPS
Sand Pack:
782.28 to 775.28ft
11.00 to 18.00ft BGS
Material: SAND

SAMPLE NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
1GP		10		0.1
				0.2
2GP		85		0.0
				0.1
3GP		75		0.2
				0.1
4GP		75		0.2
				0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 012636-WI.GPJ CRA_CORP.GDT 6/9/14

LOG OF TEST BORING

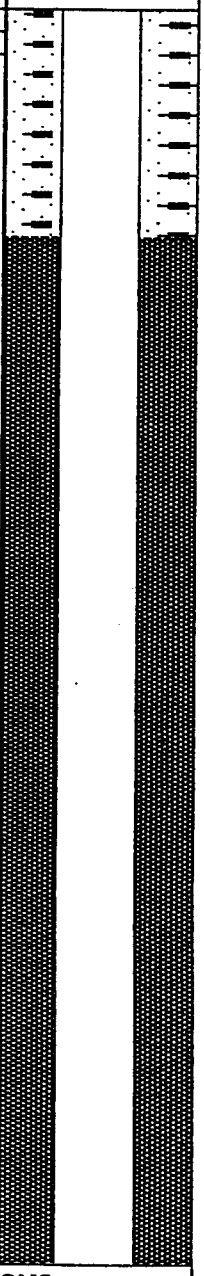
F-203 (R 01-87)

BORING NO. PFW-1
SHEET NO. 1 OF 7

PROJECT NAME PEREGRINE FLINT
LOCATION FLINT, MICHIGAN
CONTRACTOR STEARNS DRILLING CO
DRILLING METHOD 4.25" HSA

PROJECT NO. 4036.05
INSTALLATION 3-13-97
SURFACE ELEV. 99.6
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
1	SS	17	16	0.6		Asphalt, broken. Fill: well-graded sand with gravel, little silt, little clay, brown, wet.	
2	SS	15	18	0		SANDY LEAN CLAY (CL), little fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3 with some mottling to grayish brown and yellowish brown, moist, (hard Pp > 4.5) (Glacial Till).	
3	SS	16	24	0		As above (CL), very stiff from 2 to 2.5 ft.	
					5		
4	SS	15	24	0		As above (CL), fractured, very stiff (Pp=3.4) below 5.7 feet.	
5	SS	22	24	0		As above (CL), becoming mottled brown, dark grayish brown and dark gray 10YR 4/1 - 4/2.	
6	SS	16	24	0	10	As above (CL), wet at sand partings @ 8.5' and 9.1', brown, trace fractures.	



GENERAL NOTES

DATE STARTED 12 MAR 97
DATE COMPLETED 13 MAR 97
RIG CME 750 ATV
CREW CHIEF R. BENNETT
LOGGED DPR CHECKED LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING ▽ 78.0 ft. bgl
AT COMPLETION ▼
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. PFW-1
SHEET NO. 2 OF 7

PROJECT NAME PEREGRINE FLINT
LOCATION FLINT, MICHIGAN
CONTRACTOR STEARNS DRILLING CO
DRILLING METHOD 4.25" HSA

PROJECT NO. 4036.05
INSTALLATION 3-13-97
SURFACE ELEV. 99.6
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
						As above (CL), stiff to very stiff, (Pp= 1.6 to 2.7).	
7	SS	15	24			As above (CL).	
						WELL-GRADED SAND WITH SILT (SW), fine to medium, trace gravel, few clay, brown 10YR 4/3, moist, pieces of clay till.	
					15	SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3, moist, stiff to very stiff (Glacial Till).	
8	SS	15	24	0		As above (CL), hard (Pp > 4).	
					20		
						As above (CL).	
9	SS	19	24	0			
						LEAN CLAY (CL), gradational areas of	

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	3 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
					25	clayey silt and sandy silt, slightly plastic, mottled brown, dark yellowish brown, and brownish gray, hard, fractured, friable, (Glacial Till).	
						SILTY SAND (SM), fine, brown, wet.	
10	SS	40	24	0			
					30	LEAN CLAY (CL), slightly plastic, brown with dark yellowish brown and black precipitate along fractures, mostly dark grayish brown below 29.6', moist to wet along silt partings, very hard, faint lamination (Glaciolacustrine).	
					35		

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFW-1
SHEET NO.: 4 OF 7
PROJECT NO.: 4036.05
INSTALLATION: 3-13-97
SURFACE ELEV.: 99.6
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH		
11	SS	20	0			As above (CL), gray 10YR 5/1 (based on cuttings).	
					40		
12	SS	17	24	0.6		As above (CL), wet along silt partings, very stiff (Pp = 3.2 to 3.7).	
					45	SILT (ML), grading from above clay, nonplastic, gray 10YR 5/1, moist, very stiff.	

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. PFW-1
SHEET NO. 5 OF 7
PROJECT NAME PEREGRINE FLINT
PROJECT NO. 4036.05
LOCATION FLINT, MICHIGAN
INSTALLATION 3-13-97
CONTRACTOR STEARNS DRILLING CO
SURFACE ELEV. 99.6
DRILLING METHOD 4.25" HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
13	SS	14	24	0.3	50 55 60	LEAN CLAY (CL), trace fine gravel, trace fine to coarse sand, medium plastic, gray 10YR 5/1, moist, very stiff (Pp = 2.3 to 2.7), faint lamination (Glaciolacustrine).	

