ARM Group LLC
Engineers and Scientists

October 28, 2021

Ms. Barbara Brown
Project Coordinator
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Re: Supplemental Investigation Report (Rev.1)
CVOC Impacted Groundwater
Area A: Parcel A10
Tradepoint Atlantic
Sparrows Point, MD 21219

Dear Ms. Brown:

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, completed a Phase II Investigation of Parcel A10 (the Site) in July 2016. Parcel A10 is part of Area A of the Tradepoint Atlantic property located in Sparrows Point, Maryland. Following completion of the investigation, ARM prepared a Phase II Investigation Report (Revision 1) dated July 8, 2019, which was subsequently submitted to the Maryland Department of the Environment (MDE) and the United States Environmental Protection Agency (USEPA) and approved on August 20, 2019.

During the Phase II Investigation, 11 temporary groundwater sample collection points (commonly referred to as piezometers) were installed and sampled throughout the Site. Historical permanent well SG06-PDM001 was also sampled for the Phase II investigation. Following completion of the investigation, groundwater concentrations of chlorinated volatile organic compounds (CVOCs), in particular tetrachloroethene (PCE) and trichloroethene (TCE), were identified in groundwater at the Site.

The groundwater data obtained from the 11 temporary piezometers and historical permanent well SG06-PDM001 were screened to determine whether individual sample results, or cumulative results summed by sample location, exceeded the applicable USEPA Vapor Intrusion Screening Levels (VISLs) which evaluate the vapor intrusion to indoor air risk pathway. The VISLs were determined using the USEPA's VISL Calculator, which was set for a Target Cancer Risk (TCR) of 1E-5 and Target Hazard Quotient (THQ) of 1.

The VISL screening evaluation identified elevated groundwater CVOC concentrations resulting in potentially unacceptable vapor intrusion risks/hazards at multiple locations. **Figure 1** provides a summary of detections of PCE and TCE in the groundwater during the Phase II Investigation, which were the primary drivers of the elevated vapor intrusion risks/hazards. Based on the elevated CVOC detections and associated risks/hazards, an additional investigation was warranted to further characterize the extent of these aqueous contaminants. The off-property areas to the east of the Site (outside of the Tradepoint Atlantic property) are also shown on **Figure 1**. As is evident on the figure, the highest concentrations of PCE and TCE in groundwater were present in sample locations positioned along the eastern property boundary, specifically at locations A10-025-PZ and A10-027-PZ. Based on the positions of these elevated concentrations, the possibility of an off-property source was considered in the preparation of the sampling Work Plan.

The Phase II Investigation piezometers were installed with screens placed in one of two distinct sand or slag fill layers that are separated by a confining or semi-confining clay unit. Based on the specific conditions encountered at each location, the piezometers had either been screened in a sand unit below the clay or above the clay within an overlying saturated zone. These two hydrogeologic zones have been designated as the "shallow" zone and the "perched" zone, respectively. A cross section (A-A') of the subsurface encountered while installing sample locations along the eastern edge of the property is included as **Attachment 1**. This attachment also includes a figure showing the horizontal alignment of the cross section with applicable boring/piezometer locations (which are discussed in detail below). The cross section shows the clay unit observed at several locations which separates the shallow and perched zones. The cross section also incorporates historical information provided by boring SW-05-CPT which was completed by CH2MHILL and included in the Site Wide Investigation Groundwater Study Report prepared by the Bethlehem Steel Corporation Sparrows Point Division dated December 20, 2001. SW-05-CPT indicates a clay layer at approximately 25 feet below ground surface (bgs) underlying the shallow zone. While a boring/construction log is not available for the historical monitoring well SG06-PDM001, it is believed to be installed in the shallow zone because the measured groundwater elevation at this location is more consistent with the shallow zone.

A Work Plan for Characterization of CVOCs in Groundwater in Area A: Parcel A10 dated September 5, 2019 was submitted to the MDE and the USEPA. Following review of the proposed sampling approach, the Work Plan was formally approved by the agencies on September 9, 2019, and the characterization activities were initiated in Parcel A10 on September 13, 2019. This Supplemental Investigation Report provides a summary of the field methods and findings of the characterization activities.

Field Methods

A total of 21 new temporary piezometers were installed between September 13, 2019 and September 25, 2019 under the approved Supplemental Investigation Work Plan to provide sample

points to determine the nature and extent of groundwater containing elevated concentrations of CVOCs throughout Parcel A10. Seven existing piezometers (from the original scope of work) were also incorporated, for a total of 28 sample locations (14 pairs). The piezometers were installed as pairs to enable the collection of groundwater samples from both the perched and shallow groundwater zones. Regarding the seven piezometers that were sampled during the initial Phase II Investigation (A10-002-PZ, A10-015-PZ, A10-024-PZ, A10-025-PZ, A10-027-PZ, A10-029-PZ, and A10-034-PZ), additional piezometers were installed as pairs to the existing points. These piezometers were installed to investigate the corresponding groundwater zone (either perched or shallow) that the original piezometer had not targeted.

The locations of the piezometer pairs are shown on **Figure 2**. The locations targeted the eastern half of Parcel A10 where the highest concentrations of CVOCs had previously been identified. All of the locations proposed in the Supplemental Investigation Work Plan were successfully installed. Following the identification of all utilities in the study area, each groundwater collection point was installed in accordance with the procedures referenced in the Quality Assurance Project Plan (QAPP) Worksheet 21 – Field Standard Operating Procedures (SOPs), SOP No. 028 – Direct Push Installation and Construction of Temporary Groundwater Sample Collection Points. Soil boring logs and piezometer construction logs have been included in **Attachment 2**. The piezometer construction details (depths, screen intervals, etc.) are summarized in **Table 1**.

Between October 9, 2019 and October 14, 2019, groundwater samples were collected from the 14 pairs of piezometers located on Parcel A10. Five piezometers in the perched zone (A10-024(P)-PZ, A10-025(P)-PZ, A10-027(P)-PZ, A10-034(P)-PZ, and A10-035(P)-PZ) did not yield adequate water to collect a sample. Groundwater samples were therefore collected from a total of 23 piezometers in accordance with the procedures referenced in the QAPP Worksheet 21 – Field SOPs, SOP No. 006 – Groundwater Sampling. Laboratory samples were submitted to Pace Analytical Services, Inc. and analyzed for VOCs via USEPA Method 8260. The sampling and purge logs are provided in **Attachment 3**. Each groundwater collection point was checked for the presence of non-aqueous phase liquid (NAPL) immediately prior to sampling. NAPL was not detected in any location.

The groundwater sample collection points were surveyed by a Maryland-licensed surveyor to obtain top of casing (TOC) elevation data. A synoptic round of depth to water (DTW) measurements was collected from each location on November 6, 2019. In addition to the sample collection points, supplemental locations were included throughout the parcel to enhance the groundwater contour maps. Surveyed TOC and ground surface elevations for all applicable locations can be found in **Table 1**, along with the DTW measurements from this date. It is notable that the water levels in the perched piezometers with low water yields had risen significantly since the sampling attempt in October 2019. Localized potentiometric surface maps were constructed

using the DTW measurements for the shallow zone and the perched zone, as provided on **Figure 3** and **Figure 4**, respectively.

