CONESTOGA-ROVERS & ASSOCIATES

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June 27, 2012 Reference No. 012636-T09

Mr. Richard Conforti
Hazardous Waste Section, Resource Management Division
Michigan Department of Environmental Quality
525 W. Allegan (Constitution Hall)
Lansing, Michigan
U.S.A. 48933

Dear Mr. Conforti:

Re: Final Background Groundwater Sampling and
Additional Utility Corridor Investigation Report, March 2012
Former Peregrine (US) Inc. (Peregrine) Coldwater Road Facility
Genesee Township, Michigan

This letter, prepared by Conestoga-Rovers & Associates (CRA) on behalf of Revitalizing Auto Communities Environmental Response Trust (RACER), presents the results of the final background groundwater sampling event and additional utility corridor investigation conducted on March 28, 2012 (Q1 2012) at the former Peregrine Coldwater Road Site (Site) located at 1245E Coldwater Road in Genesee Township, near Flint, Michigan. This work was proposed as an addition to the Work Plan that was submitted to the Michigan Department of Natural Resources and Environment on September 7, 2010 and clarified in a follow up email dated October 28, 2010. The proposed additional background sampling was submitted in July 27, 2011 and was approved by the Michigan Department of Environmental Quality (MDEQ) during the meeting held on September 14, 2011 and confirmed in a letter received on September 26, 2011 entitled Response to Conestoga-Rovers and Associates July 27, 2011 Letter.

This letter includes the following enclosures:

Figure 1	Q1 2012 Background and Additional Utility Corridor Investigation Locations
Figure 2	Shallow and Deep Background Groundwater Results
Figure 3	Utility Corridor and Perimeter Investigation Results
Table 1	March 2012 Monitoring Well Network
Table 2	March 2012 Groundwater Results Summary
Table 3	March 2012 Borehole Completion Details

Attachment A Q1 2012 Field Data Records
Attachment B Q1 2012 Data Validation Report
Attachment C Perimeter Investigation Stratigraphy Logs

1.0 GROUNDWATER MONITORING

The details of the Q1 2012 sampling event are presented in Table 1 and the sample locations are presented in Figure 1. In total, five background groundwater samples (three drift aquifer and two perched aquifer) were collected along with a utility corridor groundwater sample and a dry weather sewer sample.

Both the utility corridor sample and the dry weather sewer sample were analyzed for volatile organic compounds (VOCs), total metals, dissolved metals, and amenable cyanide. Drift aquifer (deep groundwater) samples were analyzed for both dissolved and total metals. Perched aquifer (shallow groundwater) samples were analyzed for dissolved metals.

All groundwater samples were collected via low-flow sampling methods as presented in Table 1. The field sampling records have been included in Attachment A.

The sample results were screened against the following generic risk-based cleanup criteria as specified in Part 201 of Michigan's Natural Resources and Environmental Protection Act, Public Act 451, and identified in the DEQ RRD Operational Memorandum No. 1, updated March 25, 2011, pursuant to 1994 PA 451 as amended:

- Groundwater Contact Criteria
- Nonresidential Drinking Water Criteria
- Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria
- Residential Drinking Water Criteria
- Residential Groundwater Volatilization to Indoor Air Inhalation Criteria
- Ground/Surface Water Interface (GSI) Criteria

2.0 RESULTS AND CONCLUSIONS

2.1 SUMMARY

A summary of the Q1 2012 groundwater analytical results is presented in Table 2. All samples analyzed for VOCs showed no exceedances of screening criteria. Metals exceeding screening criteria are as follows:

- Thirteen total metals (aluminum, arsenic, beryllium, cadmium, chromium, cobalt, iron, lead, manganese, nickel, selenium, thallium, and vanadium) and three dissolved metals (arsenic, iron, and manganese) were identified at concentrations exceeding Residential and/or Nonresidential Drinking Water Criteria
- Eight total metals (arsenic, chromium, cobalt, mercury, selenium, silver, thallium, and vanadium) and dissolved arsenic were identified at concentrations exceeding GSI Criteria

There were no exceedances of Groundwater Contact Criteria, Residential Groundwater Volatilization to Indoor Air Inhalation Criteria, or Nonresidential Groundwater Volatilization to Indoor Air Inhalation Criteria.

Figure 2 presents a summary of the current exceedances of screening criteria in the shallow and deep background groundwater wells. Figure 3 presents a summary of the current exceedances of screening criteria from the utility corridor and perimeter investigation locations.

The data validation report for the March 2012 results is presented in Attachment B.

2.2 FACILITY-SPECIFIC BACKGROUND GROUNDWATER RESULTS

The Facility-Specific background investigation has been conducted and completed over the past four sampling events (between May 12, 2011 and March 28, 2012). During the Q1 2012 event the final five background samples were collected; three deep groundwater wells (B-2D, B-20D, and B21-D) and two shallow groundwater wells (B-18A and B-19AR).

Constituents exceeding screening criteria in the March 2012 background groundwater samples in the shallow groundwater were as follows:

- Two dissolved metals (iron and manganese) were identified at concentrations exceeding Residential and Nonresidential Drinking Water Criteria

Constituents exceeding criteria in the March 2012 background groundwater samples in the deep groundwater were as follows:

- Four total metals (aluminum, arsenic, iron, and manganese) and two dissolved metals (arsenic and iron) were identified at concentrations exceeding Residential and/or Nonresidential Drinking Water Criteria
- Total and dissolved Arsenic were identified at a concentration exceeding GSI Criteria

2.3 UTILITY CORRIDOR INVESTIGATION RESULTS

The utility corridor investigation was completed during the Q4 2011 event in December 2011. BH-111 was advanced in the area near where a utility corridor was suspected of crossing the property boundary; however, analysis of the results determined that BH-111 was not advanced into the utility corridor. As a result, an additional borehole (BH-112) was advanced during the Q1 2012 event and a shallow groundwater sample was collected. A dry weather sewer sample was also collected from this same sewer during the Q1 2012 event. The results of the utility corridor and dry weather sewer sample are presented in Table 2. The borehole completion details for BH-112 are presented in Table 3 and the stratigraphy log is presented in Attachment C. Please note that the property adjacent to the utility corridor sample collected from BH-112 is also owned by RACER.

Constituents exceeding screening criteria in the BH-112 utility corridor sample were as follows:

- Thirteen total metals (aluminum, arsenic, beryllium, cadmium, chromium, cobalt, iron, lead, manganese, nickel, selenium, thallium, and vanadium) and dissolved manganese were identified at concentrations exceeding Residential and/or Nonresidential Drinking Water Criteria
- Eight total metals (arsenic, chromium, cobalt, mercury, selenium, silver, thallium, and vanadium) were identified at concentrations exceeding GSI Criteria

Figure 3 presents the results of the utility corridor and perimeter investigations.

Only total aluminum was found to exceed Residential and/or Nonresidential Drinking Water Criteria screening criteria in the dry weather sewer sample.

3.0 FACILITY-SPECIFIC BACKGROUND DEVELOPMENT AND RESULT SUMMARY

In accordance with a letter dated July 27, 2011 and approved verbally by the MDEQ during the September 14, 2011 meeting, RACER completed additional evaluation of background groundwater quality in the vicinity of the Site. The letter proposed additional investigation of existing background monitoring wells at the Site. To date, nine shallow samples and ten deep samples have been collected for total metals. Additionally, nine shallow and nine deep samples have been collected for dissolved metals. With the appropriate number of samples now collected, RACER is currently working on developing Facility-Specific background values per MDEQ guidance. The derivation of and the Facility-Specific background values will be presented in a separate report. In addition, the report will also summarize the results of the groundwater monitoring completed to date, the perimeter investigation, and the utility corridor investigation, and evaluate the sample results against the Facility-Specific background values and then MDEQ criteria. A discussion of the results will be provided.

The results of the Facility-Specific Background evaluation completed by O'Brien & Gere Engineers, Inc. (OBG), at the adjacent Coldwater Road Landfill to the north of the Site as documented in a letter dated July 13, 2009, will also be used to provide a basis for comparison of the data collected under this program. The July 13, 2009 OBG letter presents a background evaluation of dissolved metals for the shallow groundwater zone. The Facility Specific Background values in the perched zone for dissolved iron and manganese presented in the letter are 1.73 milligrams per Litre (mg/L) and 1.31 mg/L, respectively. Additional data will also be considered from the Coldwater Road Landfill in the Facility-Specific evaluation, as appropriate.

4.0 SUMMARY

The Q1 2012 monitoring event was completed on March 28, 2012. RACER completed the proposed background groundwater investigation and utility corridor investigation during the Q1 2012 monitoring event.

As stated above, a report presenting the Facility-Specific background values and a comparison to Site data and MDEQ screening criteria will be prepared with the target to submit to the MDEQ in July 2012.

Should you have any questions on the above, please do not hesitate to contact David Favero with RACER or the undersigned.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Michael R. Tomka, P.E.