LOG OF TEST BORING

F-203 (R 01-87)

RMT

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	6 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
14	SS	16	24	0.2		As above (CL), abundant silt partings.	
					65		
					70	<--- Drillers note change in resistance @ 71 feet.	
15	SS	88	18			POORLY-GRADED SAND (SP), fine, trace silt, light gray 10YR 7/1, moist to dry, faint stratification.	
					75		

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME	PEREGRINE FLINT	BORING NO.	PFW-1
LOCATION	FLINT, MICHIGAN	SHEET NO.	7 OF 7
CONTRACTOR	STEARNS DRILLING CO	PROJECT NO.	4036.05
DRILLING METHOD	4.25" HSA	INSTALLATION	3-13-97
		SURFACE ELEV.	99.6
		BOREHOLE DIA.	8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
16	SS	23	18			As above (SP), some medium sand, gray 10YR 6/1, wet.	
					80		
17	SS	40	24			As above (SP), mostly medium grained.	
					85	LEAN CLAY (CL).	
						End of boring at 85 feet.	

LOG OF TEST BORING

F-203 (R 01-87)

PROJECT NAME: PEREGRINE FLINT
LOCATION: FLINT, MICHIGAN
CONTRACTOR: STEARNS DRILLING CO
DRILLING METHOD: 4.25" HSA

BORING NO.: PFW-10
SHEET NO.: 1 OF 2
PROJECT NO.: 4036.05
INSTALLATION: 3-20-97
SURFACE ELEV.: 100.5
BOREHOLE DIA.: 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	TYPE	RECOVERY N	IN	PID	DEPTH		
1	SS	11	15	0.1		Asphalt. Fill: fine to medium sand, little coarse gravel, dark yellowish brown, moist to wet.	
2	SS	12	20	0.2		SANDY LEAN CLAY (CL), some fine to coarse sand, few fine to coarse gravel, slightly plastic, brown 10YR 4/3 with some gray mottling along fractures, moist, hard (Pp > 4.5) (Glacial Till).	
3	SS	18	24	0		As above (CL), very dark gray 10YR 3/1 to olive brown 2.5Y 3/6 to grayish brown 10YR 4/2, stiff to very stiff (Pp = 1.5 to 2.5).	
					5		
4	SS	29	24	0		As above (CL), brown 10YR 4/3, hard (Pp = 4.4) below 5 feet.	
5	SS	29	24	0		As above (CL), less gray mottling below 7 feet.	
6	SS	24	24	0		As above (CL), (Pp = 4.0 to 4.5), fracture from 9.2 to 9.8 ft.	
					10	As above (CL), fracture 11.5 to 11.8'.	

GENERAL NOTES

DATE STARTED: 20 MAR 97
DATE COMPLETED: 20 MAR 97
RIG: CME LC 60
CREW CHIEF: M. HEFFERAN
LOGGED: DPR CHECKED: LPL

WATER LEVEL OBSERVATIONS

WHILE DRILLING: 13.8 ft. bgl
AT COMPLETION:
AFTER DRILLING
CAVE-IN: DATE/TIME _____ DEPTH _____
WATER: DATE/TIME _____ DEPTH _____

LOG OF TEST BORING

F-203 (R 01-87)

BORING NO. PFW-10
SHEET NO. 2 OF 2
PROJECT NAME PEREGRINE FLINT
PROJECT NO. 4036.05
LOCATION FLINT, MICHIGAN
INSTALLATION 3-20-97
CONTRACTOR STEARNS DRILLING CO
SURFACE ELEV. 100.5
DRILLING METHOD 4.25" HSA
BOREHOLE DIA. 8 IN.

SAMPLING NOTES						VISUAL CLASSIFICATION AND GENERAL OBSERVATIONS	GENERAL WELL CONSTRUCT.
INTERVAL NO.	INTERVAL TYPE	RECOVERY N	RECOVERY IN	PID	DEPTH		
7	SS	24	22	0		As above (CL), areas of dark grayish brown below 12.2 ft, very stiff (Pp = 2.5 to 3.5).	
						<--- Wet sand parting at 13.8 feet.	
8	SS	19	24	0			
					15	As above (CL), dark gray 10YR 4/1, stiff (Pp = 1.7).	
9	SS	14	24	0		As above (CL).	
10	SS	13	24	0		As above (CL).	
					20	End of boring at 20 feet.	

Attachment B
Laboratory Analytical Report

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

TestAmerica Job ID: 240-70333-1
Client Project/Site: 12636, RACER Peregrine

For:
GHD Services Inc.
14496 Sheldon Road, Suite 200
Plymouth, Michigan 48170

Attn: Rawa Fleisher

Denise D Heckler

Authorized for release by:
10/10/2016 1:37:18 PM

Denise Heckler, Project Manager II
(330)966-9477
denise.heckler@testamericainc.com

Table of Contents

Case Narrative

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Job ID: 240-70333-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-70333-1

Comments
No additional comments.

Receipt
The samples were received on 10/4/2016 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6º C.