Potential CVOC impacts were also assessed during the separate A10-006 NAPL Investigation. NAPL was identified and subsequently delineated in this area as described in detail in the NAPL Delineation Completion Report for Parcel A10 (dated January 6, 2020). Delineation piezometers were installed both downgradient and upgradient of the original location where NAPL was encountered (A10-006-SB). The locations of the delineation piezometers are shown on **Figure 2**. The delineation piezometers were installed in accordance with the QAPP SOP No. 028. Soil boring logs and delineation piezometer construction logs have been included in **Attachment 2**. The piezometer construction details are summarized in **Table 1**. Six perimeter delineation piezometers (A10-006A-PZ, A10-006B-PZ, A10-006F-PZ, A10-006H-PZ, A10-006I-PZ, and A10-006J-PZ) were sampled for VOCs (and SVOCs) on January 21, 2020. Groundwater samples were collected in accordance with the procedures referenced in the QAPP SOP No. 006. The sampling and purge logs are provided in **Attachment 3**. Each delineation piezometer was checked for the presence of NAPL immediately prior to sampling. NAPL was not detected in any perimeter delineation piezometer location. Both dense and light NAPL (DNAPL and LNAPL) samples were also collected from the interior of the delineation area for further characterization. Results of the NAPL characterization were presented in the NAPL Characterization Results Transmittal Letter for Parcel A10 (dated January 23, 2020), which is included as an electronic attachment. The NAPL samples were not found to contain significant concentrations of CVOCs.

The Supplemental Investigation Work Plan had also specified that a limited number of locations were planned to be installed and sampled in the future (outside of Parcel A10) during the separate Phase II Investigations of Parcel A16 and Parcel A18, in order to further evaluate the dissolved-phase contaminant plume(s) in the downgradient direction. A Phase II Investigation of Parcel A18 was completed in July 2020. Groundwater sample collection points from the Parcel A18 Phase II Investigation are shown on **Figure 5**. A potentiometric surface map for the shallow hydrogeologic zone in Parcel A18 is also presented on **Figure 5**, using a synoptic round of groundwater level measurements collected on June 8, 2020.

Several piezometers installed during the Parcel A18 Phase II Investigation were in close proximity to the northern and eastern borders of Parcel A10. These piezometers were installed to characterize groundwater conditions in Parcel A18 while also assessing the extent of CVOC impacts detected in the northeastern portion of Parcel A10. The piezometers were installed in accordance with the QAPP SOP No. 028. Soil boring logs and piezometer construction logs have been included in **Attachment 2**. The piezometer construction details are summarized in **Table 1**. Groundwater samples were collected from the Parcel A18 piezometers between July 7, 2020 and July 9, 2020 for analysis of VOCs (and the full suite of analytical parameters specified by the Parcel A18 Phase II Investigation Work Plan). A groundwater sample was also collected from historical permanent

well SG06-PPM004, located on Parcel A16, on July 23, 2020 for analysis of VOCs. The groundwater samples collected during the Parcel A18 Phase II Investigation, as well as from permanent well SG06-PPM004, are representative of the shallow hydrogeologic zone. Groundwater samples were collected in accordance with the procedures referenced in the QAPP SOP No. 006. The sampling and purge logs are provided in **Attachment 3**. Each groundwater collection point was checked for the presence of NAPL immediately prior to sampling. NAPL was not detected in any location.

Investigation-Derived Waste (IDW)

In accordance with the approved Work Plan(s) and the requirements of the QAPP, potentially impacted material, or IDW, generated during each phase of the investigations conducted on Parcel A10 and Parcel A18 was containerized in 55-gallon (DOT-UN1A2) drums. IDW characterization was performed in accordance with standard methods prior to disposal.

Characterization Results

Table 2 provides the analytical results for VOCs detected in groundwater during this CVOC Supplemental Investigation on Parcel A10. VOC detections observed in the six NAPL delineation piezometers on the perimeter of the A10-006 NAPL area (none of which contained NAPL) are presented on **Table 3**. Overall, the NAPL did not appear to be a significant source of groundwater CVOC contamination within the study area. VOC detections observed during the Parcel A18 Phase II Investigation are presented on **Table 4**. The laboratory reports for all the groundwater characterization samples are included as electronic attachments.

Figure 6 displays the VOC concentrations in the groundwater samples which exceeded the Project Action Limits (PALs) established in the QAPP. The red highlighting in the figure indicates which of the groundwater sample locations had an elevated vapor intrusion risk potential above the acceptable thresholds for cancer risk (>1E-05) and/or non-cancer hazard (>1). A summary of the cumulative vapor intrusion evaluation based on the USEPA VISLs is provided in **Table 5**.

Eight of the sample locations installed in the shallow zone on Parcels A10 and A18 (A10-025(S)-PZ, A10-027(S)-PZ, A10-034(S)-PZ, A10-035(S)-PZ, A10-039(S)-PZ, A18-002-PZ, A18-015-PZ, and A18-017-PZ) had elevated CVOC concentrations that contributed to potentially unacceptable cumulative vapor intrusion cancer risks (>1E-05) and/or non-cancer hazards (>1). The primary CVOC causing the elevated vapor intrusion risks/hazards for all eight locations is TCE. TCE was detected at concentrations of 256 ug/L, 218 ug/L, 134 ug/L, 1,670 ug/L, 663 ug/L, 394 ug/L, 298 ug/L, and 88 ug/L at each respective location. Each of the identified piezometers was screened in the shallow zone. PCE was also detected above its individual non-cancer VISL (240 ug/L) in some instances; however, these detections did not cause the cumulative vapor intrusion non-cancer hazard index to exceed 1 in any of the locations on Parcel A10 or Parcel A18.

It is notable that one detection of PCE during the initial Phase II Investigation (1,010 ug/L in the sample collected from A10-025(S)-PZ in July 2016) was significantly higher than the corresponding sample collected during the CVOC Supplemental Investigation (284 ug/L in October 2019).

PCE and TCE were confirmed to be the most significant CVOCs in groundwater on Parcel A10 and the neighboring Parcel A18. **Figure 7** and **Figure 8** show shallow concentration isocontour maps for PCE and TCE, respectively. Each figure includes data obtained during the Parcel A10 Phase II Investigation, the Parcel A10 CVOC Supplemental Investigation, A10-006 NAPL Investigation, and the Parcel A18 Phase II Investigation. For both PCE and TCE, the elevated concentrations appear to be present in localized hotspots along the eastern property boundary, with the highest concentrations observed in the northeastern corner of the Site.

Conclusions

The concentrations of CVOCs in groundwater have been adequately defined along the north, west and south investigation boundaries. Based on the localized groundwater potentiometric surface map for the shallow zone, groundwater is shown flowing in a north-northwestern direction. This supports the likelihood of off-site sources causing the observed CVOC contamination in shallow groundwater along the eastern property boundary. An investigation of the potential off-site source of CVOCs will not be possible, as Tradepoint Atlantic has no jurisdiction of the property to the east of Parcel A10.