RC/ev/13
Encl.

cc: David Favero, RACER (PDF)
Grant Trigger, RACER (paper)

LEGEND

- FACILITY BOUNDARY
- SHALLOW BACKGROUND MONITORING WELL LOCATION
- DEEP BACKGROUND MONITORING WELL LOCATION
- STM — STORM SEWER LINE
- SAN — SANITARY SEWER LINE
- BOREHOLE LOCATION
- M.H. — MANHOLE

N

0 200 400ft

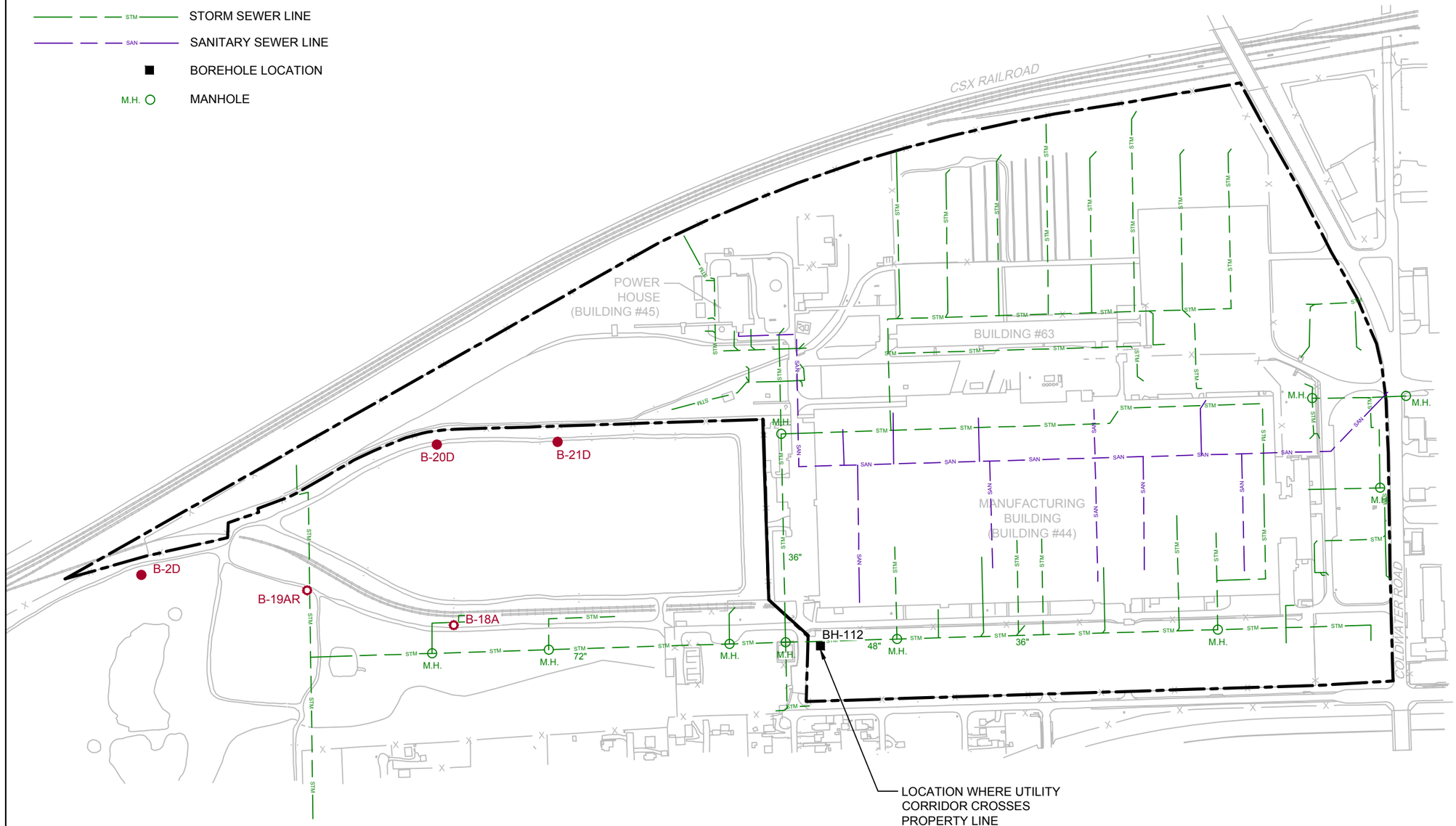

figure 1

Q1 2012 BACKGROUND AND ADDITIONAL UTILITY CORRIDOR INVESTIGATION LOCATIONS
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

NOTE:
THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.

12636-T09(CONF013)GN-WA001 MAY 30/2012

LEGEND

- FACILITY BOUNDARY
- SHALLOW MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- BACKGROUND MONITORING WELL LOCATION
- BOREHOLE LOCATION
- STORM SEWER LINE
- SANITARY SEWER LINE

MW-4-02	11/29/2010
Metals	
Aluminum	0.157 J (B)
Iron	1.41 (B)
Lead	0.0063 (B)
Manganese	0.426 (B)

- SAMPLE LOCATION
- SAMPLE DATE
- RESULT (mg/L)
- PARAMETER
- EXCEEDS CRITERIA

Chemical Name	a	b	c	d	e	f
Aluminum	64000	0.05	-	0.05	-	-
Aluminum (dissolved)	64000	0.05	-	0.05	-	-
Arsenic	4.3	0.01	-	0.01	-	0.01
Arsenic (dissolved)	4.3	0.01	-	0.01	-	0.01
Chromium	460	0.1	-	0.1	-	0.011
Chromium Total (dissolved)	460	0.1	-	0.1	-	0.011
Iron	58000	0.3	-	0.3	-	-
Iron (dissolved)	58000	0.3	-	0.3	-	-
Lead	-	0.004	-	0.004	-	-
Lead (dissolved)	-	0.004	-	0.004	-	-
Manganese	9100	0.05	-	0.05	-	-
Manganese (dissolved)	9100	0.05	-	0.05	-	-
Mercury	0.056	0.002	0.056	0.002	0.056	0.0000013
Mercury (dissolved)	0.056	0.002	0.056	0.002	0.056	0.0000013
Silver	1500	0.098	-	0.034	-	0.0002
Silver (dissolved)	1500	0.098	-	0.034	-	0.0002
Vanadium	970	0.062	-	0.0045	-	0.012
Vanadium (dissolved)	970	0.062	-	0.0045	-	0.012
Cyanide (total)	57	0.2	-	0.2	-	0.0052

Criteria:
a - Groundwater Contact Criteria (2011) (GCC[A])
b - Non Residential Drinking Water Criteria (2011) (NRDWC[B])
c - Non Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (NRGVIAIC[C])
d - Residential Drinking Water Criteria (2011) (RDWC[D])
e - Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (RGVIAIC[E])
f - Groundwater Surface Water Interface Criteria (2011) (GSI[F])

0 200 400ft

B-20D	9/15/2011	12/8/2011	3/28/2012
Metals			
Aluminum	1.1 (BD)	0.52 (BD)	0.53 (BD)
Aluminum (dissolved)	0.085 (BD)	0.034 J	0.019 J
Arsenic	0.04 (BDF)	0.039 (BDF)	0.038 (BDF)
Arsenic (dissolved)	0.036 (BDF)	0.036 (BDF)	0.035 (BDF)
Chromium	0.005 U	0.005 U	0.005 U
Chromium (dissolved)	0.005 U	0.005 U	0.005 U
Iron	3.4 (BD)	2.5 (BD)	2.7 (BD)
Iron (dissolved)	1.8 (BD)	1.5 (BD)	1.6 (BD)
Lead	0.003 U	0.003 U	0.003 U
Lead (dissolved)	0.003 U	0.003 U	0.003 U
Manganese	0.08 (BD)	0.064 (BD)	0.064 (BD)
Manganese (dissolved)	0.047	0.049	0.047
Mercury	0.0002 U	0.0002 U	0.0002 U
Mercury (dissolved)	0.0002 U	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 U	0.0002 U
Silver (dissolved)	0.0002 U	0.0002 U	0.0002 U
Vanadium	0.004 U	0.0025 J	0.0013 J
Vanadium (dissolved)	0.004 U	0.00072 J	0.004 U
Wet			
Cyanide (total)	0.0050 U	0.0050 U	-

B-21D	9/15/2011	12/8/2011	3/28/2012
Metals			
Aluminum	0.17 (BD)	3.7 (BD)	0.79 (BD)/0.87 (BD)
Aluminum (dissolved)	0.05 U	0.1 (BD)	0.05 U/0.05 U
Arsenic	0.054 (BDF)	0.045 (BDF)	0.052 (BDF)/0.054 (BDF)
Arsenic (dissolved)	0.048 (BDF)	0.042 (BDF)	0.048 (BDF)/0.045 (BDF)
Chromium	0.0025 J	0.0067	0.005 U/0.0029 J
Chromium (dissolved)	0.005 U	0.005 U	0.005 U/0.005 U
Iron	4.4 (BD)	7 (BD)	2.1 (BD)/2.1 (BD)
Iron (dissolved)	1 (BD)	1.2 (BD)	0.9 (BD)/0.87 (BD)
Lead	0.0022 J	0.003 U	0.003 U/0.003 U
Lead (dissolved)	0.003 U	0.003 U	0.003 U/0.003 U
Manganese	0.15 (BD)	0.18 (BD)	0.052 (BD)/0.053 (BD)
Manganese (dissolved)	0.035	0.05	0.035/0.034
Mercury	0.0002 U	0.0002 U	0.0002 U/0.0002 U
Mercury (dissolved)	0.0002 U	0.0002 U	0.0002 U/0.0002 U
Silver	0.0002 U	0.0002 U	0.0002 U/0.000094 J
Silver (dissolved)	0.0002 U	0.0002 U	0.0002 U/0.0002 U
Vanadium	0.0047 (D)	0.01 (D)	0.0018 J/0.0025 J
Vanadium (dissolved)	0.004 U	0.004 U	0.004 U/0.004 U
Wet			
Cyanide (total)	0.0050 U	0.0050 U	-

B-19A	5/12/2011	9/14/2011	12/6/2011	12/7/2011
Metals				
Aluminum	0.2 U	0.05 U/0.05 U	0.05 U	-
Aluminum (dissolved)	-	-	-	0.05 U
Arsenic	0.005 U	0.005 U/0.005 U	0.005 U	-
Arsenic (dissolved)	-	-	-	0.005 U
Chromium	0.005 U	0.005 U/0.005 U	0.005 U	-
Chromium (dissolved)	-	-	-	0.005 U
Iron	0.0927 J	0.1 U/0.1 U	0.1 U	-
Iron (dissolved)	-	-	-	0.1 U
Lead	0.003 U	0.003 U/0.003 U	0.003 U	-
Lead (dissolved)	-	-	-	0.003 U
Manganese	0.0065 J	0.0057 J/0.0032 J	0.015 U	-
Manganese (dissolved)	-	-	-	0.015 U
Mercury	0.0002 U	0.0002 U/0.0002 U	0.0002 U	-
Mercury (dissolved)	-	-	-	0.0002 U
Silver	0.0002 U	0.0002 U/0.0002 U	0.0002 U	-
Silver (dissolved)	-	-	-	0.0002 U
Vanadium	0.004 U	0.004 U/0.004 U	0.004 U	-
Vanadium (dissolved)	-	-	-	0.004 U
Wet				
Cyanide (total)	-	0.0050 U/0.0050 U	0.0050 U	-