Metals
Method(s) 200.7 Rev 4.4, 6010B: Some requested practical quantitation limits (PQLs) on the following samples fall below the laboratory's verified standard quantitation limit: GW-12636-100316-SSH-4116 (240-70333-1), GW-12636-100316-SSH-4216 (240-70333-2), GW-12636-100316-SSH-4316 (240-70333-3) and GW-12636-100316-SSH-4416 (240-70333-4). The continuing calibration blanks and method blanks may not support the lower PQL.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Qualifiers

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-70333-1	GW-12636-100316-SSH-4116	Water	10/03/16 09:00	10/04/16 09:30
240-70333-2	GW-12636-100316-SSH-4216	Water	10/03/16 09:45	10/04/16 09:30
240-70333-3	GW-12636-100316-SSH-4316	Water	10/03/16 12:25	10/04/16 09:30
240-70333-4	GW-12636-100316-SSH-4416	Water	10/03/16 14:00	10/04/16 09:30

Detection Summary

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Client Sample ID: GW-12636-100316-SSH-4116 — Lab Sample ID: 240-70333-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	18		5.0	3.3	ug/L	1		6010B	Dissolved
Iron	19000		100	25	ug/L	1		6010B	Dissolved
Manganese	2800		15	5.1	ug/L	1		6010B	Dissolved
Lead	20		3.0	1.9	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12636-100316-SSH-4216 — Lab Sample ID: 240-70333-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	12		5.0	3.3	ug/L	1		6010B	Dissolved
Iron	7600		100	25	ug/L	1		6010B	Dissolved
Manganese	6300		15	5.1	ug/L	1		6010B	Dissolved
Lead	3.6		3.0	1.9	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12636-100316-SSH-4316 — Lab Sample ID: 240-70333-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	56		5.0	3.3	ug/L	1		6010B	Dissolved
Iron	93000		100	25	ug/L	1		6010B	Dissolved
Manganese	3400		15	5.1	ug/L	1		6010B	Dissolved
Lead	71		3.0	1.9	ug/L	1		6010B	Dissolved

Client Sample ID: GW-12636-100316-SSH-4416 — Lab Sample ID: 240-70333-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	120		5.0	3.3	ug/L	1		6010B	Dissolved
Iron	150000		100	25	ug/L	1		6010B	Dissolved
Manganese	2400		15	5.1	ug/L	1		6010B	Dissolved
Lead	53		3.0	1.9	ug/L	1		6010B	Dissolved

This Detection Summary does not include radiochemical test results.

Method Summary

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12636-100316-SSH-4116
Date Collected: 10/03/16 09:00
Date Received: 10/04/16 09:30

Lab Sample ID: 240-70333-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	18		5.0	3.3	ug/L		10/05/16 14:00	10/06/16 19:35	1
Iron	19000		100	25	ug/L		10/05/16 14:00	10/06/16 19:35	1
Manganese	2800		15	5.1	ug/L		10/05/16 14:00	10/06/16 19:35	1
Lead	20		3.0	1.9	ug/L		10/05/16 14:00	10/06/16 19:35	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12636-100316-SSH-4216
Date Collected: 10/03/16 09:45
Date Received: 10/04/16 09:30

Lab Sample ID: 240-70333-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	12		5.0	3.3	ug/L		10/05/16 14:00	10/06/16 19:40	1
Iron	7600		100	25	ug/L		10/05/16 14:00	10/06/16 19:40	1
Manganese	6300		15	5.1	ug/L		10/05/16 14:00	10/06/16 19:40	1
Lead	3.6		3.0	1.9	ug/L		10/05/16 14:00	10/06/16 19:40	1

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12636-100316-SSH-4316
Date Collected: 10/03/16 12:25
Date Received: 10/04/16 09:30

Lab Sample ID: 240-70333-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	56		5.0	3.3	ug/L		10/05/16 14:00	10/06/16 19:44	1
Iron	93000		100	25	ug/L		10/05/16 14:00	10/06/16 19:44	1
Manganese	3400		15	5.1	ug/L		10/05/16 14:00	10/06/16 19:44	1
Lead	71		3.0	1.9	ug/L		10/05/16 14:00	10/06/16 19:44	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Method: 6010B - Metals (ICP) - Dissolved

Client Sample ID: GW-12636-100316-SSH-4416
Date Collected: 10/03/16 14:00
Date Received: 10/04/16 09:30

Lab Sample ID: 240-70333-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	120		5.0	3.3	ug/L		10/05/16 14:00	10/06/16 19:49	1
Iron	150000		100	25	ug/L		10/05/16 14:00	10/06/16 19:49	1
Manganese	2400		15	5.1	ug/L		10/05/16 14:00	10/06/16 19:49	1
Lead	53		3.0	1.9	ug/L		10/05/16 14:00	10/06/16 19:49	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Metals

Prep Batch: 249966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-70333-1	GW-12636-100316-SSH-4116	Dissolved	Water	3005A	
240-70333-2	GW-12636-100316-SSH-4216	Dissolved	Water	3005A	
240-70333-3	GW-12636-100316-SSH-4316	Dissolved	Water	3005A	
240-70333-4	GW-12636-100316-SSH-4416	Dissolved	Water	3005A	
MB 240-249966/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-249966/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 250164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-70333-1	GW-12636-100316-SSH-4116	Dissolved	Water	6010B	249966
240-70333-2	GW-12636-100316-SSH-4216	Dissolved	Water	6010B	249966
240-70333-3	GW-12636-100316-SSH-4316	Dissolved	Water	6010B	249966
240-70333-4	GW-12636-100316-SSH-4416	Dissolved	Water	6010B	249966
MB 240-249966/1-A	Method Blank	Total Recoverable	Water	6010B	249966
LCS 240-249966/2-A	Lab Control Sample	Total Recoverable	Water	6010B	249966