Exceedances of the cumulative vapor intrusion criteria were limited to five shallow groundwater samples in Parcel A10 (A10-0025(S)-PZ, A10-027(S)-PZ, A10-034(S)-PZ, A10-035(S)-PZ, and A10-039(S)-PZ) and three shallow groundwater samples in Parcel A18 (A18-002-PZ, A18-015-PZ, and A18-017-PZ). An overlying sample from the perched zone was successfully collected from only one location (A10-039(P)-PZ), and the sample from this piezometer showed a lack of significant impacts in the overlying water-bearing zone. None of the delineation piezometers that were sampled at the perimeter of the A10-006 NAPL area exceeded the acceptable cumulative vapor intrusion criteria. The cumulative vapor intrusion evaluation is included in **Table 5**. As presented in **Attachment 1**, the presence of a low-permeability clay/silt soil unit, and the presence of unimpacted perched groundwater above the shallow zone on Parcel A10, will prohibit or significantly reduce the potential for vapor intrusion resulting from the vertical migration of vapors from contaminants in the shallow zone.

The characterization findings have been incorporated into a vapor intrusion assessment within the Response and Development Work Plan (RADWP) for Sub-Parcel A10-1 (Revision 2 dated December 31, 2020). Construction under the RADWP has since been initiated and is complete. A sub-slab vapor barrier was installed below the concrete floor slab of the new logistics center on Sub-Parcel A10-1 to prevent the intrusion of contaminant vapors to indoor air. The installation of

the vapor barrier addresses the potential for unacceptable vapor intrusion risks/hazards resulting from the presence of CVOCs in the shallow groundwater. An initial Building Occupancy Assessment (BOA) was conducted on June 22, 2021 at the warehouse prior to occupancy. No sub-slab soil gas VOC PAL exceedances were observed during this assessment. All findings were submitted to MDE and EPA in a BOA Letter Report dated August 18, 2021. Post occupancy sub-slab and indoor air sampling was conducted on August 28, 2021. Indoor air samples from four locations exceeded the MDE May 2019 Commercial Indoor Air Screening Levels for one or more of the following: naphthalene, chloroform, and trichloroethene. In retrospect, the sampling conditions were not representative of normal operating conditions (i.e. building sealed with no HVAC in operation). Therefore, additional indoor air sampling was conducted from those four locations on September 17, 2021 during normal operations. No screening levels exceedances were detected during the resampling event. All findings were submitted to MDE and EPA in the Post Occupancy Assessment Report on October 5, 2021.

Any further activities on the Site will be coordinated with the MDE under separate cover. It is anticipated that additional monitoring will be required for the CVOC plume in the vicinity of Parcels A10 and A18 under the Site-Wide Groundwater Corrective Measures Study (CMS) long-term monitoring program.

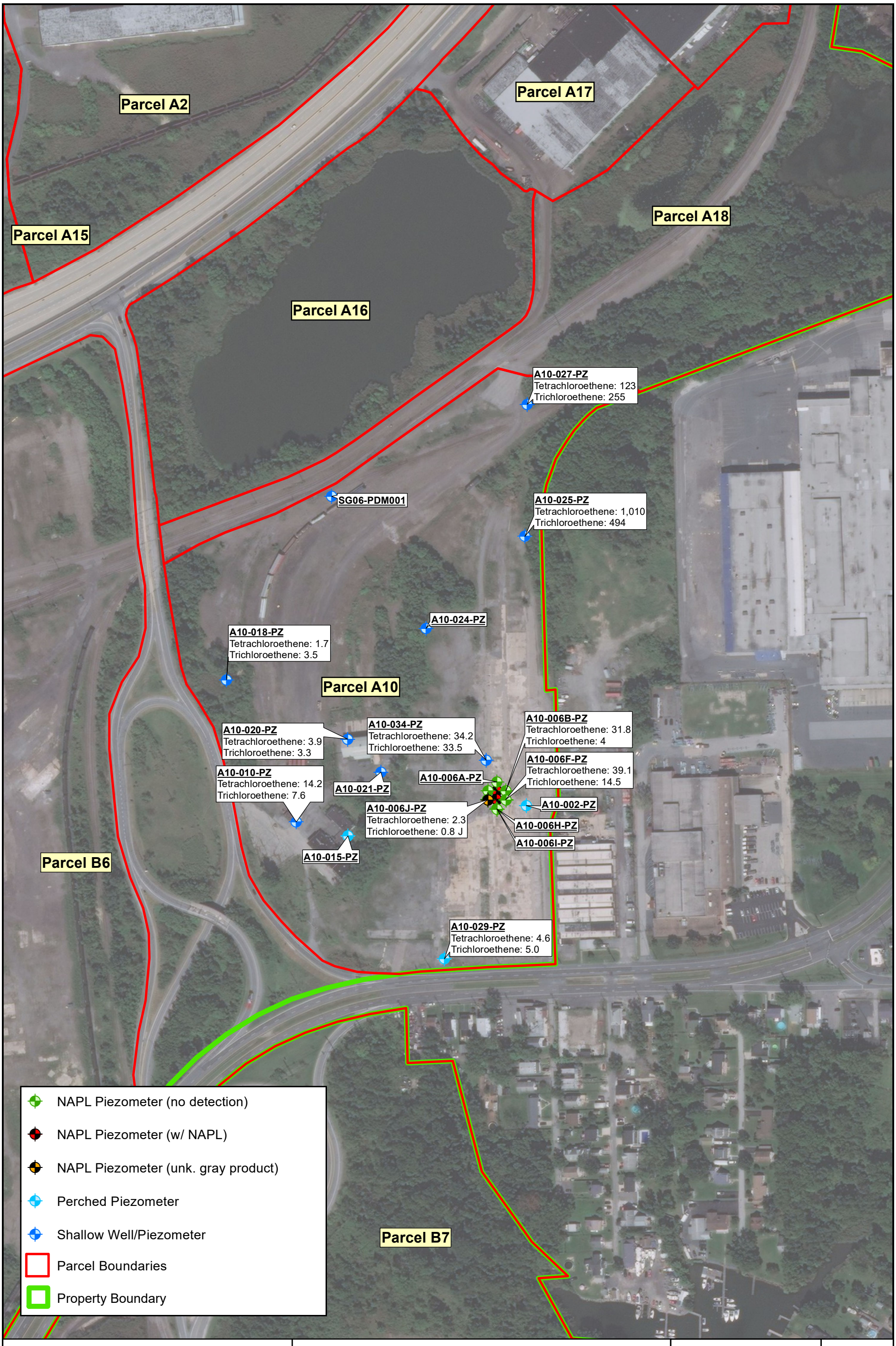
If you have any questions, or if we can provide any additional information at this time, please do not hesitate to contact ARM Group LLC at 410-290-7775.