B-2D	5/12/2011	9/14/2011	12/7/2011	3/28/2012
Metals				
Aluminum	0.498 (BD)	0.26 (BD)	1.6 (BD)/1.7 (BD)	0.67 (BD)
Aluminum (dissolved)	-	0.05 U	0.044 J/0.055 (BD)	0.05 U
Arsenic	0.004 J	0.013 (BDF)	0.0038 J/0.005 U	0.005 U
Arsenic (dissolved)	-	0.014 (BDF)	0.005 U/0.005 U	0.005 U
Chromium	0.005 U	0.005 U	0.0031 J/0.003 J	0.005 U
Chromium (dissolved)	-	0.005 U	0.005 U/0.0022 J	0.005 U
Iron	3.23 (BD)	2.2 (BD)	1.9 (BD)/2.2 (BD)	0.99 (BD)
Iron (dissolved)	-	1.4 (BD)	0.1 U/0.091 J	0.1 U
Lead	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
Manganese	0.167 (BD)	0.13 (BD)	0.052 (BD)/0.057 (BD)	0.039
Manganese (dissolved)	-	0.08 (BD)	0.0064 J/0.0074 J	0.0036 J
Mercury	0.0002 U	0.0002 U	0.0002 U/0.0002 U	0.0002 U
Mercury (dissolved)	-	0.0002 U	0.0002 U/0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 U	0.0002 U/0.0002 U	0.0002 U
Silver (dissolved)	-	0.0002 U	0.0002 U/0.0002 U	0.0002 U
Vanadium	0.004 U	0.004 U	0.0041/0.0032 J	0.0013 J
Vanadium (dissolved)	-	0.004 U	0.004 U/0.00087 J	0.004 U
Wet				
Cyanide (total)	-	0.0050 U	0.0050 U/0.0050 U	-

B-19AR	9/15/2011	12/8/2011	3/28/2012
Metals			
Aluminum	4 (BD)	9.2 (BD)	-
Aluminum (dissolved)	1.6 (BD)	3.4 (BD)	0.05 U
Arsenic	0.0035 J	0.0086	-
Arsenic (dissolved)	0.005 U	0.005 U	0.005 U
Chromium	0.0078	0.03 (F)	-
Chromium (dissolved)	0.005 U	0.011	0.005 U
Iron	5.1 (BD)	12 (BD)	-
Iron (dissolved)	0.23	4.4 (BD)	0.1 U
Lead	0.0029 J	0.0023 J	-
Lead (dissolved)	0.003 U	0.003 U	0.003 U
Manganese	0.12 (BD)	0.26 (BD)	-
Manganese (dissolved)	0.0071 J	0.094 (BD)	0.015 U
Mercury	0.0002 U	0.0002 U	-
Mercury (dissolved)	0.0002 U	0.0002 U	0.0002 U
Silver	0.00053 (F)	0.0002 U	-
Silver (dissolved)	0.0002 U	0.0002 U	0.0002 U
Vanadium	0.0096 (D)	0.023 (DF)	-
Vanadium (dissolved)	0.004 U	0.0089 (D)	0.004 U
Wet			
Cyanide (total)	0.0050 U	0.0050 U	-

B-18A	9/14/2011	12/5/2011	3/28/2012
Metals			
Aluminum	0.05 U	0.05 U	-
Aluminum (dissolved)	0.05 U	0.05 U	0.05 U
Arsenic	0.0038 J	0.0066	-
Arsenic (dissolved)	0.005 U	0.0066	0.0072
Chromium	0.005 U	0.005 U	-
Chromium (dissolved)	0.005 U	0.005 U	0.005 U
Iron	0.1 U	0.65 (BD)	-
Iron (dissolved)	0.1 U	0.61 (BD)	0.4 (BD)
Lead	0.003 U	0.003 U	-
Lead (dissolved)	0.003 U	0.003 U	0.003 U
Manganese	0.015	0.26 (BD)	-
Manganese (dissolved)	0.025	0.26 (BD)	0.098 (BD)
Mercury	0.0002 U	0.0002 U	-
Mercury (dissolved)	0.00019 J (F)	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 U	-
Silver (dissolved)	0.0002 U	0.0002 U	0.0002 U
Vanadium	0.004 U	0.004 U	-
Vanadium (dissolved)	0.004 U	0.004 U	0.004 U
Wet			
Cyanide (total)	0.0050 U	0.0050 U	-

B-7	9/15/2011	12/5/2011
Metals		
Aluminum	0.26 (BD)	0.71 (BD)
Aluminum (dissolved)	0.05 U	0.05 U
Arsenic	0.005 U	0.005 U
Arsenic (dissolved)	0.005 U	0.005 U
Chromium	0.005 U	0.008
Chromium (dissolved)	0.005 U	0.0035 J
Iron	0.3	0.84 (BD)
Iron (dissolved)	0.1 U	0.1 U
Lead	0.003 U	0.003 U
Lead (dissolved)	0.003 U	0.003 U
Manganese	0.03	0.016
Manganese (dissolved)	0.0036 J	0.0085 J
Mercury	0.0002 U	0.0002 U
Mercury (dissolved)	0.0002 U	0.0002 U
Silver	0.0002 U	0.0002 U
Silver (dissolved)	0.0002 U	0.0002 U
Vanadium	0.004 U	0.0014 J
Vanadium (dissolved)	0.004 U	0.004 U
Wet		
Cyanide (total)	0.0050 U	0.0050 U

NOTE;
THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.

figure 2

SHALLOW AND DEEP BACKGROUND GROUNDWATER RESULTS
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

12636-T09(CONF013)GN-WA002 JUN 27/2012

LEGEND

FACILITY BOUNDARY

STORM SEWER LINE

SANITARY SEWER LINE

BOREHOLE LOCATION

MANHOLE

SAMPLE LOCATION

SAMPLE DATE

RESULT (mg/L)

PARAMETER

EXCEEDS CRITERIA

MW-4-02	11/29/2010
Metals	
Aluminum	0.157 J (B)
Iron	1.41 (B)
Lead	0.0063 (B)
Manganese	0.426 (B)

Chemical Name	a	b	c	d	e	f
Aluminum	64000	0.05	-	0.05	-	-
Aluminum (dissolved)	64000	0.05	-	0.05	-	-
Arsenic	4.3	0.01	-	0.01	-	0.01
Arsenic (dissolved)	4.3	0.01	-	0.01	-	0.01
Beryllium	290	0.004	-	0.004	-	-
Cadmium	190	0.005	-	0.005	-	-
Chromium	460	0.1	-	0.1	-	0.011
Chromium (dissolved)	460	0.1	-	0.1	-	0.011
Cobalt	2400	0.1	-	0.04	-	0.1
Iron	58000	0.3	-	0.3	-	-
Iron (dissolved)	58000	0.3	-	0.3	-	-
Lead	-	0.004	-	0.004	-	-
Lead (dissolved)	-	0.004	-	0.004	-	-
Manganese	9100	0.05	-	0.05	-	-
Manganese (dissolved)	9100	0.05	-	0.05	-	-
Mercury	0.056	0.002	0.056	0.002	0.056	1.3E-06
Mercury (dissolved)	0.056	0.002	0.056	0.002	0.056	1.3E-06
Nickel	74000	0.1	-	0.1	-	-
Selenium	970	0.05	-	0.05	-	0.005
Selenium (dissolved)	970	0.05	-	0.05	-	0.005
Silver	1500	0.098	-	0.034	-	0.0002
Silver (dissolved)	1500	0.098	-	0.034	-	0.0002
Thallium	13	0.002	-	0.002	-	0.0037
Thallium (dissolved)	13	0.002	-	0.002	-	0.0037
Vanadium	970	0.062	-	0.0045	-	0.012
Vanadium (dissolved)	970	0.062	-	0.0045	-	0.012
Cyanide (total)	57	0.2	-	0.2	-	0.0052

Criteria:
a - Groundwater Contact Criteria (2011) (GCC[A])
b - Non Residential Drinking Water Criteria (2011) (NRDWC[B])
c - Non Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (NRGVIAIC[C])
d - Residential Drinking Water Criteria (2011) (RDWC[D])
e - Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (RGVIAIC[E])
f - Groundwater Surface Water Interface Criteria (2011) (GSI[F])

0 200 400ft

CSX RAILROAD

BH-107 (DRY AT 25FT)

BH-106 (DRY AT 25FT)

BH-105 (DRY AT 25FT)

POWER HOUSE (BUILDING #45)

BUILDING #63

LOCATION WHERE UTILITY CORRIDOR CROSSES PROPERTY LINE

BH-103

BH-101

BH-104 (DRY AT 25FT)

MANUFACTURING BUILDING (BUILDING #44)

BH-102 (DRY AT 15FT)

BH-111 (DRY AT 20FT)

BH-112

BH-110 (DRY AT 15FT)

BH-109 (DRY AT 20FT)

BH-108 (DRY AT 15FT)

COLDWATER ROAD

LOCATION WHERE UTILITY CORRIDOR CROSSES PROPERTY LINE

BH-103	12/5/2011
Metals	
Aluminum	0.47 (BD)
Aluminum (dissolved)	0.05 U
Arsenic	0.005 U
Arsenic (dissolved)	0.005 U
Chromium	0.005 U
Chromium (dissolved)	0.005 U
Iron	5.4 (BD)
Iron (dissolved)	4.6 (BD)
Lead	0.003 U
Lead (dissolved)	0.003 U
Manganese	1.3 (BD)
Manganese (dissolved)	1.4 (BD)
Mercury	0.0002 U
Mercury (dissolved)	0.0002 U
Silver	0.0002 U
Silver (dissolved)	0.0002 U
Vanadium	0.001 J
Vanadium (dissolved)	0.004 U
Wet	
Cyanide (total)	0.0050 U

