Memorandum

August 18, 2016

To:	Mr. Rich Conforti (MDEQ)	Ref. No.:	012636
From:	Michael Tomka/kf/89		
cc:	Dave Favero / Grant Trigger (RACER Trust) Joe Rogers/John McCabe (MDEQ)		
Subject:	Coldwater Road Industrial Lands MW-17-13 Area Investigation		

The following memorandum has been prepared to summarize the historic monitoring results in the vicinity of monitoring well MW-17-13 and to propose additional investigative activities to delineate elevated concentrations of metals (arsenic, iron, and manganese) found in groundwater samples previously collected from monitoring well MW-17-13.

1. Background

MW-17-13 was installed in March 2013 in response to detections of metals concentrations within borehole water samples collected as part of perimeter borehole investigation activities completed in December 2011. During this perimeter investigation borehole BH-103 was advanced in the area of MW-17-13 and a borehole water sample was collected and analyzed for Volatile Organic Compounds and inorganics. The borehole water results are presented in Table 1 and BH-103 location is presented on Figure 1. The results showed elevated concentrations of manganese, iron, and aluminum. A monitoring well was then installed in order to collect and analyze representative groundwater samples using low flow methods.

MW-17-13 is located approximately 30ft north of Coldwater Road as presented in Figure 1 and is surrounded by a large maintained field (i.e., mowed). Historic imagery does not indicate any previous activities in this area and the closest on-Site developed area is the Former East (Employee) Parking Lot. The monitoring well stratigraphic and installation log for MW-17-13 is presented in Attachment A.

Since the installation of MW-17-13, total/dissolved arsenic, dissolved iron, and manganese have been reported above screening values at this location which is not consistent with results from the remaining on-Site wells. Figure 1 presents a summary of the exceedances between March 2014 and March 2016. Arsenic concentrations are generally above both residential and non-residential drinking water criteria and GSI (all 0.01 milligrams per liter [mg/L]) ranging in concentrations from 0.01 to 0.023 mg/L. Dissolved Iron concentrations are generally above both residential and non-residential drinking water criteria (health based and aesthetic) ranging from 5.9 to 24 mg/L compared to background concentrations of 4.0 mg/L. Manganese (total and dissolved) also has regularly exceeded residential and non-residential drinking water criteria. 2015/2016 Sample turbidities were generally below 10 NTU with the exception of March 2016 at 22 NTU.

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2. Proposed Investigation

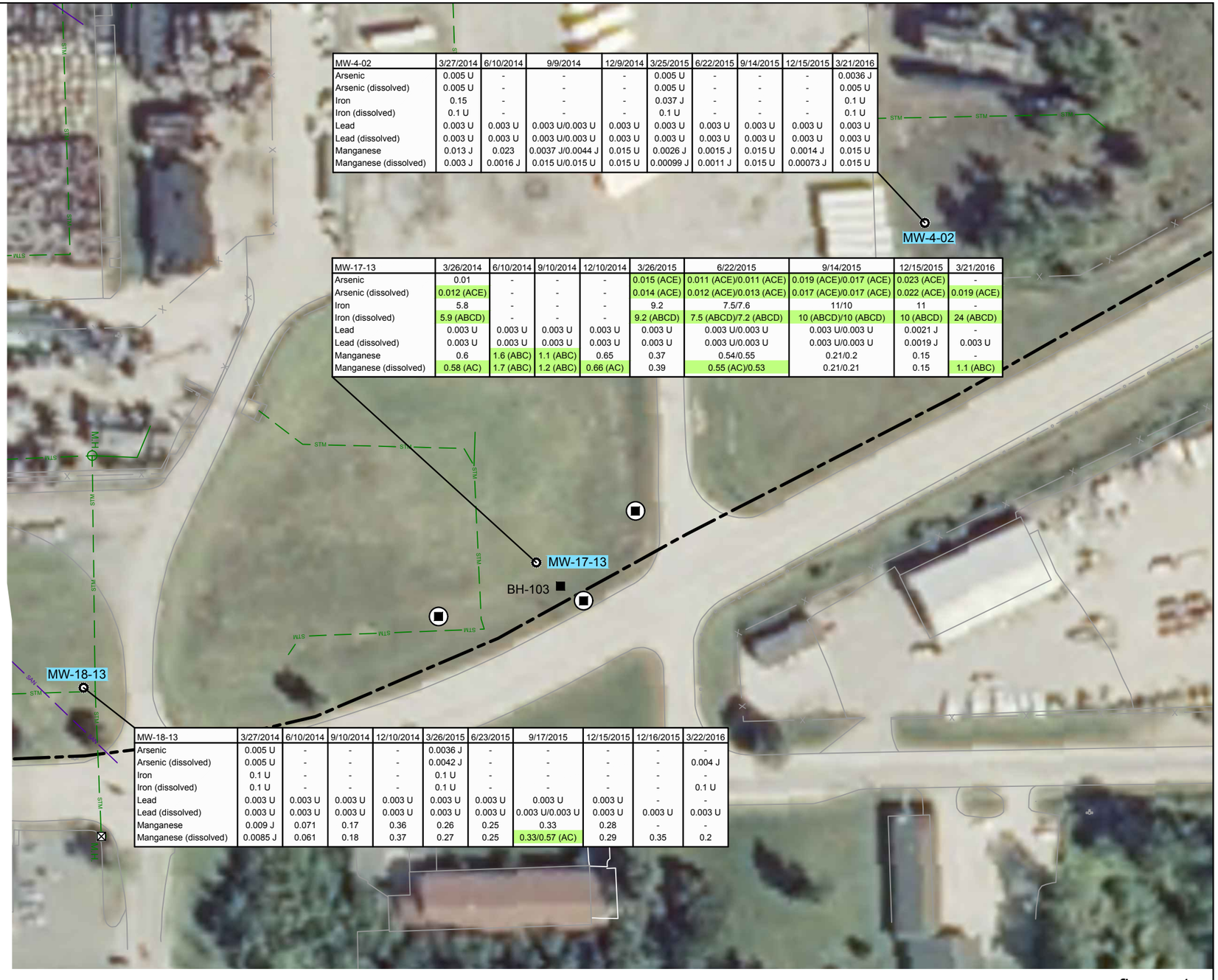
Based on the data available, and considering the results are not consistent with results from the remaining wells, GHD recommends that three step out borings be completed in the vicinity of MW-17-13. Boreholes will be advance to 30 ft below ground surface or 5 feet into native clay (whichever is less) and stratigraphy will be recorded. Additional step-out borings may be advanced to better delineate the extent of the saturated zone, if required. A groundwater sample will be collected using Geoprobe groundwater sampling techniques (if groundwater is present). The results of the investigation will be used to evaluate the extent of the saturated sand seam and elevated metals concentrations, including if either extend off-Site. Groundwater will be sampled for dissolved arsenic, iron, and manganese. Total arsenic, iron, and manganese will also be analyzed if turbidity reading less than 10 NTU can be achieved.