Respectfully Submitted,
ARM Group LLC

Kaye Guille, P.E., PMP
Senior Engineer

Eric S. Magdar, P.G.
Vice President

FIGURES



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0 125 250 500 Feet

Parcel A10 NAPL & CVOC Characterization: Phase II PCE/TCE Detections in Groundwater (ug/L)

July 14, 2021

Sparrows Point
ARM Project 20010110

Tradepoint Atlantic
Baltimore County, MD

Figure

1

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0 100 200 400 Feet

Parcel A10 NAPL & CVOC Characterization: Paired Piezometer Locations

July 14, 2021

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Tradepoint Atlantic
Baltimore County, MD

Figure
2

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0 100 200 400 Feet

Parcel A10 NAPL & CVOC Characterization: Groundwater Contour Map (ft amsl) Shallow Zone

July 14, 2021

Sparrows Point
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Baltimore County, MD

Figure
3

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0 100 200 400 Feet

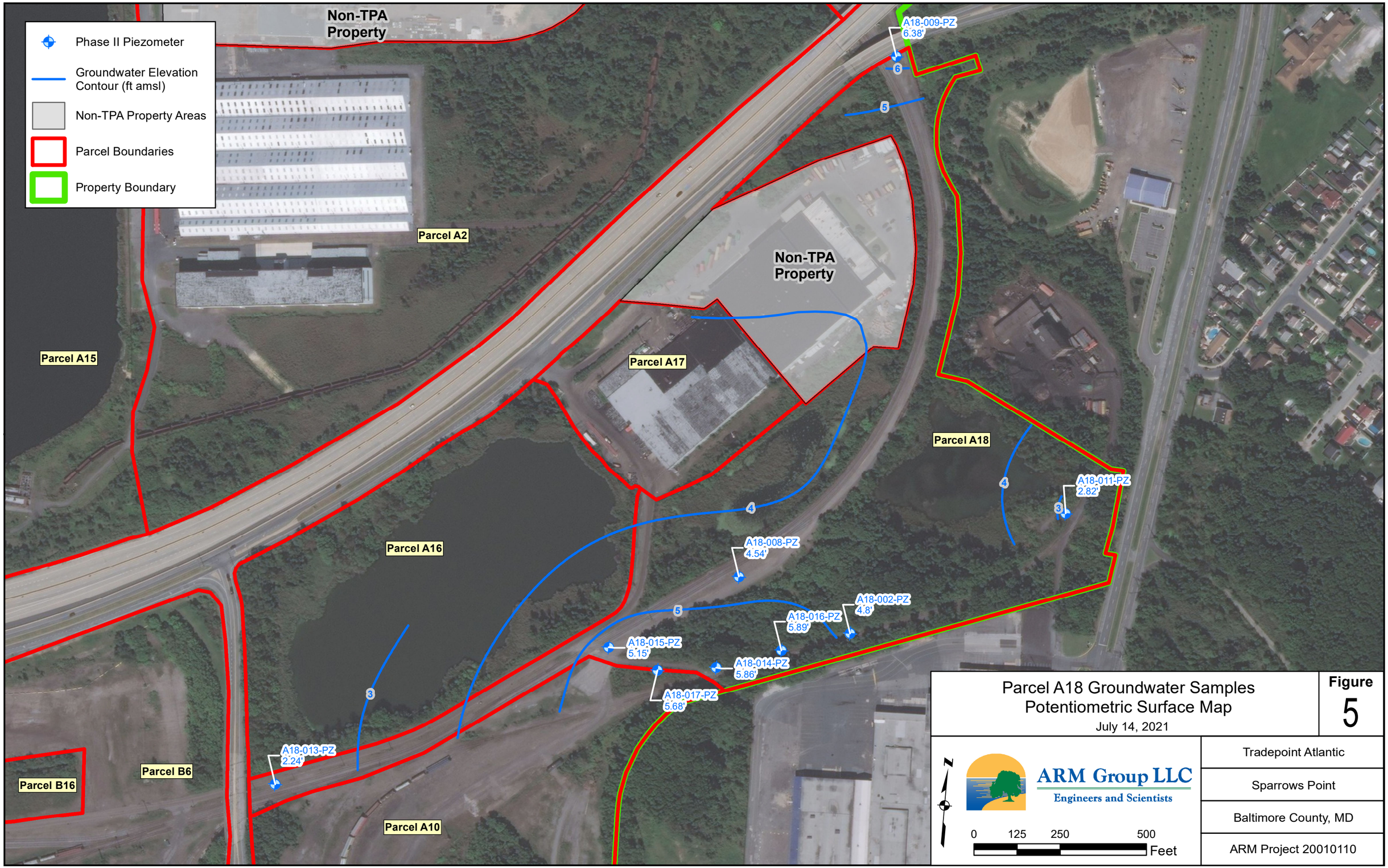
Parcel A10 NAPL & CVOC Characterization: Groundwater Contour Map (ft amsl) Perched Zone

July 14, 2021

Sparrows Point
ARM Project 20010110

Tradepoint Atlantic
Baltimore County, MD

Figure
4



Parcel A18 Groundwater Samples
Potentiometric Surface Map
July 14, 2021

Figure 5

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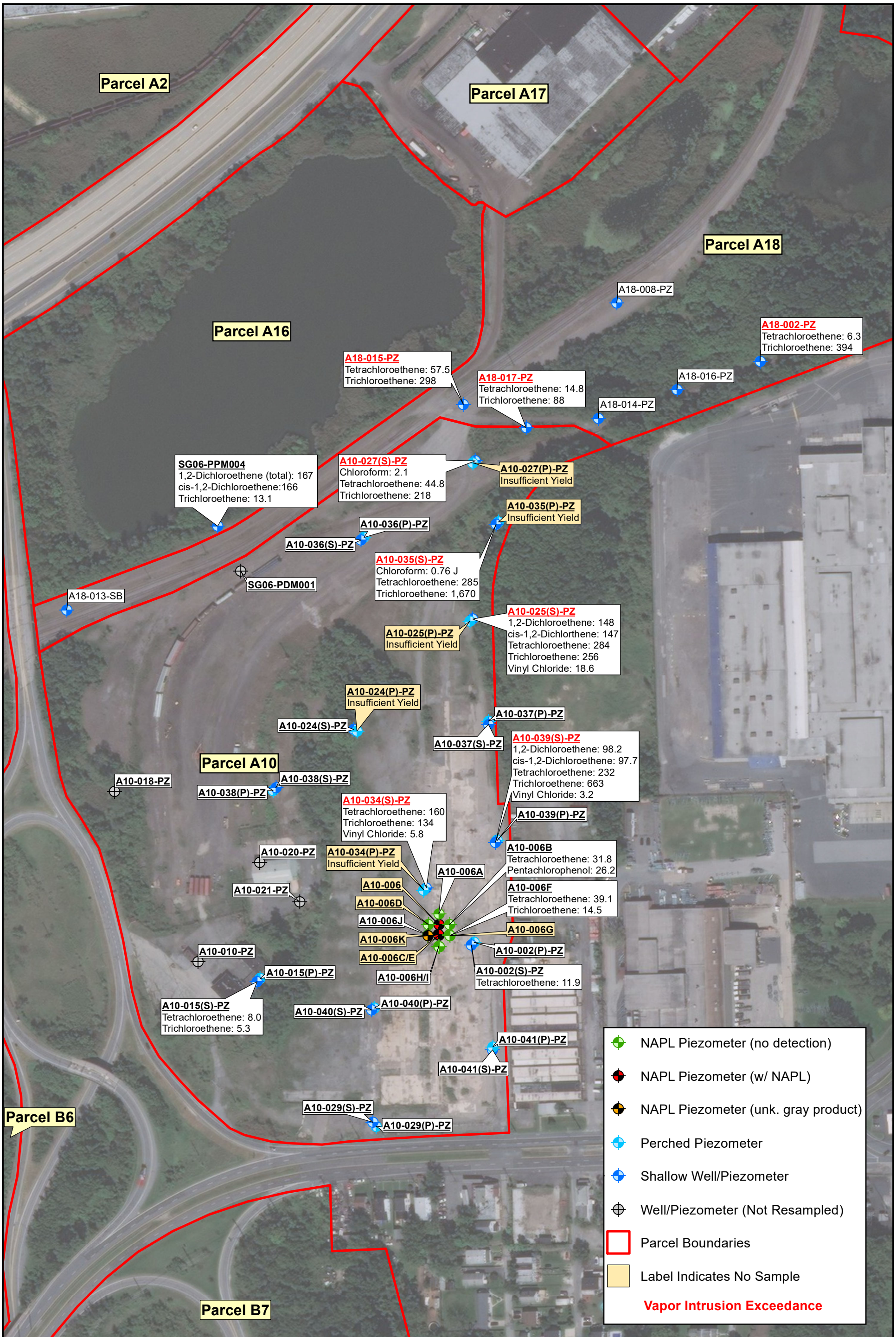
Sparrows Point
Baltimore County, MD
ARM Project 20010110