BH-101	12/5/2011
Metals	
Aluminum	53 (BD)
Aluminum (dissolved)	0.89 (BD)
Arsenic	0.028 (BDF)
Arsenic (dissolved)	0.005 U
Beryllium	0.0045 (BD)
Cadmium	0.0072 (BD)
Chromium	0.11 (BDF)
Chromium (dissolved)	0.005 U
Cobalt	0.049 (D)
Iron	74 (BD)
Iron (dissolved)	1.7 (BD)
Lead	0.068 (BD)
Lead (dissolved)	0.003 U
Manganese	3.8 (BD)
Manganese (dissolved)	1.5 (BD)
Mercury	0.00032 (F)
Mercury (dissolved)	0.0002 U
Nickel	0.12 (BD)
Silver	0.00015 J
Silver (dissolved)	0.0002 U
Vanadium	0.14 (BDF)
Vanadium (dissolved)	0.00093 J
Wet	
Cyanide (total)	0.0050 U

BH-112	3/28/2012
Metals	
Aluminum	140 (BD)
Aluminum (dissolved)	0.05 U
Arsenic	0.33 (BDF)
Arsenic (dissolved)	0.005 U
Beryllium	0.0092 (BD)
Cadmium	0.0071 (BD)
Chromium	0.35 (BDF)
Chromium (dissolved)	0.005 U
Cobalt	0.19 (BDF)
Iron	540 (BD)
Iron (dissolved)	0.1 U
Lead	0.35 (BD)
Lead (dissolved)	0.003 U
Manganese	14 (BD)
Manganese (dissolved)	1.2 (BD)
Mercury	0.0011 (F)
Mercury (dissolved)	0.0002 U
Nickel	0.44 (BD)
Selenium	0.14 (BDF)
Selenium (dissolved)	0.005 U
Silver	0.00087 (F)
Silver (dissolved)	0.0002 U
Thallium	0.0042 (BDF)
Thallium (dissolved)	0.0002 J
Vanadium	0.49 (BDF)
Vanadium (dissolved)	0.004 U
Wet	
Cyanide (total)	0.0050 U

figure 3

UTILITY CORRIDOR AND PERIMETER INVESTIGATION RESULTS
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
Genesee Township, Michigan

NOTES:
THIS DRAWING IS FOR REFERENCE ONLY AND IS NEITHER COMPLETE NOR TO EXACTING SCALE.

12636-T09(CONF013)GN-WA003 MAY 23/2012

TABLE 1

MARCH 2012 BACKGROUND MONITORING WELL NETWORK
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Monitoring Well	*Screened Interval (ft bgs)*	*Ground Surface Elevation* [1] *(ft AMSL)*	*Top of Casing Elevation* [1] *(ft AMSL)*	*Reference Elevation (Top of Riser) (ft AMSL)*		*Depth To Water (Below Riser) (ft)*	*Date*	*Winter 2011 Event Parameters*
Perched Monitoring Wells								
B-18A [6]	36 to 41	809.53	812.25	N/A	[2]	23.11	03/28/12	Dissolved Metals
B-19AR [6]	34 to 44	810.48	813.15	N/A	[2]	37.76	03/28/12	Dissolved Metals
Drift Aquifer Monitoring Wells								
B-2D [6]	62 to 72	800.61	804.32	803.97	[5]	53.42	03/28/12	Total and Dissolved Metals
B-20D [6]	83 to 88	813.37	816.61	N/A	[2]	69.78	03/28/12	Total and Dissolved Metals
B-21D [6]	91 to 96	820.06	822.60	N/A	[2]	80.78	03/28/12	Total and Dissolved Metals

Notes:

(1) Surveyed March 25, 2004, unless otherwise noted
(2) Surveyed December 2010/January 2010
(3) Surveyed December 2010/January 2011
(4) Surveyed December 2010/January 2011 for top of riser elevation only
(5) Surveyed April 2011
(6) Site-specific background well
(7) Well inaccessible due to surface water

TABLE 2

ANALYTICAL RESULTS SUMMARY
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Sample Location:								*B-2D*	*B-18A*	*B-19AR*
Sample ID:								*GW-12636-032812-JY-004*	*GW-12636-032812-JY-002*	*GW-12636-032812-JY-003*
Sample Date:								*3/28/2012*	*3/28/2012*	*3/28/2012*
Parameters:	***Units***	*a*	*b*	*c*	*d*	*e*	*f*			
Volatile Organic Compounds										
1,1,1-Trichloroethane	mg/L	1300	0.2	1300	0.2	660	0.089	-	-	-
1,1,2,2-Tetrachloroethane	mg/L	4.7	0.035	77	0.0085	12	0.078	-	-	-
1,1,2-Trichloroethane	mg/L	21	0.005	110	0.005	17	0.33	-	-	-
1,1-Dichloroethane	mg/L	2400	2.5	2300	0.88	1000	0.74	-	-	-
1,1-Dichloroethene	mg/L	11	0.007	1.3	0.007	0.2	0.13	-	-	-
1,2,4-Trichlorobenzene	mg/L	19	0.07	300	0.07	300	0.099	-	-	-
1,2,4-Trimethylbenzene	mg/L	56	0.063	56	0.063	56	0.017	-	-	-
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.39	0.0002	1.2	0.0002	1.2	-	-	-	-
1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.025	0.00005	15	0.00005	2.4	0.0057	-	-	-
1,2-Dichlorobenzene	mg/L	160	0.6	160	0.6	160	0.013	-	-	-
1,2-Dichloroethane	mg/L	19	0.005	59	0.005	9.6	0.36	-	-	-
1,2-Dichloropropane	mg/L	16	0.005	36	0.005	16	0.23	-	-	-
1,3,5-Trimethylbenzene	mg/L	61	0.072	61	0.072	61	0.045	-	-	-
1,3-Dichlorobenzene	mg/L	2	0.019	41	0.0066	18	0.028	-	-	-
1,4-Dichlorobenzene	mg/L	6.4	0.075	74	0.075	16	0.017	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	240000	38	240000	13	240000	2.2	-	-	-
2-Hexanone	mg/L	5200	2.9	8700	1	4200	-	-	-	-
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	13000	5.2	20000	1.8	20000	-	-	-	-
Acetone	mg/L	31000	2.1	1000000	0.73	1000000	1.7	-	-	-
Benzene	mg/L	11	0.005	35	0.005	5.6	0.2	-	-	-
Bromodichloromethane	mg/L	14	0.08	37	0.08	4.8	-	-	-	-
Bromoform	mg/L	140	0.08	3100	0.08	470	-	-	-	-
Bromomethane (Methyl bromide)	mg/L	70	0.029	9	0.01	4	0.035	-	-	-
Carbon disulfide	mg/L	1200	2.3	550	0.8	250	-	-	-	-
Carbon tetrachloride	mg/L	4.6	0.005	2.4	0.005	0.37	0.045	-	-	-
Chlorobenzene	mg/L	86	0.1	470	0.1	210	0.025	-	-	-
Chloroethane	mg/L	440	1.7	5700	0.43	5700	1.1	-	-	-
Chloroform (Trichloromethane)	mg/L	150	0.08	180	0.08	28	0.35	-	-	-
Chloromethane (Methyl chloride)	mg/L	490	1.1	45	0.26	8.6	-	-	-	-
cis-1,2-Dichloroethene	mg/L	200	0.07	210	0.07	93	0.62	-	-	-
cis-1,3-Dichloropropene	mg/L	-	-	-	-	-	-	-	-	-
Cyclohexane	mg/L	-	-	-	-	-	-	-	-	-
Dibromochloromethane	mg/L	18	0.08	110	0.08	14	-	-	-	-
Dichlorodifluoromethane (CFC-12)	mg/L	300	4.8	300	1.7	220	-	-	-	-
Ethylbenzene	mg/L	170	0.074	170	0.074	110	0.018	-	-	-
Isopropyl benzene	mg/L	56	2.3	56	0.8	56	0.028	-	-	-
Methyl acetate	mg/L	-	-	-	-	-	-	-	-	-
Methyl cyclohexane	mg/L	-	-	-	-	-	-	-	-	-
Methyl tert butyl ether (MTBE)	mg/L	610	0.04	47000	0.04	47000	7.1	-	-	-

TABLE 2

ANALYTICAL RESULTS SUMMARY
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Sample Location:								***B-2D***	***B-18A***	***B-19AR***
Sample ID:								***GW-12636-032812-JY-004***	***GW-12636-032812-JY-002***	***GW-12636-032812-JY-003***
Sample Date:								***3/28/2012***	***3/28/2012***	***3/28/2012***
Parameters:	***Units***	*a*	*b*	*c*	*d*	*e*	*f*			
Methylene chloride	mg/L	220	0.005	1400	0.005	220	1.5	-	-	-
Styrene	mg/L	9.7	0.1	310	0.1	170	0.08	-	-	-
Tetrachloroethene	mg/L	12	0.005	170	0.005	25	0.06	-	-	-
Toluene	mg/L	530	0.79	530	0.79	530	0.27	-	-	-
trans-1,2-Dichloroethene	mg/L	220	0.1	200	0.1	85	1.5	-	-	-
trans-1,3-Dichloropropene	mg/L	-	-	-	-	-	-	-	-	-
Trichloroethene	mg/L	22	0.005	97	0.005	15	0.2	-	-	-
Trichlorofluoromethane (CFC-11)	mg/L	1100	7.3	1100	2.6	1100	-	-	-	-
Trifluorotrichloroethane (Freon 113)	mg/L	170	170	170	170	170	0.032	-	-	-
Vinyl chloride	mg/L	1	0.002	13	0.002	1.1	0.013	-	-	-
Xylenes (total)	mg/L	190	0.28	190	0.28	190	0.041	-	-	-
Metals										
Aluminum	mg/L	64000	0.05	-	0.05	-	-	0.67 [ba]	-	-
Aluminum (dissolved)	mg/L	64000	0.05	-	0.05	-	-	0.05 U	0.05 U	0.05 U
Antimony	mg/L	68	0.006	-	0.006	-	0.13	0.002 U	-	-
Antimony (dissolved)	mg/L	68	0.006	-	0.006	-	0.13	0.002 U	0.002 U	0.0004 J
Arsenic	mg/L	4.3	0.01	-	0.01	-	0.01	0.005 U	-	-
Arsenic (dissolved)	mg/L	4.3	0.01	-	0.01	-	0.01	0.005 U	0.0072	0.005 U
Barium	mg/L	14000	2	-	2	-	-	0.082 J	-	-
Barium (dissolved)	mg/L	14000	2	-	2	-	-	0.08 J	0.035 J	0.027 J
Beryllium	mg/L	290	0.004	-	0.004	-	-	0.001 U	-	-
Beryllium (dissolved)	mg/L	290	0.004	-	0.004	-	-	0.001 U	0.001 U	0.001 U
Cadmium	mg/L	190	0.005	-	0.005	-	-	0.001 U	-	-
Cadmium (dissolved)	mg/L	190	0.005	-	0.005	-	-	0.001 U	0.001 U	0.001 U
Chromium	mg/L	460	0.1	-	0.1	-	0.011	0.005 U	-	-
Chromium (dissolved)	mg/L	460	0.1	-	0.1	-	0.011	0.005 U	0.005 U	0.005 U
Cobalt	mg/L	2400	0.1	-	0.04	-	0.1	0.007 U	-	-
Cobalt (dissolved)	mg/L	2400	0.1	-	0.04	-	0.1	0.007 U	0.007 U	0.007 U
Copper	mg/L	7400	1	-	1	-	-	0.0032	-	-
Copper (dissolved)	mg/L	7400	1	-	1	-	-	0.002 U	0.002 U	0.002 U
Iron	mg/L	58000	0.3	-	0.3	-	-	0.99 [ba]	-	-
Iron (dissolved)	mg/L	58000	0.3	-	0.3	-	-	0.1 U	0.4 [ba]	0.1 U
Lead	mg/L	-	0.004	-	0.004	-	-	0.003 U	-	-
Lead (dissolved)	mg/L	-	0.004	-	0.004	-	-	0.003 U	0.003 U	0.003 U
Manganese	mg/L	9100	0.05	-	0.05	-	-	0.039	-	-
Manganese (dissolved)	mg/L	9100	0.05	-	0.05	-	-	0.0036 J	0.098 [ba]	0.015 U
Mercury	mg/L	0.056	0.002	0.056	0.002	0.056	0.0000013	0.0002 U	-	-
Mercury (dissolved)	mg/L	0.056	0.002	0.056	0.002	0.056	0.0000013	0.0002 U	0.0002 U	0.0002 U