As an additional note, RACER intends to place groundwater use restrictions on the Site which will restrict the use of groundwater as a potable source.

GHD will obtain any necessary right-of-way permits required to complete the investigation.

The proposed borehole locations are presented on Figure 1.

GHD can schedule the field work after receipt of MDEQ approval of this proposed investigation and notify MDEQ when the work will be completed. After field work is completed the laboratory electronic data deliverable (EDD) is expected to be received within about three weeks, and a summary report can be provided to MDEQ within four weeks of receipt of the EDD from the laboratory.



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
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
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
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
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

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
Arsenic	0.01	-	-	-	0.015 (ACE)	0.011 (ACE)/0.011 (ACE)	0.019 (ACE)/0.017 (ACE)	0.023 (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)
Iron	5.8	-	-	-	9.2	7.5/7.6	11/10	11	-
Iron (dissolved)	5.9 (ABCD)	-	-	-	9.2 (ABCD)	7.5 (ABCD)/7.2 (ABCD)	10 (ABCD)/10 (ABCD)	10 (ABCD)	24 (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	-
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
Manganese	0.6	1.6 (ABC)	1.1 (ABC)	0.65	0.37	0.54/0.55	0.21/0.2	0.15	-
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)

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
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
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	0.33/0.57 (AC)	0.29	0.35	0.2

0 50 100ft

LEGEND

- FACILITY BOUNDARY
- SHALLOW MONITORING WELL LOCATION (ANNUAL)
- BOREHOLE LOCATION
- QUARTERLY MONITORING LOCATION
- STORM SEWER LINE
- SANITARY SEWER LINE
- MANHOLE
- STORM SEWER MONITORING LOCATION
- PROPOSED BOREHOLE 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 LOCATION
SAMPLE DATE
RESULT (mg/L)
PARAMETER NOT ANALYZED
PARAMETER

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

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.

SOURCE:
AERIAL PHOTO FROM NAIP, 2009.

figure 1

MW17-13 GROUNDWATER INVESTIGATION
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

BH-103 Groundwater Analytical Results Summary
RACER Coldwater Road Industrial Lands
Genesee Township, Michigan