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 240-249966/1-A
Matrix: Water
Analysis Batch: 250164

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 249966

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.0	U	5.0	3.3	ug/L		10/05/16 14:00	10/06/16 10:42	1
Iron	100	U	100	25	ug/L		10/05/16 14:00	10/06/16 10:42	1
Manganese	15	U	15	5.1	ug/L		10/05/16 14:00	10/06/16 10:42	1
Lead	3.0	U	3.0	1.9	ug/L		10/05/16 14:00	10/06/16 10:42	1

Lab Sample ID: LCS 240-249966/2-A
Matrix: Water
Analysis Batch: 250164

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 249966

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	2000	2070		ug/L		104	80 - 120
Iron	1000	1030		ug/L		103	80 - 120
Manganese	500	522		ug/L		104	80 - 120
Lead	500	487		ug/L		97	80 - 120

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Client Sample ID: GW-12636-100316-SSH-4116
Lab Sample ID: 240-70333-1
Date Collected: 10/03/16 09:00
Matrix: Water
Date Received: 10/04/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			249966	10/05/16 14:00	AJC	TAL CAN
Dissolved	Analysis	6010B		1	250164	10/06/16 19:35	KLC	TAL CAN

Client Sample ID: GW-12636-100316-SSH-4216
Lab Sample ID: 240-70333-2
Date Collected: 10/03/16 09:45
Matrix: Water
Date Received: 10/04/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			249966	10/05/16 14:00	AJC	TAL CAN
Dissolved	Analysis	6010B		1	250164	10/06/16 19:40	KLC	TAL CAN

Client Sample ID: GW-12636-100316-SSH-4316
Lab Sample ID: 240-70333-3
Date Collected: 10/03/16 12:25
Matrix: Water
Date Received: 10/04/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			249966	10/05/16 14:00	AJC	TAL CAN
Dissolved	Analysis	6010B		1	250164	10/06/16 19:44	KLC	TAL CAN

Client Sample ID: GW-12636-100316-SSH-4416
Lab Sample ID: 240-70333-4
Date Collected: 10/03/16 14:00
Matrix: Water
Date Received: 10/04/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3005A			249966	10/05/16 14:00	AJC	TAL CAN
Dissolved	Analysis	6010B		1	250164	10/06/16 19:49	KLC	TAL CAN

Laboratory References:
TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Certification Summary

Client: GHD Services Inc.
Project/Site: 12636, RACER Peregrine

TestAmerica Job ID: 240-70333-1

Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17
Illinois	NELAP	5	200004	07-31-17
Kansas	NELAP	7	E-10336	01-31-17
Kentucky (UST)	State Program	4	58	02-23-17
Kentucky (WW)	State Program	4	98016	12-31-16 *
Minnesota	NELAP	5	039-999-348	12-31-16 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17
Nevada	State Program	9	OH-000482008A	07-31-17
New Jersey	NELAP	2	OH001	06-30-17
New York	NELAP	2	10975	03-31-17
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17
USDA	Federal		P330-13-00319	11-26-16 *
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-17
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

* Certification renewal pending - certification considered valid.

TestAmerica Michigan
10448 Citation Drive
Suite 200
Brighton, MI 48116
Phone: 810.229.2763 Fax:

1-21 C14

Chain of Custody Record

163239

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other:

Client Contact	Project Manager: M. Tomka	Site Contact: R. Chatfield	Date: 10/3/16	COC No: 163239
Company Name: GHD	Tel/Fax: 519 884 0510	Lab Contact: D. Heckler	Carrier: FedEx	1 of 1 COCs
Address: 14496 N Sheldon Rd Ste 200	Analysis Turnaround Time			Sampler: S. Hoeckmeyer
City/State/Zip: Plymouth MI 48170	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 734 453 5123	TAT if different from Below			Walk-in Client:
Fax:	☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day			Lab Sampling:
Project Name: RacoTrust Peregrine/Coldwater				Job / SDG No.:
Site: SSOW 12636-T09 201				
P O #				

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	D. Manganese	D. Lead	D. Arsenic	D. Iron	Sample Specific Notes:
GW-12636-100316-SSH-4116	10/3/16	0900	G	GW	1	Y	N	X	X	X	X	
GW-12636-100316-SSH-4216	"	0945	G	GW	1	Y	N	X	X	X	X	
GW-12636-100316-SSH-4316	"	1225	G	GW	1	Y	N	X	X	X	X	
GW-12636-100316-SSH-4416	"	1400	G	GW	1	Y	N	X	X	X	X	

240-70333 Chain of Custody

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Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 1,4

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:
GW was very silty - field filtered

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: 959437	Cooler Temp. (°C): Obs'd: _____ Corr'd: _____	Therm ID No.: _____
Relinquished by:	Company: GHD	Date/Time: 10/3/16 1700	Received by:	Company: TANC	Date/Time: 10/4/16 9:30
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