TABLE 2

ANALYTICAL RESULTS SUMMARY
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Sample Location:								***B-2D***	***B-18A***	***B-19AR***
Sample ID:								***GW-12636-032812-JY-004***	***GW-12636-032812-JY-002***	***GW-12636-032812-JY-003***
Sample Date:								***3/28/2012***	***3/28/2012***	***3/28/2012***
Parameters:	***Units***	*a*	*b*	*c*	*d*	*e*	*f*			
Nickel	mg/L	74000	0.1	-	0.1	-	-	0.02 U	-	-
Nickel (dissolved)	mg/L	74000	0.1	-	0.1	-	-	0.02 U	0.02 U	0.02 U
Selenium	mg/L	970	0.05	-	0.05	-	0.005	0.005 U	-	-
Selenium (dissolved)	mg/L	970	0.05	-	0.05	-	0.005	0.005 U	0.005 U	0.005 U
Silver	mg/L	1500	0.098	-	0.034	-	0.0002	0.0002 U	-	-
Silver (dissolved)	mg/L	1500	0.098	-	0.034	-	0.0002	0.0002 U	0.0002 U	0.0002 U
Thallium	mg/L	13	0.002	-	0.002	-	0.0037	0.00019 J	-	-
Thallium (dissolved)	mg/L	13	0.002	-	0.002	-	0.0037	0.00017 J	0.00021 J	0.00084 J
Vanadium	mg/L	970	0.062	-	0.0045	-	0.012	0.0013 J	-	-
Vanadium (dissolved)	mg/L	970	0.062	-	0.0045	-	0.012	0.004 U	0.004 U	0.004 U
Zinc	mg/L	110000	5	-	2.4	-	-	0.02 U	-	-
Zinc (dissolved)	mg/L	110000	5	-	2.4	-	-	0.02 U	0.02 U	0.02 U
General Chemistry										
Cyanide (amenable)	mg/L	57	0.2	-	0.2	-	-	-	-	-
Cyanide (total)	mg/L	57	0.2	-	0.2	-	0.0052	-	-	-

Notes:

J - Estimated concentration
U - Not present at or above the associated value
- - Not analyzed
Criteria:
a - Groundwater Contact Criteria (2011) (GCC[A])
b - Non-Residential Drinking Water Criteria (2011) (NRDWC[B])
c - Non-Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (NRGVIAIC[C])
d - Residential Drinking Water Criteria (2011) (RDWC[D])
e - Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (RGVIAIC[E])
f - Groundwater Surface Water Interface (2011) (GSI[F])

TABLE 2

ANALYTICAL RESULTS SUMMARY
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Sample Location:		*B-20D*	*B-21D*	*B-21D*	*BH-112*	*Storm sewer*
Sample ID:		*GW-12636-032812-JY-005*	*GW-12636-032812-JY-006*	*GW-12636-032812-JY-007*	*GW-12636-032812-SH-008*	*SW-12636-032812-SH-001*
Sample Date:		*3/28/2012*	*3/28/2012*	*3/28/2012*	*3/28/2012*	*3/28/2012*
				(Duplicate)		
Parameters:	*Units*					
Volatile Organic Compounds						
1,1,1-Trichloroethane	mg/L	-	-	-	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	mg/L	-	-	-	0.001 U	0.001 U
1,1,2-Trichloroethane	mg/L	-	-	-	0.001 U	0.001 U
1,1-Dichloroethane	mg/L	-	-	-	0.001 U	0.001 U
1,1-Dichloroethene	mg/L	-	-	-	0.001 U	0.001 U
1,2,4-Trichlorobenzene	mg/L	-	-	-	0.001 U	0.001 U
1,2,4-Trimethylbenzene	mg/L	-	-	-	0.001 U	0.001 U
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	-	-	-	0.001 U	0.001 U
1,2-Dibromoethane (Ethylene dibromide)	mg/L	-	-	-	0.001 U	0.001 U
1,2-Dichlorobenzene	mg/L	-	-	-	0.001 U	0.001 U
1,2-Dichloroethane	mg/L	-	-	-	0.001 U	0.001 U
1,2-Dichloropropane	mg/L	-	-	-	0.001 U	0.001 U
1,3,5-Trimethylbenzene	mg/L	-	-	-	0.001 U	0.001 U
1,3-Dichlorobenzene	mg/L	-	-	-	0.001 U	0.001 U
1,4-Dichlorobenzene	mg/L	-	-	-	0.001 U	0.001 U
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	-	-	-	0.00082 J	0.01 U
2-Hexanone	mg/L	-	-	-	0.01 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	-	-	-	0.01 U	0.01 U
Acetone	mg/L	-	-	-	0.01 U	0.01 U
Benzene	mg/L	-	-	-	0.00029 J	0.001 U
Bromodichloromethane	mg/L	-	-	-	0.001 U	0.001 U
Bromoform	mg/L	-	-	-	0.001 U	0.001 U
Bromomethane (Methyl bromide)	mg/L	-	-	-	0.001 U	0.001 U
Carbon disulfide	mg/L	-	-	-	0.00013 J	0.005 U
Carbon tetrachloride	mg/L	-	-	-	0.001 U	0.001 U
Chlorobenzene	mg/L	-	-	-	0.001 U	0.001 U
Chloroethane	mg/L	-	-	-	0.001 U	0.001 U
Chloroform (Trichloromethane)	mg/L	-	-	-	0.001 U	0.001 U
Chloromethane (Methyl chloride)	mg/L	-	-	-	0.001 U	0.001 U
cis-1,2-Dichloroethene	mg/L	-	-	-	0.001 U	0.001 U
cis-1,3-Dichloropropene	mg/L	-	-	-	0.001 U	0.001 U
Cyclohexane	mg/L	-	-	-	0.00025 J	0.001 U
Dibromochloromethane	mg/L	-	-	-	0.001 U	0.001 U
Dichlorodifluoromethane (CFC-12)	mg/L	-	-	-	0.001 U	0.001 U
Ethylbenzene	mg/L	-	-	-	0.001 U	0.001 U
Isopropyl benzene	mg/L	-	-	-	0.001 U	0.001 U
Methyl acetate	mg/L	-	-	-	0.01 U	0.01 U
Methyl cyclohexane	mg/L	-	-	-	0.00024 J	0.001 U
Methyl tert butyl ether (MTBE)	mg/L	-	-	-	0.005 U	0.005 U