Sample Location:		**BH-103**
Sample ID:		**GW-12636-120511-SH-BH103**
Sample Date:		**12/5/2011**
Parameters:	**Units**	
Volatile Organic Compounds		
1,1,1-Trichloroethane	mg/L	0.001 U
1,1,2,2-Tetrachloroethane	mg/L	0.001 U
1,1,2-Trichloroethane	mg/L	0.001 U
1,1-Dichloroethane	mg/L	0.001 U
1,1-Dichloroethene	mg/L	0.001 U
1,2,4-Trichlorobenzene	mg/L	0.001 U
1,2,4-Trimethylbenzene	mg/L	0.00016 J
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.001 U
1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.001 U
1,2-Dichlorobenzene	mg/L	0.001 U
1,2-Dichloroethane	mg/L	0.001 U
1,2-Dichloropropane	mg/L	0.001 U
1,3,5-Trimethylbenzene	mg/L	0.001 U
1,3-Dichlorobenzene	mg/L	0.001 U
1,4-Dichlorobenzene	mg/L	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	0.01 U
2-Hexanone	mg/L	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	0.01 U
Acetone	mg/L	0.01 U
Benzene	mg/L	0.001 U
Bromodichloromethane	mg/L	0.001 U
Bromoform	mg/L	0.001 U
Bromomethane (Methyl bromide)	mg/L	0.001 U
Carbon disulfide	mg/L	0.005 U
Carbon tetrachloride	mg/L	0.001 U
Chlorobenzene	mg/L	0.001 U
Chloroethane	mg/L	0.001 U
Chloroform (Trichloromethane)	mg/L	0.001 U
Chloromethane (Methyl chloride)	mg/L	0.001 U
cis-1,2-Dichloroethene	mg/L	0.001 U
cis-1,3-Dichloropropene	mg/L	0.001 U
Cyclohexane	mg/L	0.001 U
Dibromochloromethane	mg/L	0.001 U
Dichlorodifluoromethane (CFC-12)	mg/L	0.001 U
Ethylbenzene	mg/L	0.001 U
Isopropyl benzene	mg/L	0.001 U
Methyl acetate	mg/L	0.01 U
Methyl cyclohexane	mg/L	0.001 U
Methyl tert butyl ether (MTBE)	mg/L	0.005 U
Methylene chloride	mg/L	0.005 U
Styrene	mg/L	0.001 U
Tetrachloroethene	mg/L	0.001 U
Toluene	mg/L	0.00014 J
trans-1,2-Dichloroethene	mg/L	0.001 U
trans-1,3-Dichloropropene	mg/L	0.001 U
Trichloroethene	mg/L	0.001 U
Trichlorofluoromethane (CFC-11)	mg/L	0.001 U
Trifluorotrichloroethane (Freon 113)	mg/L	0.001 U
Vinyl chloride	mg/L	0.001 U
Xylenes (total)	mg/L	0.002 U

Table 1

BH-103 Groundwater Analytical Results Summary
RACER Coldwater Road Industrial Lands
Genesee Township, Michigan

Sample Location:		**BH-103**
Sample ID:		**GW-12636-120511-SH-BH103**
Sample Date:		**12/5/2011**
Parameters:	**Units**	
Metals		
Aluminum	mg/L	0.47
Aluminum (dissolved)	mg/L	0.05 U
Antimony	mg/L	0.002 U
Antimony (dissolved)	mg/L	0.002 U
Arsenic	mg/L	0.005 U
Arsenic (dissolved)	mg/L	0.005 U
Barium	mg/L	0.35
Barium (dissolved)	mg/L	0.39
Beryllium	mg/L	0.001 U
Beryllium (dissolved)	mg/L	0.001 U
Cadmium	mg/L	0.001 U
Cadmium (dissolved)	mg/L	0.001 U
Chromium	mg/L	0.005 U
Chromium (dissolved)	mg/L	0.005 U
Cobalt	mg/L	0.0049 J
Cobalt (dissolved)	mg/L	0.0053 J
Copper	mg/L	0.0025
Copper (dissolved)	mg/L	0.002 U
Iron	mg/L	5.4
Iron (dissolved)	mg/L	4.6
Lead	mg/L	0.003 U
Lead (dissolved)	mg/L	0.003 U
Manganese	mg/L	1.3
Manganese (dissolved)	mg/L	1.4
Mercury	mg/L	0.0002 U
Mercury (dissolved)	mg/L	0.0002 U
Nickel	mg/L	0.0087 J
Nickel (dissolved)	mg/L	0.0095 J
Selenium	mg/L	0.005 U
Selenium (dissolved)	mg/L	0.005 U
Silver	mg/L	0.0002 U
Silver (dissolved)	mg/L	0.0002 U
Thallium	mg/L	0.001 U
Thallium (dissolved)	mg/L	0.001 U
Vanadium	mg/L	0.001 J
Vanadium (dissolved)	mg/L	0.004 U
Zinc	mg/L	0.022
Zinc (dissolved)	mg/L	0.013 J
General Chemistry		
Cyanide (amenable)	mg/L	0.0050 U
Cyanide (total)	mg/L	0.0050 U

Notes:

J - Estimated concentration.
U - Not present at or above the associated value.
UJ - Estimated reporting limit.
- - Not analyzed.

Attachment A

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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

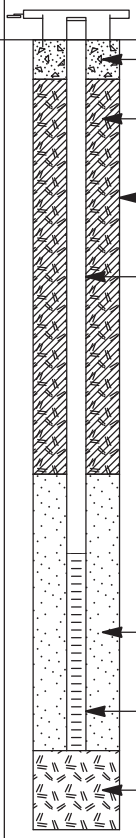
HOLE DESIGNATION: MW-17-13
DATE COMPLETED: October 24, 2013
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: E. MICKELSON

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		

MONITORING WELL



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