10/10/2016

TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 70333
Canton Facility

Client SHD Site Name _____ Cooler unpacked by:

Cooler Received on 10/4/16 Opened on 10/4/16

FedEx: 1st Grd Exp UPS FAS Stetson Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.4 °C) Observed Cooler Temp. 1.2 °C Corrected Cooler Temp. 1.6 °C
   IR GUN #36 (CF +1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were custody seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 11-15 have been checked at the originating laboratory.		
11. Were sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# **HC574756**
12. Were VOAs on the COC?	Yes	No
13. Were air bubbles >6 mm in any VOA vials?	Yes	No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
15. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

15. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

16. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
GW-12636-100316-SSH-4116	240-70333-A-1	Plastic 500ml - w/ Nitric - Dis.	<2		
GW-12636-100316-SSH-4216	240-70333-A-2	Plastic 500ml - w/ Nitric - Dis.	<2		
GW-12636-100316-SSH-4316	240-70333-A-3	Plastic 500ml - w/ Nitric - Dis.	<2		
GW-12636-100316-SSH-4416	240-70333-A-4	Plastic 500ml - w/ Nitric - Dis.	<2		

Attachment C
Summary of Groundwater Monitoring Results

PFW-9	3/26/2014	6/9/2014	9/9/2014	12/9/2014	3/27/2015	6/23/2015	9/17/2015	12/16/2015	3/21/2016	6/20/2016	9/28/2016
Arsenic	0.005 U	-	-	-	0.005 U	-	-	-	0.005 U/0.005 U	-	-
Arsenic (dissolved)	0.005 U	-	-	-	0.005 U	-	-	-	0.005 U/0.005 U	-	-
Iron	0.084 J	-	-	-	0.1 U	-	-	-	0.1 U/0.1 U	-	-
Iron (dissolved)	0.21	-	-	-	0.1 U	-	-	-	0.1 U/0.1 U	-	-
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U/0.003 U	0.005 U	-
Lead (dissolved)	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U/0.003 U	0.005 U	0.0022 J
Manganese	0.0028 J	0.015 U	0.21	0.022	0.015 U	0.00094 J	0.0056 J	0.0018 J	0.015 U/0.015 U	0.049	-
Manganese (dissolved)	0.0041 J	0.0011 J	0.22	0.023	0.015 U	0.0012 J	0.0057 J	0.015 U	0.015 U/0.015 U	0.048	0.14

MW-17-13	3/26/2014	6/10/2014	9/10/2014	12/10/2014	3/26/2015	6/22/2015	9/14/2015	12/15/2015	3/21/2016	6/20/2016	9/28/2016
Arsenic	0.01	-	-	-	0.015 (ACE)	0.011 (ACE)/0.011 (ACE)	0.019 (ACE)/0.017 (ACE)	0.023 (ACE)	-	0.015 (ACE)/0.014 (ACE)	0.022 (ACE)
Arsenic (dissolved)	0.012 (ACE)	-	-	-	0.014 (ACE)	0.012 (ACE)/0.013 (ACE)	0.017 (ACE)/0.017 (ACE)	0.022 (ACE)	0.019 (ACE)	0.015 (ACE)/0.016 (ACE)	0.028 (ACE)
Iron	5.8	-	-	-	9.2	7.5/7.6	11/10	11	-	14/14	12
Iron (dissolved)	5.9 (ABCD)	-	-	-	9.2 (ABCD)	7.5 (ABCD)/7.2 (ABCD)	10 (ABCD)/10 (ABCD)	10 (ABCD)	24 (ABCD)	14 (ABCD)/14 (ABCD)	13 (ABCD)
Lead	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U/0.003 U	0.003 U/0.003 U	0.0021 J	-	0.003 U/0.0022 J	0.0029 J
Lead (dissolved)	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U/0.003 U	0.003 U/0.003 U	0.0019 J	0.003 U	0.003 U/0.003 U	0.003 U
Manganese	0.6	1.6 (ABC)	1.1 (ABC)	0.65	0.37	0.54/0.55	0.21/0.2	0.15	-	1.2 (ABC)/1.2 (ABC)	0.76
Manganese (dissolved)	0.58 (AC)	1.7 (ABC)	1.2 (ABC)	0.66 (AC)	0.39	0.55 (AC)/0.53	0.21/0.21	0.15	1.1 (ABC)	1.2 (ABC)/1.2 (ABC)	0.69 (AC)

PFW-2	3/26/2014	6/9/2014	9/9/2014	12/9/2014	3/27/2015	6/23/2015	9/17/2015	12/16/2015	3/21/2016	6/20/2016	9/28/2016
Arsenic	0.005 U	-	-	-	0.0029 J	-	-	-	-	-	-
Arsenic (dissolved)	0.005 U	-	-	-	0.005 U	-	-	-	0.005 U	-	-
Iron	1.3	-	-	-	1.1	-	-	-	-	-	-
Iron (dissolved)	0.23	-	-	-	0.99	-	-	-	1.2	-	-
Lead	0.003 U	0.0023 J	0.003 U	0.0037	0.003 U	0.003 U	0.003 U	0.003 U	-	0.005 U	0.0024 J/0.0021 J
Lead (dissolved)	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.005 U	0.0022 J/0.005 U
Manganese	0.66 J	1.5 (ABC)	1.6 (ABC)	0.84	0.76	1.7 (ABC)	1.9 (ABC)	0.78	-	1.1 (ABC)	1.8 (ABC)/1.8 (ABC)
Manganese (dissolved)	0.97 J (ABC)	1.5 (ABC)	1.6 (ABC)	0.81 (AC)	0.87 (ABC)	1.6 (ABC)	1.7 (ABC)	0.92 (ABC)	0.95 (ABC)	1.1 (ABC)	1.8 (ABC)/1.8 (ABC)