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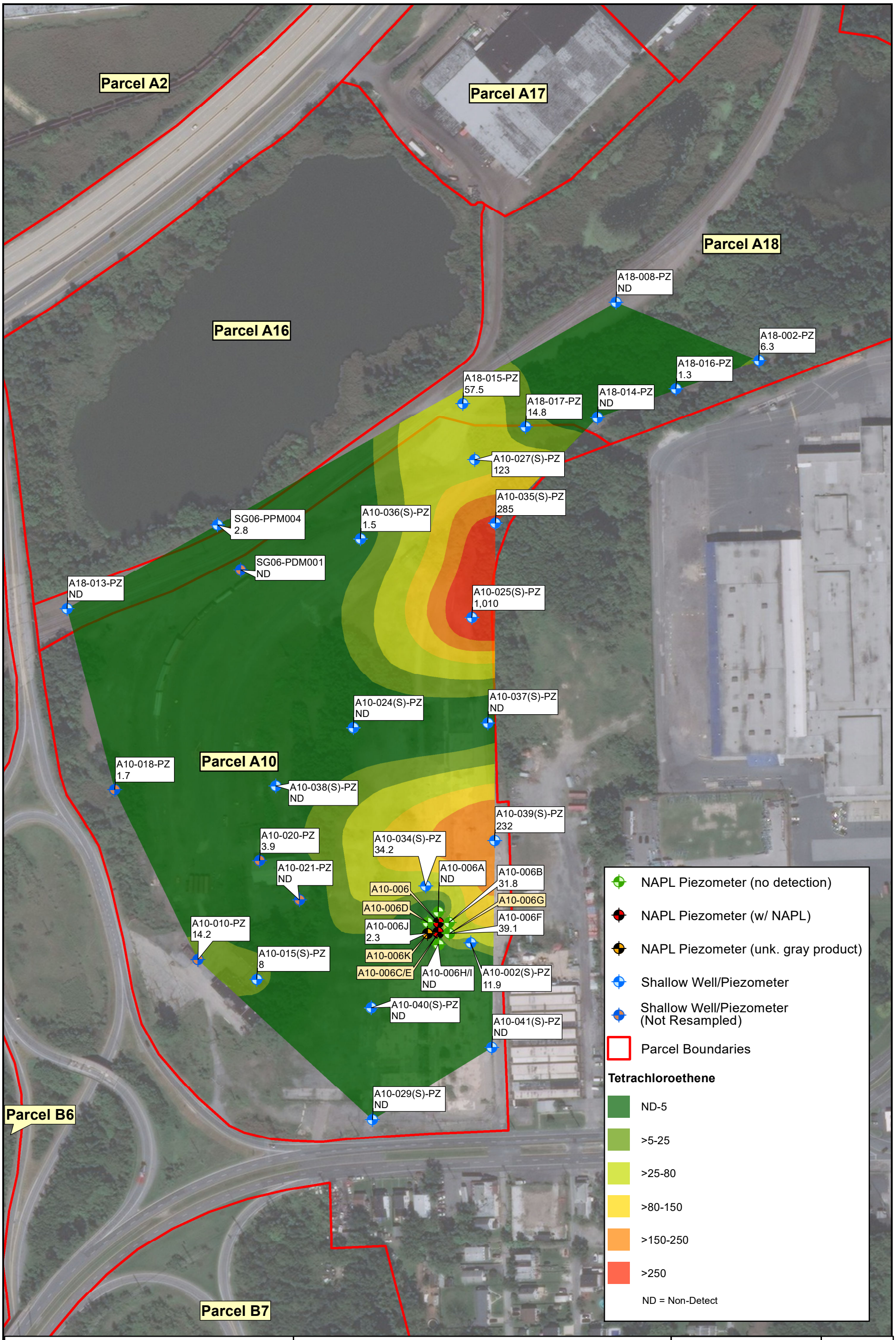
Parcel A10 NAPL & CVOC Characterization: Groundwater VOC Vapor Intrusion & PAL Exceedances (ug/L)

July 14, 2021

Sparrows Point
ARM Project 20010110

Tradepoint Atlantic
Baltimore County, MD

Figure
6



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Parcel A10 NAPL & CVOC Characterization: Groundwater Tetrachloroethene Isocontours (ug/L) Shallow Zone