TABLE 2

ANALYTICAL RESULTS SUMMARY
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Sample Location:		*B-20D*	*B-21D*	*B-21D*	*BH-112*	*Storm sewer*
Sample ID:		*GW-12636-032812-JY-005*	*GW-12636-032812-JY-006*	*GW-12636-032812-JY-007*	*GW-12636-032812-SH-008*	*SW-12636-032812-SH-001*
Sample Date:		*3/28/2012*	*3/28/2012*	*3/28/2012* *(Duplicate)*	*3/28/2012*	*3/28/2012*
Parameters:	***Units***					
Methylene chloride	mg/L	-	-	-	0.005 U	0.005 U
Styrene	mg/L	-	-	-	0.001 U	0.001 U
Tetrachloroethene	mg/L	-	-	-	0.001 U	0.001 U
Toluene	mg/L	-	-	-	0.00057 J	0.001 U
trans-1,2-Dichloroethene	mg/L	-	-	-	0.001 U	0.001 U
trans-1,3-Dichloropropene	mg/L	-	-	-	0.001 U	0.001 U
Trichloroethene	mg/L	-	-	-	0.001 U	0.001 U
Trichlorofluoromethane (CFC-11)	mg/L	-	-	-	0.001 U	0.001 U
Trifluorotrichloroethane (Freon 113)	mg/L	-	-	-	0.001 U	0.001 U
Vinyl chloride	mg/L	-	-	-	0.001 U	0.001 U
Xylenes (total)	mg/L	-	-	-	0.002 U	0.002 U
Metals						
Aluminum	mg/L	**0.53**[ba]	**0.79**[ba]	**0.87**[ba]	**140**[ba]	**0.12**[ba]
Aluminum (dissolved)	mg/L	0.019 J	0.05 U	0.05 U	0.05 U	0.05 U
Antimony	mg/L	0.00025 J	0.00013 J	0.00014 J	0.003	0.0004 J
Antimony (dissolved)	mg/L	0.00017 J	0.002 U	0.002 U	0.002 U	0.00037 J
Arsenic	mg/L	**0.038**[bar]	**0.052**[bar]	**0.054**[bar]	**0.33**[bar]	0.005 U
Arsenic (dissolved)	mg/L	**0.035**[bar]	**0.048**[bar]	**0.045**[bar]	0.005 U	0.005 U
Barium	mg/L	0.05 J	0.17	0.17	1.9	0.048 J
Barium (dissolved)	mg/L	0.048 J	0.17	0.17	0.24	0.048 J
Beryllium	mg/L	0.001 U	0.001 U	0.001 U	**0.0092**[ba]	0.001 U
Beryllium (dissolved)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cadmium	mg/L	0.001 U	0.001 U	0.001 U	**0.0071**[ba]	0.001 U
Cadmium (dissolved)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium	mg/L	0.005 U	0.005 U	0.0029 J	**0.35**[bar]	0.01
Chromium (dissolved)	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.011
Cobalt	mg/L	0.007 U	0.007 U	0.007 U	**0.19**[bar]	0.007 U
Cobalt (dissolved)	mg/L	0.007 U	0.007 U	0.007 U	0.0034 J	0.007 U
Copper	mg/L	0.0025	0.0024	0.0029	0.48	0.002 U
Copper (dissolved)	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Iron	mg/L	**2.7**[ba]	**2.1**[ba]	**2.1**[ba]	**540**[ba]	0.14
Iron (dissolved)	mg/L	**1.6**[ba]	**0.9**[ba]	**0.87**[ba]	0.1 U	0.1 U
Lead	mg/L	0.003 U	0.003 U	0.003 U	**0.35**[ba]	0.003 U
Lead (dissolved)	mg/L	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
Manganese	mg/L	**0.064**[ba]	**0.052**[ba]	**0.053**[ba]	**14**[ba]	0.0068 J
Manganese (dissolved)	mg/L	0.047	0.035	0.034	**1.2**[ba]	0.0046 J
Mercury	mg/L	0.0002 U	0.0002 U	0.0002 U	**0.0011**[r]	0.0002 U
Mercury (dissolved)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U

TABLE 2

ANALYTICAL RESULTS SUMMARY
FORMER PEREGRINE (US), INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Sample Location:		*B-20D*	*B-21D*	*B-21D*	*BH-112*	*Storm sewer*
Sample ID:		*GW-12636-032812-JY-005*	*GW-12636-032812-JY-006*	*GW-12636-032812-JY-007*	*GW-12636-032812-SH-008*	*SW-12636-032812-SH-001*
Sample Date:		*3/28/2012*	*3/28/2012*	*3/28/2012* *(Duplicate)*	*3/28/2012*	*3/28/2012*
Parameters:	***Units***					
Nickel	mg/L	0.02 U	0.02 U	0.0035 J	**0.44**[bd]	0.02 U
Nickel (dissolved)	mg/L	0.02 U	0.02 U	0.02 U	0.0077 J	0.02 U
Selenium	mg/L	0.005 U	0.005 U	0.005 U	**0.14**[bdf]	0.005 U
Selenium (dissolved)	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Silver	mg/L	0.0002 U	0.0002 U	0.000094 J	**0.00087**[f]	0.0002 U
Silver (dissolved)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Thallium	mg/L	0.00028 J	0.00018 J	0.001 U	**0.0042**[bdf]	0.00032 J
Thallium (dissolved)	mg/L	0.00022 J	0.00014 J	0.001 U	0.0002 J	0.00027 J
Vanadium	mg/L	0.0013 J	0.0018 J	0.0025 J	**0.49**[bdf]	0.00085 J
Vanadium (dissolved)	mg/L	0.004 U	0.004 U	0.004 U	0.004 U	0.0011 J
Zinc	mg/L	0.02 U	0.02 U	0.02 U	2.3	0.02 U
Zinc (dissolved)	mg/L	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
General Chemistry						
Cyanide (amenable)	mg/L	-	-	-	0.0050 U	0.0050 U
Cyanide (total)	mg/L	-	-	-	0.0050 U	0.0050 U

Notes:

J - Estimated concentration
U - Not present at or above the associated value
- - Not analyzed
Criteria:
a - Groundwater Contact Criteria (2011) (GCC[A])
b - Non-Residential Drinking Water Criteria (2011) (NRDWC[B])
c - Non-Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (NRGVIAIC[C])
d - Residential Drinking Water Criteria (2011) (RDWC[D])
e - Residential Groundwater Volatilization to Indoor Air Inhalation Criteria (2011) (RGVIAIC[E])
f - Groundwater Surface Water Interface (2011) (GSI[F])

TABLE 3

MARCH 2012 BOREHOLE COMPLETION DETAILS
FORMER PEREGRINE (US) INC. COLDWATER ROAD FACILITY
GENESEE TOWNSHIP, MICHIGAN

Boring Location	*Installation Date*	*Ground Surface Elevation* [(1)] *(ft AMSL)*	*Depth of Boring (ft bgs)*	*Depth to Clay (ft bgs)*	*Screen Interval (ft bgs)*	*Sample Collected*
BH-112	3/28/2012	-	25	21	20.00	Cyanide, Metals, VOCs

Notes:

(1) Location not surveyed
Metals - Total and Dissolved Metals
Cyanide - Amenable cyanide

ATTACHMENT A

Q1 2012 FIELD DATA RECORDS

FIELD DATA RECORD FORM (QSF-422D)
METER, PH/COND./TEMP./DO/ORP/TDS/SALINITY/FLOW CELL, QED MP-20

Control No.: 4682
Date: 3-28-12
User: J.Y.
Project No.: 12636-T09
Project Name: Racer Peregrine
Location: Flint Mich
Additional Equipment Control Numbers and Descriptions:

FIELD PROCEDURE BEFORE USE:

	Check when completed
• Check kit contents.	☒
• Check battery level. Change if at or less than 3 volts.	
• Check pH 7 buffer reading. Calibrate if greater than ±0.2.	Reading 4.01
PH is a two point calibration but always start with the seven standard.	7.09
• Fill calibration cup ½ full with pH 7.0 buffer and attach to probe with probes facing down.	Calibrated (Y) / N
• Use ← key to start the calib symbol to flashing and press enter ↵.	
• Use ↓ key to start pH symbol to start flashing and press enter ↵.	
• Use ↑or ↓ to raise or lower displayed value to match the standard then press enter ↵.	
• Fill calibration cup ½ full with pH 4 or 10 buffer and attach to probe with probes facing down.	
• Repeat steps 3 and 4.	
• Press Esc to return to the real time data screen.	
Check conductivity standard near the expected range. Calibrate if greater than ±0.5%.	Standard 4.49 Reading 4.58
Conductivity is a one point calibration.	Calibrated (Y) / N
• Fill calibration cup ½ full with 0.7 mS standard and attach to probe with probes facing up.	
• Use ← key to start the calib symbol to flashing and press enter ↵.	
• Use ↓ key to start SpC symbol to start flashing and press enter ↵.	
• Use ↑or ↓ to raise or lower displayed value to match the standard then press enter ↵.	
• Press Esc to return to the real time data screen.	
Check DO-probe for air bubbles and change membrane and solution if needed (see manual for instructions).	Lot. Exp.
	7.00 C150015 1/15/14
	Auto-Cal C143849 7/19/12

Filing: Field File

Signature: John

FIELD DATA RECORD FORM
METER, TURBIDITY (PORTABLE) HACH 2100P

(QSF-421D)

Control No.: 6928
Date: 3-28-12
User: S.Y.

Project No.: 12636-T09
Project Name: Racer Peregrine
Location: Flint, Michigan

Additional Equipment Control Numbers and Descriptions:

FIELD PROCEDURE BEFORE USE:

Do Not Calibrate in the Field - In-House Calibration Only by Field Equipment Manager

Check when completed

Check kit contents;

- Meter ☒
- Low 0-10, medium 0-100, high 0-1000 standards ☒
- Extra AA batteries ☒
- Sample vials ☒

Test and record Gelex standards: ☒

	Gelex Standard	*Meter Reading*
• Low 0-10	5.06	5.01
• Medium 0-100		
• High 0-1000		

Note: Condensation on outside of sample bottles affects meter readings.

Filing: Field File

Signature: John Lee

FIELD DATA RECORD FORM
METER, WATER LEVEL

(QSF-251D)

Control No.: 6952
Date: 3-28-12
User: J.Y.

Project No.: 12636-T09
Project Name: Power Peregrine

Location: Flint, Michigan

Additional Equipment Control Numbers and Descriptions:

FIELD PROCEDURE BEFORE USE:

	Check when completed
• Check for broken or missing parts.	
• Check push button for operation of buzzer.	☒
• Check operation of signal light.	☒
• Try probe in water to see if unit operates, check rotary sensitivity switch if so equipped.	☒
• Check cable for cuts resulting in bare wire.	☒

Filing: Field File

Signature: Josh

(Storm sewer 001)

MONITORING WELL RECORD FOR LOW-FLOW PURGING

I.D. # 002

Project Data:

Project Name: [redacted] Racer Peregrine

Ref. No.: [redacted] 12636

Date: 08-28-12

Personnel:

Monitoring Well Data:

Well No.: MW-B12A

Measurement Point:

Constructed Well Depth (ft):

Measured Well Depth (ft):

Depth of Sediment (ft):

Screen Length (ft):

Depth to Pump Intake (ft)[1]:

Well Diameter, D (in):

Well Screen Volume, V_s (mL)[2]:

Initial Depth to Water (ft): 23.11

Start 0900

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, V_p (mL)	No. of Well Screen Volumes Purged[4]
0925	100	↓		7.10	12.30	0.941	84	0.35	2.97		
0930	"			7.09	12.37	0.942	89	0.35	—		
0935	"	26.72		7.11	12.36	0.940	89	0.34	1.88		
	Collect "B02"		Disc. Metals								

Notes: "Diss. Metals" Field Filtered

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stablization criteria and appear to be stablizing), No. of Well Screen Volumes Purged= Vp/Vs.