MW-1	3/26/2014	3/27/2015	3/21/2016
Arsenic	0.005 U	0.005 U	-
Arsenic (dissolved)	0.005 U	0.005 U	0.003 J
Iron	0,55	0,2	-
Iron (dissolved)	0,1 U	0,1 U	0,24
Lead	0.0034	0.003 U	-
Lead (dissolved)	0,003 U	0.003 U	0,003 U
Manganese	0,038	0,1	-
Manganese (dissolved)	0,01 J	0,018	0,33

MW-4-02	3/27/2014	6/10/2014	9/9/2014	12/9/2014	3/25/2015	6/22/2015	9/14/2015	12/15/2015	3/21/2016	6/20/2016	9/28/2016
Arsenic	0.005 U	-	-	-	0.005 U	-	-	-	0.0036 J	-	-
Arsenic (dissolved)	0.005 U	-	-	-	0.005 U	-	-	-	0.005 U	-	-
Iron	0.15	-	-	-	0.037 J	-	-	-	0.1 U	-	-
Iron (dissolved)	0.1 U	-	-	-	0.1 U	-	-	-	0.1 U	-	-
Lead	0.003 U	0.003 U	0.003 U/0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.005 U	0.0023 J
Lead (dissolved)	0.003 U	0.003 U	0.003 U/0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.0027 J	0.005 U
Manganese	0.013 J	0.023	0.0037 J/0.0044 J	0.015 U	0.0026 J	0.0015 J	0.015 U	0.0014 J	0.015 U	0.015 U	0.015 U
Manganese (dissolved)	0.003 J	0.0016 J	0.015 U/0.015 U	0.015 U	0.00099 J	0.0011 J	0.015 U	0.00073 J	0.015 U	0.015 U	0.015 U

B-9	3/26/2014	6/9/2014	9/9/2014	12/9/2014	3/27/2015	6/23/2015	9/17/2015	12/15/2015	12/16/2015	3/21/2016	6/21/2016	9/29/2016
Arsenic (dissolved)	0.005 U	-	-	-	0.0061	-	-	-	-	0.0036 J	-	-
Iron (dissolved)	0.1 U	-	-	-	0.1 U	-	-	-	-	0.65	-	-
Lead	-	0.003 U	0.003 U	0.0019 J	-	0.003 U	-	0.003 U/0.003 U	-	-	0.005 U	-
Lead (dissolved)	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U/0.003 U	0.003 U/0.003 U	0.003 U	0.003 U	0.0023 J	0.0038 J
Manganese	-	0.03	0.21	0.047	-	0.11	-	0.16/0.17	-	-	1.2 (ABC)	-
Manganese (dissolved)	0.047	0.019	0.2	0.039	0.036	0.085	0.28/0.27	0.19/0.2	0.089	0.25	0.75 (AC)	0.59 (AC)

MW-2	3/26/2014	3/27/2015	3/21/2016
Arsenic	0.0066	0.0076/0.0077	-
Arsenic (dissolved)	0.0046 J	0.0076/0.0062	0.0081
Iron	6	2,1/2,1	-
Iron (dissolved)	4	1.9/1.7	2.6
Lead	0.003 U	0.003 U/0.003 U	-
Lead (dissolved)	0.003 U	0.003 U/0.003 U	0.003 U
Manganese	1.8 (ABC)	1.5 (ABC)/1.5 (ABC)	-
Manganese (dissolved)	1.7 (ABC)	1.5 (ABC)/1.5 (ABC)	2.3 (ABC)

PFW-4	6/10/2014	3/26/2015	3/21/2016
Arsenic	-	0.0052	-
Arsenic (dissolved)	0.005 U/0.005 U	0.0043 J	0.0031 J
Iron	-	0,1 U	-
Iron (dissolved)	0,1 U/0,1 U	0,1 U	0,22
Lead	-	0.0027 J	-
Lead (dissolved)	0.003 U/0.003 U	0.003 U	0.0021 J
Manganese	-	0,046	-
Manganese (dissolved)	0.052/0.052	0,049	0,056