July 14, 2021

Sparrows Point
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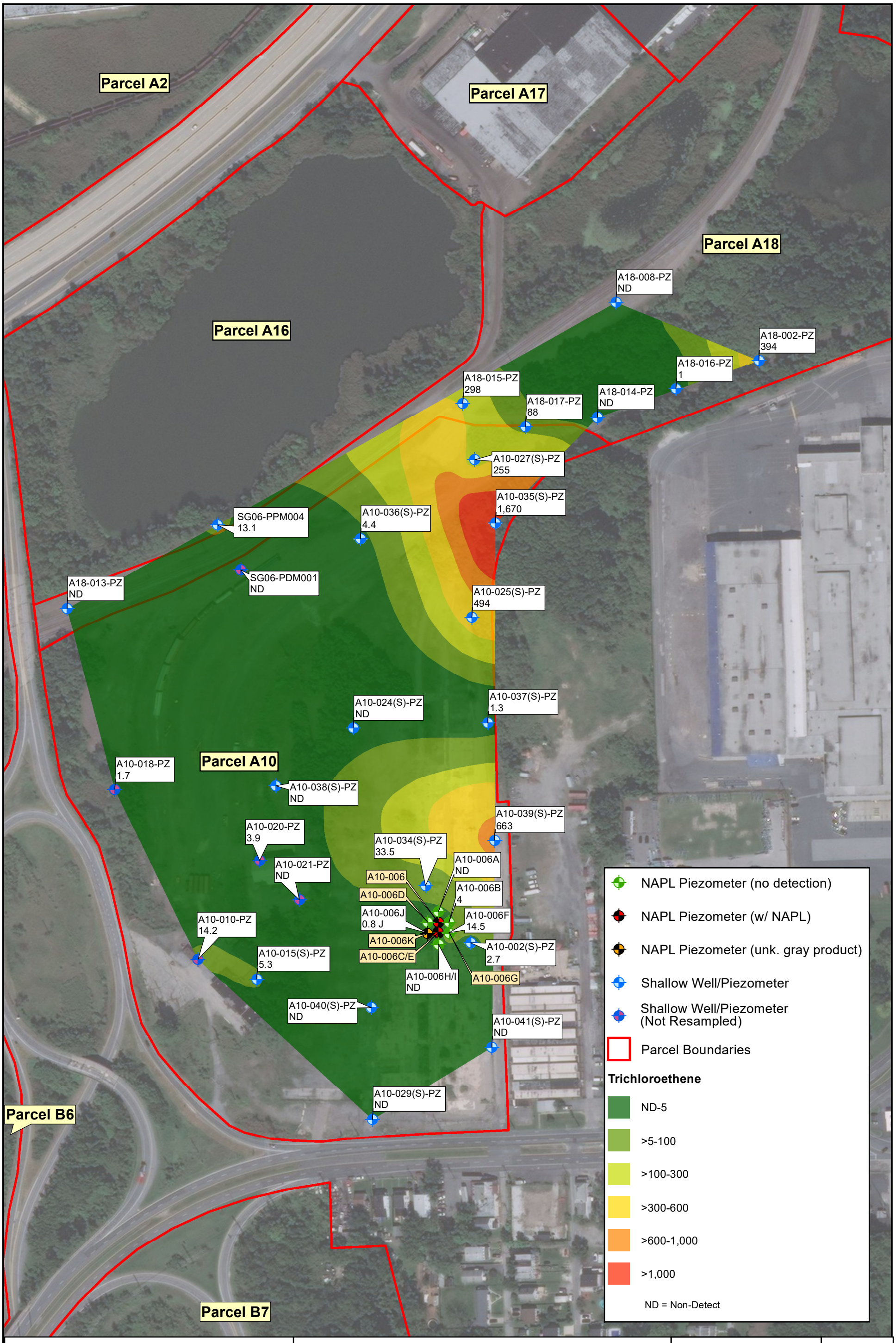
Figure
7



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Parcel A10 NAPL & CVOC Characterization: Groundwater Trichloroethene Isocontours (ug/L) Shallow Zone

July 14, 2021

Sparrows Point
ARM Project 20010110

Tradepoint Atlantic
Baltimore County, MD

Figure
8

TABLES

Table 1 - Parcel A10 CVOC Characterization
Piezometer Construction Details and Elevation Measurements

Location ID	TOC Elevation (ft. AMSL)	Measured DTW (ft. TOC)	Groundwater Elevation (ft. amsl)	Ground Elevation (ft. amsl)	Screen Interval (ft. bgs)	Screen Bottom Elevation (ft. amsl)	Hydraulic Zone
Sample Locations (14 Paired Piezometers)							
A10-002(P)-PZ	22.13	10.08	12.05	18.90	7 to 17	1.9	Perched
A10-002(S)-PZ	22.06	16.45	5.61	18.99	15 to 25	-6.0	Shallow
A10-015(P)-PZ	20.09	9.30	10.79	16.32	3.5 to 13.5	2.8	Perched
A10-015(S)-PZ	18.39	13.36	5.03	16.33	18 to 28	-11.7	Shallow
A10-024(P)-PZ	13.99	8.34	5.65	11.66	3 to 9	2.7	Perched
A10-024(S)-PZ	14.36	9.04	5.32	11.43	10 to 20	-8.6	Shallow
A10-025(P)-PZ	17.33	7.67	9.66	14.70	3 to 10	4.7	Perched
A10-025(S)-PZ	16.94	12.47	4.47	14.14	10 to 20	-5.9	Shallow
A10-027(P)-PZ	15.02	5.67	9.35	13.01	3 to 8	5.0	Perched
A10-027(S)-PZ	16.38	12.56	3.82	12.59	12 to 22	-9.4	Shallow
A10-029(P)-PZ	23.11	6.62	16.49	19.64	4 to 14	5.6	Perched
A10-029(S)-PZ	23.20	17.92	5.28	19.70	22 to 32	-12.3	Shallow
A10-034(P)-PZ	19.74	8.80	10.94	17.03	3 to 10	7.0	Perched
A10-034(S)-PZ	20.10	14.48	5.62	17.11	20 to 25	-7.9	Shallow
A10-035(P)-PZ	17.46	10.91	6.55	14.67	3 to 13	1.7	Perched
A10-035(S)-PZ	17.16	13.43	3.73	14.76	14 to 24	-9.2	Shallow
A10-036(P)-PZ	15.13	9.03	6.10	12.87	3 to 13	-0.1	Perched
A10-036(S)-PZ	15.78	12.01	3.77	12.70	14 to 24	-11.3	Shallow
A10-037(P)-PZ	16.21	7.23	8.98	14.61	3 to 13	1.6	Perched
A10-037(S)-PZ	16.71	11.35	5.36	14.36	13 to 23	-8.6	Shallow
A10-038(P)-PZ	14.15	7.28	6.87	11.76	3 to 13	-1.2	Perched
A10-038(S)-PZ	14.60	9.51	5.09	11.69	14 to 24	-12.3	Shallow
A10-039(P)-PZ	17.36	8.99	8.37	15.14	3 to 13	2.1	Perched
A10-039(S)-PZ	18.06	12.31	5.75	15.13	14 to 24	-8.9	Shallow
A10-040(P)-PZ	19.71	5.73	13.98	18.75	4 to 14	4.8	Perched
A10-040(S)-PZ	21.16	15.80	5.36	18.81	18 to 28	-9.2	Shallow
A10-041(P)-PZ	17.51	3.44	14.07	15.65	3 to 13	2.7	Perched
A10-041(S)-PZ	18.80	13.12	5.68	15.94	16 to 26	-10.1	Shallow
Supplemental A10 Gauging Locations							
A10-010-PZ	17.98	13.22	4.76	14.24	14 to 24	-9.8	Shallow
A10-018-PZ	18.65	14.52	4.13	15.11	17 to 27	-11.9	Shallow
A10-020-PZ	13.64	8.7	4.94	12.29	14 to 24	-11.7	Shallow
A10-021-PZ	13.26	NA	NA	11.76	14 to 24	-12.2	Shallow
SG06-PDM001	12.04	9.05	2.99	12.42	4 to 14	-1.6	Shallow

Table 1 - Parcel A10 CVOC Characterization
Piezometer Construction Details and Elevation Measurements