MONITORING WELL RECORD FOR LOW-FLOW PURGING

I.D. # 003

MS/MSD

Project Data:

Project Name: [redacted] Racer Peregrine

Ref. No.: [redacted] 126.36

Date: 08-28-12

Personnel:

Monitoring Well Data:

Well No.: MW-B19AR

Measurement Point:

Constructed Well Depth (ft):

Measured Well Depth (ft):

Depth of Sediment (ft):

Screen Length (ft):

Depth to Pump Intake (ft)[1]:

Well Diameter, D (in):

Well Screen Volume, V_s (mL)[2]:

Initial Depth to Water (ft): 37.76

Start 1000

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1030	100	↓		7.87	11.31	0.793	95	2.17	73.9		
1100	"	44.08		8.32	11.36	0.675	90	1.88	86.8		
1105	"			8.28	11.50	0.681	94	2.00	102		
1110	"	Hitting Pump		8.27	11.52	0.693	90	1.92	153		
		↳ well going dry;			Stop let recharge to Sample						
1130	Collect	"0034									
		Dup	Metals								

Notes: Diss. Metals, Field Filtered

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stablization criteria and appear to be stablizing), No. of Well Screen Volumes Purged= Vp/Vs.

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Rafer Paragrine

Ref. No.: [redacted] 12636

Date: 3-28-12

Personnel: John York

Start: 1240

Sample ID: 804

Monitoring Well Data:

Well No.: MW-B2D

Vapour PID (ppm): _____

Measurement Point: _____

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): _____

Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____

Depth to Pump Intake (m/ft)[1]: _____

Well Diameter, D (cm/in): _____

Well Screen Volume, V_s (L)[2]: _____

Initial Depth to Water (m/ft): 53.42

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[4] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
Precision Required[5]:				*±3 %*	*±0.005 or 0.01[6]*	*±10 %*	*±10 %*	*±0.1 Units*	*±10 mV*		
1310	100	53.42		12.80	0.772	29.5	3.41	7.13	97		
1315	"	↓		12.29	0.771	28.3	3.29	7.13	99		
1320	"	↓		11.99	0.761	27.1	3.16	7.13	98		
	Collect + 004			T. / Diss. Metals							

Notes: Diss. Metals / Field Filtered

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $Vs=\pi*(r2)*L$ in mL, where r (r=D/2) and L are in cm. For imperial units, $Vs=\pi*(r2)*L*(2.54)3$, where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Sample ID:

Analysis:

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Racer Peregrine

Ref. No.: [redacted] 12636

Date: 3-28-12

Personnel: John York

Start: 1350 [redacted]

Sample ID: 005

Monitoring Well Data:

Well No.: MW-B20D

Vapour PID (ppm): _____

Measurement Point: _____

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): _____

Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____

Depth to Pump Intake (m/ft)[1]: _____

Well Diameter, D (cm/in): _____

Well Screen Volume, V_s (L)[2]: _____

Initial Depth to Water (m/ft): 69.78

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01 [6]	±10 %	±10 %	±0.1 Units	±10 mV		
1420	150			11.08	0.890	53.6	3.36	7.37	88		
1450	"			11.15	0.889	39.6	3.17	7.36	88		
1455	"			11.29	0.888	30.9	3.03	7.37	87		
1500	"			11.22	0.888	25.9	2.96	7.34	85		
1505	"	↓		11.19	0.889	25.1	2.92	7.37	84		
1510	"	70.30		11.20	0.888	23.5	2.84	7.32	84		
	Collect "005"		Ti/Diss Metals								

Notes: Diss. Metals Field Filtered

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, Vs=π*(r2)*L in mL, where r (r=D/2) and L are in cm. For Imperial units, Vs=π*(r2)*L* (2.54)3 , where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Sample ID:

Analysis:

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Racer Peregrine

Ref. No.: [redacted] 12636

Date: 3-28-12

Personnel: John York

Start: 1530

Sample ID: 006
007 Dup

Monitoring Well Data:

Well No.: MW-B21D

Vapour PID (ppm): _____

Measurement Point: _____

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): _____

Depth of Sediment (m/ft): _____

Saturated Screen Length (m/ft): _____

Depth to Pump Intake (m/ft)[1]: _____

Well Diameter, D (cm/in): _____

Well Screen Volume, V_s (L)[2]: _____

Initial Depth to Water (m/ft): 80.78

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level[3] (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged[4]
			Precision Required[5]:	±3 %	±0.005 or 0.01 [5]	±10 %	±10 %	±0.1 Units	±10 mV		
1600	150			11.11	0.587	41.4	0.51	7.41	83		
1605	"			11.06	0.590	42.2	0.62	7.36	81		
1610	"			10.83	0.593	37.9	0.68	7.43	83		
1615	"			10.78	0.603	37.6	0.93	7.40	81		
1620	"			10.72	0.613	31.3	1.10	7.34	80		
1625	"			10.70	0.619	32.9	1.15	7.36	80		
1630	"	81.82		10.68	0.629	34.3	1.07	7.41	79		
	Collect	006									
1640		007 Dup									

Notes: Diss Metals Field Filtered

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, Vs=π*(r2)*L in mL, where r (r=D/2) and L are in cm. For Imperial units, Vs=π*(r2)*L* (2.54)3 , where r and L are in inches

(3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.

(4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.

(5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Sample ID:

Analysis:

CHAIN OF CUSTODY RECORD

COC NO.: PL- 08931
PAGE 1 OF 1
(See Reverse Side for Instructions)

CONESTOGA-ROVERS & ASSOCIATES
14496 Sheldon Road, Suite #200, Plymouth, Michigan 48170
Phone: (734) 453-5123 Fax: (734) 453-5201

Project No/ Phase/Task Code: 12636-T09	Laboratory Name: Test America	Lab Location: North Canton, Oh.	SSOW ID: 12636
Project Name: Racer Peregrine	Lab Contact: Denise Hackler	Lab Quote No:	Cooler No:
Project Location: Flint, Michigan			Carrier: Fed Ex
Chemistry Contact: Paul Wiseman			Airbill No: 8694 4903 4038
Sampler(s): J. York, S. Hoevemeyer			Date Shipped: 3-28-12

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Container Quantity & Preservation: Unpreserved	Hydrochloric Acid (HCl)	Nitric Acid (HNO_3)	Sulfuric Acid (H_2SO_4)	Sodium Hydroxide (NaOH)	Methanol/Water (Soil VOC)	EnCores 3x5-g, 1x25-g	Other:	Total Containers/Sample	Analysis Requested: T. Metals	Diss. Metals	VOC	ALN					MS/MSD Request	Comments/ Special Instructions:
1	TB-12636-032812-SH	3-28-12	—	WQ	G		X							1			X							Trip Blank
2	SW-12636-032812-SH-001	"	0830	WM	G		X	X		X				6	X	X	X	X						Stormsewer
3	GW-12636-032812-JY-002	"	0935	WG	G			X						1		X								B18A
4		JY-003	"	1130	WG	G			X						2		X			MS	MSD			B19AR
5		JY-004	"	1320	WG	G			X						2	X	X							B2D
6		JY-005	"	1510	WG	G			X						2	X	X							B20D
7		JY-006	"	1630	WG	G			X						2	X	X							D21D
8		JY-007	"	1640	WG	G			X						2	X	X							= Dup
9	✓	SH-008	"	1000	WG	G		X	X		X				6	X	X	X	X						BH-112
10																								
11																								
12																								
13																								
14																								
15																								

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Total Number of Containers:
All Samples in Cooler must be on COC

Notes/ Special Requirements: Diss. Metals = Field Filtered

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. John York	CRA	3-28-12	1700	1.			
2.				2.			
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT — ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE — Fully Executed Copy (CRA) YELLOW — Receiving Laboratory Copy PINK — Shipper GOLDENROD — Sampling Crew

CRA Form: COC-10A (20110804)

ATTACHMENT B

Q1 2012 DATA VALIDATION REPORT

CONESTOGA-ROVERS & ASSOCIATES

14496 Sheldon Road, Suite #200
Plymouth, Michigan 48170
Telephone: (734) 453-5123 Fax: (734) 453-5201
www.CRAworld.com

MEMORANDUM

TO: Mike Tomka

REF. NO.: 12636

FROM: Nancy Smith/ah/158/Det

DATE: June 26, 2012

RE: Data Quality Assessment and Reduced Validation
Quarterly Sampling Event – March 28, 2012
RACER Peregrine, Coldwater, MI

The following details a quality assessment and validation of the analytical data resulting from the March 28, 2012, collection of seven (7) water samples, and two (2) quality control samples from the RACER Peregrine Site in Coldwater, Michigan. The sample summary detailing sample identification, sample location, quality control samples, and analytical parameters is presented in Table 1. Sample analysis was completed at Test America Laboratories in North Canton, Ohio in accordance with the methodologies presented in Table 2.

The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP). Application of quality assurance criteria was consistent with following guidance documents:

i. "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999; and

ii. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Review", EPA-540/R-94/013, February 1994.

These guidelines are collectively referred to as "NFGs" in this Memorandum.

Sample Quantitation

The laboratory reported detected concentrations of volatile organic compounds (VOC), and inorganics below the laboratory's report limit (RL) but above the laboratory's method detection limit (MDL). The laboratory flagged these sample concentrations with a "J". These concentrations should be qualified as estimated (J) values unless qualified otherwise in this memorandum.

Sample Preservation and Holding Times

Sample holding time periods and preservation requirements are presented in Table 2.

All samples were shipped and maintained in accordance with the sample preservation requirements.

Method Blank Samples

Method blank samples are prepared from a purified sample matrix and are processed concurrently with investigative samples to assess the presence and the magnitude of sample contamination introduced during sample analysis. Method blank samples are analyzed at a minimum frequency of one per analytical batch and target analytes should be non-detect.

The samples presented in Table 3 should be qualified due to laboratory contamination. The laboratory flagged the organic concentrations with a "B" which may be disregarded. The remaining method blank samples did not contain target compounds with concentrations that impacted the investigative samples.