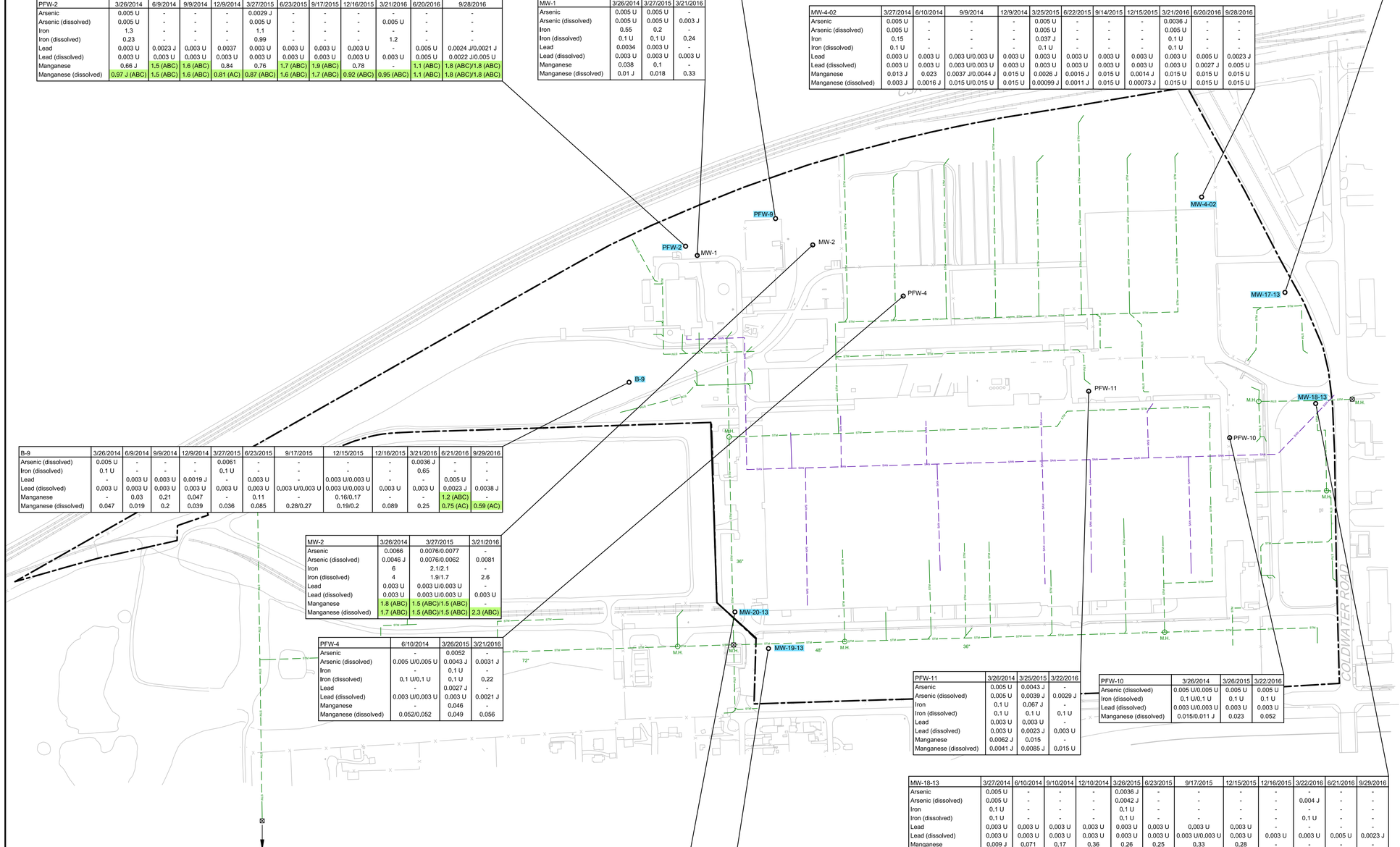
PFW-11	3/26/2014	3/25/2015	3/22/2016
Arsenic	0,005 U	0,0043 J	-
Arsenic (dissolved)	0,005 U	0,0039 J	0,0029 J
Iron	0,1 U	0,067 J	-
Iron (dissolved)	0,1 U	0,1 U	0,1 U
Lead	0,003 U	0,003 U	-
Lead (dissolved)	0,003 U	0,0023 J	0,003 U
Manganese	0,0062 J	0,015	-
Manganese (dissolved)	0,0041 J	0,0085 J	0,015 U

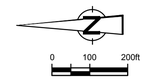
PFW-10	3/26/2014	3/26/2015	3/22/2016
Arsenic (dissolved)	0.005 U/0.005 U	0.005 U	0.005 U
Iron (dissolved)	0,1 U/0,1 U	0,1 U	0,1 U
Lead (dissolved)	0.003 U/0.003 U	0.003 U	0.003 U
Manganese (dissolved)	0.015/0.011 J	0.023	0.052

MW-18-13	3/27/2014	6/10/2014	9/10/2014	12/10/2014	3/26/2015	6/23/2015	9/17/2015	12/15/2015	12/16/2015	3/22/2016	6/21/2016	9/29/2016
Arsenic	0,005 U	-	-	-	0,0036 J	-	-	-	-	-	-	-
Arsenic (dissolved)	0,005 U	-	-	-	0,0042 J	-	-	-	-	0,004 J	-	-
Iron	0,1 U	-	-	-	0,1 U	-	-	-	-	-	-	-
Iron (dissolved)	0,1 U	-	-	-	0,1 U	-	-	-	-	0,1 U	-	-
Lead	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	-	-	-	-
Lead (dissolved)	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U/0,003 U	0,003 U	0,003 U	0,003 U	0,005 U	0,0023 J
Manganese	0,009 J	0,071	0,17	0,36	0,26	0,25	0,33	0,28	-	-	-	-
Manganese (dissolved)	0,0085 J	0,061	0,18	0,37	0,27	0,25	0,57 (AC)/0,33	0,29	0,35	0,2	0,29	0,087