Location ID	TOC Elevation (ft. AMSL)	Measured DTW (ft. TOC)	Groundwater Elevation (ft. amsl)	Ground Elevation (ft. amsl)	Screen Interval (ft. bgs)	Screen Bottom Elevation (ft. amsl)	Hydraulic Zone
A10-006 NAPL Investigation Area Gauging Locations							
A10-006-PZ	22.63	10.39	12.24	Not Surveyed	4 to 14	Not Surveyed	Perched
A10-006A-PZ	22.31	10.82	11.49	Not Surveyed	3 to 19	Not Surveyed	Perched
A10-006B-PZ	21.5	15.29	6.21	Not Surveyed	5 to 28	Not Surveyed	Shallow
A10-006C-PZ	22.29	14.82	7.47	Not Surveyed	4 to 30	Not Surveyed	Shallow
A10-006D-PZ	20.25	8.01	12.24	Not Surveyed	3 to 15	Not Surveyed	Shallow
A10-006E-PZ	21.87	10.02	11.85	Not Surveyed	2 to 15	Not Surveyed	Perched
A10-006F-PZ	21.87	15.85	6.02	Not Surveyed	15 to 30	Not Surveyed	Shallow
A10-006G-PZ	20.74	7.16	13.58	Not Surveyed	3 to 15	Not Surveyed	Perched
A10-006H-PZ	22.08	15.36	6.72	Not Surveyed	15 to 30	Not Surveyed	Shallow
A10-006I-PZ	21.81	9.31	12.50	Not Surveyed	3 to 15	Not Surveyed	Perched
A10-006J-PZ	20.81	14.82	5.99	Not Surveyed	15 to 30	Not Surveyed	Shallow
A10-006K-PZ	20.61	7.82	12.79	Not Surveyed	3 to 15	Not Surveyed	Perched
A18 Phase II Investigation Groundwater Gauging Locations							
A18-002-PZ	17.97	12.65	5.32	14.88	5 to 20	-5.1	Shallow
A18-008-PZ	15.66	11.57	4.09	12.56	9 to 19	-6.4	Shallow
A18-009-PZ	24.1	17.47	6.63	21.46	5 to 25	-3.5	Shallow
A18-011-PZ	15.43	12.95	2.48	11.97	5 to 15	-3.0	Shallow
A18-013-PZ	13.65	11.81	1.84	10.87	5 to 15	-4.1	Shallow
A18-014-PZ	18.29	13.07	5.22	15.07	9 to 21	-5.9	Shallow
A18-015-PZ	17.57	13.04	4.53	14.26	10 to 25	-10.7	Shallow
A18-016-PZ	17.24	11.96	5.28	14.41	10 to 25	-10.6	Shallow
A18-017-PZ	17.43	12.44	4.99	14.37	11 to 26	-11.6	Shallow

Groundwater measurements shown in red contained LNAPL
Groundwater measurements shown in blue contained DNAPL
DTW = Depth to water
TOC = Top of casing
bgs = below ground surface
amsl = above mean sea level
NA = Not Applicable (due to piezometer damage)

Table 2 - Parcel A10 CVOC Characterization
Summary of VOCs Detected in Groundwater

Parameter	Units	PAL	A10-002(P)-PZ	A10-002(S)-PZ	A10-015(P)-PZ	A10-015(S)-PZ	A10-024(S)-PZ	A10-025(S)-PZ
			10/11/2019	10/15/2019	10/11/2019	10/10/2019	10/11/2019	10/15/2019
1,1-Dichloroethene	ug/L	7	1.0 U	**2.6**	1.0 U	**0.71 J**	1.0 U	**0.77 J**
1,2-Dichlorobenzene	ug/L	600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**3.4**
1,2-Dichloroethene (Total)	ug/L	70	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**148**
1,4-Dichlorobenzene	ug/L	75	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.2**
2-Butanone (MEK)	ug/L	5,600	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Acetone	ug/L	14,000	**5.9 J**	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromomethane	ug/L	7.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	810	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.93 J**
Chloroform	ug/L	0.22	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	70	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**147**
Methyl acetate	ug/L	20,000	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl-tert-butyl ether	ug/L	14	1.0 U	**2.3**	1.0 U	**1.7**	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	1.0 U	**11.9**	1.0 U	**8.0**	1.0 U	**284**
Toluene	ug/L	1,000	**0.40 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.90 J**
Trichloroethene	ug/L	5	1.0 U	**2.7**	1.0 U	**5.3**	1.0 U	**256**
Vinyl chloride	ug/L	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**18.6**

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

J: The positive result reported for this analyte is a quantitative estimate.

Table 2 - Parcel A10 CVOC Characterization
Summary of VOCs Detected in Groundwater

Parameter	Units	PAL	A10-027(S)-PZ	A10-029(P)-PZ	A10-029(S)-PZ	A10-034(S)-PZ	A10-035(S)-PZ	A10-036(P)-PZ
			10/9/2019	10/11/2019	10/15/2019	10/15/2019	10/11/2019	10/11/2019
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	**0.87 J**	**1.2**	1.0 U
1,2-Dichlorobenzene	ug/L	600	**3.1**	1.0 U	1.0 U	**2.0**	1.0 U	1.0 U
1,2-Dichloroethene (Total)	ug/L	70	**8.3**	2.0 U	2.0 U	**33.6**	**23.1**	2.0 U
1,4-Dichlorobenzene	ug/L	75	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	ug/L	5,600	10.0 U	**8.7 J**	10.0 U	10.0 U	10.0 U	10.0 U
Acetone	ug/L	14,000	10.0 U	**410 J**	10.0 U	**8.0 J**	10.0 U	33.8 U
Bromomethane	ug/L	7.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	810	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	5	**0.94 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100	1.0 U	1.0 U	1.0 U	**2.1**	1.0 U	1.0 U
Chloroform	ug/L	0.22	**2.1**	1.0 U	1.0 U	1.0 U	**0.76 J**	1.0 U
cis-1,2-Dichloroethene	ug/L	70	**8.3**	1.0 U	1.0 U	**33.1**	**23.1**	1.0 U
Methyl acetate	ug/L	20,000	5.0 U	5.0 U	**0.86 J**	5.0 U	5.0 U	5.0 U
Methyl-tert-butyl ether	ug/L	14	1.0 U	1.0 U	**1.4**	**1.3**	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	**44.8**	1.0 U	1.0 U	**160**	**285**	1.0 U
Toluene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100	1.0 U	1.0 U	1.0 U	**0.53 J**	1.0 U	1.0 U
Trichloroethene	ug/L	5	**218**	1.0 U	1.0 U	**134**	**1,670**	1.0 U
Vinyl chloride	ug/L	2	1.0 U	1.0 U	1.0 U	**5.8**	**0.59 J**	1.0 U

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

J: The positive result reported for this analyte is a quantitative estimate.