Surrogate Compounds - Organic Analyses

Individual sample performance for organic analyses was monitored by assessing the results of surrogate compound percent recoveries. Surrogate percent recoveries are reviewed against the laboratory developed control limits provided in the analytical report.

The surrogate recovery acceptance criteria were met for all samples.

Matrix Spike/Matrix Spike Duplicate Analyses

To assess the long term accuracy and precision of the analytical methods on various matrices, matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and the relative percent difference (RPD) of the concentrations were determined. The organic MS/MSD percent recovery and RPD control limits are established by the laboratory. The inorganic control limits are defined by the methods or the laboratory and the NFG. The samples selected for MS/MSD analysis are identified in Table 1.

In some sample batches, non-Site-specific samples were utilized as MS/MSDs. Qualification of samples associated with these MS/MSDs was not performed. If MS/MSD analyses could not be completed in an analytical batch due to insufficient sample volume; precision and accuracy were verified by the analysis of the laboratory control sample/laboratory control duplicate (LCS/LCD). The MS/MSD percent recoveries and associated RPD met the acceptance criteria for all samples.

Laboratory Control Sample Analyses

The laboratory control sample (LCS) analyses serves as a monitor of the overall performance in all steps of the sample analysis and is analyzed with each sample batch. The LCS percent recoveries were evaluated against method and laboratory established control limits.

The LCS percent recoveries were within the laboratory control limits or did not warrant qualification, indicating that an acceptable level of overall performance was achieved

Field Quality Assurance/Quality Control

The field quality assurance/quality control consisted of one (1) field duplicate sample set and one (1) trip blank sample.

Field Quality Assurance/Quality Control (continued)

Field Duplicate Samples

Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. The RPDs associated with these duplicate samples must be less than 50 and 100 percent for water and soil samples, respectively. If the reported concentration in either the investigative sample or its duplicate is less than five times the RL, the evaluation criteria is one or two times the RL value for water and soil samples, respectively.

The data indicate that an adequate level of precision was achieved for the sampling event.

Trip Blank Samples

To monitor potential cross-contamination of VOC during sample transportation and storage, a trip blank was submitted to the laboratory for VOC analysis with each shipping cooler containing multiple samples.

No target analytes were reported as detected in the trip blank samples that impacted the investigative samples.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

TABLE 1

SAMPLE COLLECTION AND ANALYSIS SUMMARY
QUARTERLY SAMPLING EVENT - MARCH 2012
RACER- PEREGRINE SITE
COLDWATER, MICHIGAN

Sample Identification	*Location*	*Matrix*	*QC Samples*	*Collection Date (mm/dd/yyyy)*	*Collection Time (hr:min)*	*Analysis/Parameters* TCL VOC	Metals - Total	Metals-dissolved	Cyanide-Amenable	Cyanide - Total
CRA SDG No.: 13	**TA-NC Lot No.: 240-9666-1**									
TB-12636-032812-SH	Trip Blank	water	Trip Blank	03/28/2012	3/28/2012	X				
SW-12636-032812-SH-001	Storm sewer	water		03/28/2012	8:30:00 AM	X	X	X	X	X
GW-12636-032812-JY-002	B-18A	water		03/28/2012	9:35:00 AM			X		
GW-12636-032812-JY-003	B-19AR	water	MS/MSD	03/28/2012	11:30:00 AM			X		
GW-12636-032812-JY-004	B-2D	water		03/28/2012	1:20:00 PM		X	X		
GW-12636-032812-JY-005	B-20D	water		03/28/2012	3:10:00 PM		X	X		
GW-12636-032812-JY-006	B-21D	water		03/28/2012	4:30:00 PM		X	X		
GW-12636-032812-JY-007	B-21D	water	DUP (JY-006)	03/28/2012	4:40:00 PM		X	X		
GW-12636-032812-SH-008	BH-112	water		03/28/2012	10:00:00 AM	X	X	X	X	X

Notes:

DUP - Field Duplicate Sample of sample in parenthesis
MS/MSD - Matrix Spike/Matrix Spike Duplicate
QC - Quality Control
TCL - Target Compound List
VOC - Volatile Organic Compounds

TABLE 2

SUMMARY OF ANALYTICAL METHODS, HOLDING TIME PERIODS, AND PRESERVATIVES
QUARTERLY SAMPLING EVENT - MARCH 2012
RACER- PEREGRINE SITE
COLDWATER, MICHIGAN

Parameter	*Method*	*Matrix*	*Holding Time*	*Preservation* [2]
TCL VOC	SW-846 8260	Water	- 14 days from sample collection to completion of analysis.	pH < 2 and Iced, 4 ± 2° C
Metals (Total/Dissolved)		Water	- 180 days from sample collection to completion of analysis	pH < 2 and Iced, 4 ± 2° C
Aluminum	SW-846 6020			
Antimony	SW-846 6020			
Arsenic	SW-846 6010B			
Barium	SW-846 6010B			
Beryllium	SW-846 6010B			
Cadmium	SW-846 6010B			
Calcium	SW-846 6010B			
Chromium	SW-846 6010B			
Cobalt	SW-846 6010B			
Copper	SW-846 6020			
Iron	SW-846 6010B			
Lead	SW-846 6010B			
Manganese	SW-846 6010B			
Nickel	SW-846 6010B			
Selenium	SW-846 6010B			
Silver	SW-846 6020			
Thallium	SW-846 6020			
Vanadium	SW-846 6010B			
Zinc	SW-846 6010B			
Mercury	SW-846 7470A		- 28 days from sample collection to completion of analysis	pH < 2 and Iced, 4 ± 2° C
General Chemistry				
Cyanide (Amenable)	SW-846 9012	Water	- 14 days from sample collection to analysis	Iced, 4 ± 2° C
Cyanide (Total)	SW-846 9012	Water	- 14 days from sample collection to analysis	Iced, 4 ± 2° C

Notes

[1] Method References:
SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, 3rd Edition, and Promulgated updates, November 1986

TABLE 3

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO METHOD BLANK CONTAMINATION
QUARTERLY SAMPLING EVENT - MARCH 2012
RACER- PEREGRINE SITE
COLDWATER, MICHIGAN

Parameter	*Analyte*	*Analysis Date*	*Blank Result*	*Sample ID*	*Qualified Result*	*Units*
TCL VOC	Acetone	04/06/12	3.03	GW-12636-032812-SH-008	10 U	µg/L
				TB-12636-032812-SH	10 U	µg/L
Metals (Total)	Zinc (total)	04/04/12	6.58	GW-12636-032812-JY-004	20 U	µg/L
				GW-12636-032812-JY-005	20 U	µg/L
				GW-12636-032812-JY-006	20 U	µg/L
				GW-12636-032812-JY-007	20 U	µg/L
				SW-12636-032812-SH-001	20 U	µg/L
Metals (Dissolved)	Zinc (dissolved)	04/04/12	6.58	GW-12636-032812-JY-005	20 U	µg/L
				GW-12636-032812-JY-006	20 U	µg/L
				SW-12636-032812-SH-001	20 U	µg/L
Metals (Total)	Copper (total)	04/04/12	0.431	SW-12636-032812-SH-001	2.0 U	µg/L
Metals (Dissolved)	Copper (dissolved)	04/04/12	0.431	GW-12636-032812-JY-002	2.0 U	µg/L
				GW-12636-032812-JY-003	2.0 U	µg/L
				GW-12636-032812-JY-004	2.0 U	µg/L
				GW-12636-032812-JY-005	2.0 U	µg/L
				GW-12636-032812-JY-006	2.0 U	µg/L
				GW-12636-032812-SH-008	2.0 U	µg/L
				SW-12636-032812-SH-001	2.0 U	µg/L
Metals (Dissolved)	Manganese (dissolved)	04/04/12	0.443	GW-12636-032812-JY-003	15 U	µg/L

Notes:

U - Qualified as Not Detected at the report limit

TCL - Target Compound List
VOC - Volatile Organic Compounds

ATTACHMENT C

PERIMETER INVESTIGATION STRATIGRAPHY LOGS

STRATIGRAPHY LOG (OVERBURDEN)

PROJECT NAME Peregrine / Coldwater
PROJECT NUMBER 12636
CLIENT Roger Trust
LOCATION Flint, MI

DRILLING CONTRACTOR CRA Services
DRILLER Pat + Dan
SURFACE ELEVATION
WEATHER (A.M.)
(P.M.)

HOLE DESIGNATION BH112
DATE/TIME STARTED 0830 9/28/12
DATE/TIME COMPLETED 1111 9/28/12
DRILLING METHOD probe
CRA SUPERVISOR S. Heeremeyer

STRATIGRAPHIC INTERVALS (DEPTHS IN ft m BGS) FROM	AT	TO	SAMPLE DESCRIPTION	SAMPLE DETAILS: 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		4"	asphalt									0-5	0.0		
4"		1	gravel + asphalt fill												
1		4	SM - sand, silt moist to dry, trace gravel, brown, fine to med grained, loose												
4		8	SW - sand fine to med grained, tan/brown dry, trace silt, loose									5-10	0.0		
8			SM - silty sand, fine grained, moist to dry, tan/brown, loose												
	13		moist									10-15	0.0		
	15	18	wet, trace silt												
18		20	SP - sand/gravel, med grained wet, trace silt, to coarse /brown/grey									15-20	0.0		
20		21	SW - sand, grey, trace silt/clay, wet									20-25	0.0		
21		25	CL - clay, med plas, trace silt/sand, moist, grey												

DEPTH OF BOREHOLE CAVING _____ DEPTH OF FIRST GROUNDWATER ENCOUNTER 21.5 TOPSOIL THICKNESS 3/4"
WATER LEVEL IN OPEN BOREHOLE ON COMPLETION _____ AFTER ____ HOURS ____
COMPLETION DETAILS: BOH 25'

NOTES AND COMMENTS

NOTE: FOR EACH SPLIT-SPOON SAMPLE, RECORD BLOW COUNTS, N-VALUE, SAMPLE RECOVERY LENGTH, AND SAMPLE INTERVAL.
NOTES: Install 1" PVC temp. well, ran peristaltic pump for 15 minutes, collect sample of H2O, water was turbid dark brown, set well screen at 20' bgs,