MW-20-13	3/26/2014	6/9/2014	9/10/2014	12/10/2014	3/25/2015	6/22/2015	9/17/2015	12/15/2015	3/21/2016	6/20/2016	9/28/2016
Arsenic	0,005 U	-	-	-	0,0042 J	-	-	-	0,0039 J	-	-
Arsenic (dissolved)	0,005 U	-	-	-	0,0035 J	-	-	-	0,005 U	-	-
Iron	0,1 U	-	-	-	0,018 J	-	-	-	0,1 U	-	-
Iron (dissolved)	0,1 U	-	-	-	0,1 U	-	-	-	0,1 U	-	-
Lead	0,003 U	0,003 U	0,003 U	0,003 U	0,0025 J	0,003 U	0,003 U	0,0022 J	0,003 U	0,005 U	0,005 U
Lead (dissolved)	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,003 U	0,0021 J	0,003 U	0,005 U	0,005 U
Manganese	0,0062 J	0,0023 J	0,015 U	0,015 U	0,004 J	0,00068 J	0,015 U	0,00054 J	0,015 U	0,015 U	0,015 U
Manganese (dissolved)	0,0056 J	0,0012 J	0,015 U	0,015 U	0,0011 J	0,001 J	0,015 U	0,015 U	0,015 U	0,015 U	0,015 U

MW-19-13	3/27/2014	6/9/2014	9/9/2014	12/9/2014	3/26/2015	6/22/2015	9/14/2015	12/15/2015	3/21/2016	6/21/2016
Arsenic	0,005 U	-	-	-	-	-	-	-	0,0046 J	-
Arsenic (dissolved)	0,005 U	-	-	-	0,0042 J	-	-	-	0,0037 J	-
Iron	0,12	-	-	-	-	-	-	-	0,1 U	-
Iron (dissolved)	0,1 U	-	-	-	0,1 U	-	-	-	0,1 U	-
Lead	0,003 U	0,003 U	0,003 U	0,003 U/0,003 U	-	0,003 U	0,003 U	0,0031	0,003 U	0,005 U
Lead (dissolved)	0,003 U	0,003 U	0,003 U	0,003 U/0,003 U	0,003 U	0,003 U	0,003 U	0,0028 J	0,003 U	0,005 U
Manganese	0,11	0,092	0,28	0,19/0,2	-	0,086	0,12	0,19	0,23	0,064
Manganese (dissolved)	0,11	0,11	0,27	0,2/0,19	0,14	0,078	0,11	0,18	0,22	0,057





LEGEND

- FACILITY BOUNDARY
- SHALLOW MONITORING WELL LOCATION (ANNUAL)
- QUARTERLY MONITORING LOCATION
- STORM SEWER LINE
- SANITARY SEWER LINE
- MANHOLE
- STORM SEWER MONITORING LOCATION
- SAMPLE LOCATION

MW-17-13	3/26/2014
Arsenic	0.01
Arsenic (dissolved)	0.012 (ABC)
Iron (dissolved)	5.9 (AB)
Lead (dissolved)	-
Manganese	0.6

- SAMPLE DATE
- RESULT (mg/L)
- PARAMETER NOT ANALYZED
- PARAMETER

Parameter	Background	A	B	C	D	E
Aluminum	10.5	0.05	0.3	0.05	4.1	-
Aluminum (dissolved)	3.52	0.05	0.3	0.05	4.1	-
Arsenic	0.01	0.01	-	0.01	-	0.01
Arsenic (dissolved)	0.0072	0.01	-	0.01	-	0.01
Iron	32.58	0.3	2.0	0.3	5.6	-
Iron (dissolved)	4.0	0.3	2.0	0.3	5.6	-
Lead	0.0035	0.004	-	0.004	-	-
Lead (dissolved)	0.003 U	0.004	-	0.004	-	-
Manganese	0.963	0.05	0.86	0.05	2.5	-
Manganese (dissolved)	0.547	0.05	0.86	0.05	2.5	-

Background	Background - Shallow Water Bearing Zone
A	Residential Drinking Water Criteria
B	Residential Drinking Water Criteria - Health Based Criteria
C	Nonresidential Drinking Water Criteria
D	Nonresidential Drinking Water Criteria - Health Based Criteria
E	Groundwater/Surface Water Interface (GSI) Criteria

NOTES:
1. THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.
2. RESULTS ARE FIRST SCREENED AGAINST SITE-SPECIFIC BACKGROUND VALUES (BACKGROUND); THOSE CONSTITUENTS EXCEEDING BACKGROUND ARE THEN SCREENED AGAINST MDEQ PART 201 CRITERIA.

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY

GENESEE TOWNSHIP, MICHIGAN

SHALLOW GROUNDWATER MONITORING RESULTS SUMMARY

GHD

Source Reference:

Project Manager:	Reviewed By:	Date:	
IKR	RC	NOVEMBER 2016	
Scale: AS SHOWN	Project No: 12636-T05	Report No: MEMO092	Drawing No: Drawing 1

12636-T05(MEMO092)GN-WA001 NOV 4, 2016