Table 2 - Parcel A10 CVOC Characterization
Summary of VOCs Detected in Groundwater

Parameter	Units	PAL	A10-036(S)-PZ	A10-037(P)-PZ	A10-037(S)-PZ	A10-038(P)-PZ	A10-038(S)-PZ	A10-039(P)-PZ
			10/10/2019	10/11/2019	10/10/2019	10/11/2019	10/11/2019	10/11/2019
1,1-Dichloroethene	ug/L	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (Total)	ug/L	70	**1.8 J**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,4-Dichlorobenzene	ug/L	75	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	ug/L	5,600	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Acetone	ug/L	14,000	10.0 U	**213**	10.0 U	**27.6**	10.0 U	**23.1**
Bromomethane	ug/L	7.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	810	1.0 U	1.0 U	1.0 U	**7.8**	1.0 U	1.0 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	ug/L	0.22	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	70	**1.8**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	ug/L	20,000	5.0 U	5.0 U	5.0 U	**2.3 J**	5.0 U	5.0 U
Methyl-tert-butyl ether	ug/L	14	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	**1.5**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.74 J**
trans-1,2-Dichloroethene	ug/L	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	5	**4.4**	1.0 U	**1.3**	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

J: The positive result reported for this analyte is a quantitative estimate.

Table 2 - Parcel A10 CVOC Characterization
Summary of VOCs Detected in Groundwater

Parameter	Units	PAL	A10-039(S)-PZ	A10-040(P)-PZ	A10-040(S)-PZ	A10-041(P)-PZ	A10-041(S)-PZ
			10/15/2019	10/11/2019	10/15/2019	10/10/2019	10/15/2019
1,1-Dichloroethene	ug/L	7	**1.8**	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (Total)	ug/L	70	**98.2**	2.0 U	2.0 U	2.0 U	2.0 U
1,4-Dichlorobenzene	ug/L	75	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (MEK)	ug/L	5,600	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Acetone	ug/L	14,000	**9.2 J**	**77.5**	10.0 U	10.0 U	10.0 U
Bromomethane	ug/L	7.5	1.0 U	1.0 U	1.0 U	**0.76 J**	1.0 U
Carbon disulfide	ug/L	810	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100	**0.62 J**	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	ug/L	0.22	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	70	**97.7**	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	ug/L	20,000	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methyl-tert-butyl ether	ug/L	14	**0.78 J**	1.0 U	**1.2**	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	**232**	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100	**0.50 J**	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	5	**663**	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2	**3.2**	1.0 U	1.0 U	1.0 U	1.0 U

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

J: The positive result reported for this analyte is a quantitative estimate.

Table 3 - A10-006 NAPL Delineation Area
Summary of VOCs Detected in Groundwater

Parameter	Units	PAL	A10-006A-PZ	A10-006B-PZ	A10-006F-PZ	A10-006H-PZ	A10-006I-PZ	A10-006J-PZ
			1/21/2020	1/21/2020	1/21/2020	1/21/2020	1/21/2020	1/21/2020
1,1-Dichloroethene	µg/L	7	1 U	1 U	**0.88 J**	1 U	1 U	1 U
1,2-Dichlorobenzene	µg/L	600	1 U	**2.1**	1 U	1 U	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	2 U	**1.9 J**	**2.6**	2 U	2 U	2 U
Acetone	µg/L	14,000	10 U	**7.3 J**	10 U	10 U	**11.7**	10 U
cis-1,2-Dichloroethene	µg/L	70	1 U	**1.9**	**2.6**	1 U	1 U	1 U
Isopropylbenzene	µg/L	450	**0.87 J**	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether (MTBE)	µg/L	14	1 U	**0.95 J**	**2.7**	**1.3**	1 U	**1.6**
Tetrachloroethene	µg/L	5	1 U	**31.8**	**39.1**	1 U	1 U	**2.3**
Trichloroethene	µg/L	5	1 U	**4**	**14.5**	1 U	1 U	**0.8 J**
Vinyl chloride	µg/L	2	1 U	1 U	**0.36 J**	1 U	1 U	1 U

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

All results are non-validated

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

J: The positive result reported for this analyte is a quantitative estimate.

Table 4 - Parcel A10 CVOC Characterization
Summary of VOCs Detected in Parcel A18 Groundwater

Parameter	Units	PAL	A18-002-PZ*	A18-008-PZ*	A18-009-PZ*	A18-011-PZ*	A18-013-PZ*	A18-014-PZ	A18-015-PZ*	A18-016-PZ	A18-017-PZ	SG06-PPM004*
			7/9/2020	7/7/2020	7/7/2020	7/9/2020	7/9/2020	7/8/2020	7/7/2020	7/8/2020	7/8/2020	7/23/2020
1,1-Dichloroethane	µg/L	2.7	1 U	**0.4 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	µg/L	7	**2.7**	1 U	1 U	1 U	1 U	1 U	1 U	**1.5**	1 U	1 U
1,2-Dichlorobenzene	µg/L	600	1 U	1 U	1 U	1 U	1 U	1 U	**9.4**	1 U	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	**36**	2 U	2 U	2 U	2 U	2 U	**4.3**	2 U	**1.5 J**	**167**
1,4-Dichlorobenzene	µg/L	75	1 U	1 U	1 U	1 U	1 U	1 U	**0.96 J**	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	**33.3**	1 U	1 U	1 U	1 U	1 U	**4.2**	1 U	**1.5**	**166**
Methyl tert-butyl ether (MTBE)	µg/L	14	**4.1**	**0.3 J**	1 U	1 U	1 U	1 U	**1.2**	1 U	1 U	1 U
Tetrachloroethene	µg/L	5	**6.3**	1 U	1 U	1 U	1 U	1 U	**57.5**	**1.3**	**14.8**	**2.8**
trans-1,2-Dichloroethene	µg/L	100	**2.8**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.65 J**
Trichloroethene	µg/L	5	**394**	1 U	1 U	1 U	1 U	1 U	**298**	**1**	**88**	**13.1**
Vinyl chloride	µg/L	2	**0.48 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1.1**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
*Indicates non-validated data
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.

Table 5 - Parcel A10 CVOC Characterization
Cumulative Vapor Intrusion Comparison

				A10-002(P)-PZ 10/11/2019		A10-002(S)-PZ 10/15/2019		A10-015(P)-PZ 10/11/2019		A10-015(S)-PZ 10/10/2019		A10-024(S)-PZ 10/11/2019		A10-025(S)-PZ 10/15/2019		A10-027(S)-PZ 10/9/2019		A10-029(P)-PZ 10/11/2019	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																			
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1.2	1.1E-07	1 U	0	1 U	0
1,4-Dioxane	SVOC		130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.94 J	5.2E-07	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	2.1	5.8E-07	1 U	0
Methyl tert-butyl ether	VOC		20,000	1 U	0	2.3	1.2E-09	1 U	0	1.7	8.5E-10	1 U	0	1 U	0	1 U	0	1 U	0
Naphthalene	SVOC		200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	VOC		25	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	18.6	7.4E-06	1 U	0	1 U	0
Tetrachloroethene	VOC		650	1 U	0	11.9	1.8E-07	1 U	0	8	1.2E-07	1 U	0	284	4.4E-06	44.8	6.9E-07	1 U	0
Trichloroethene	VOC		74	1 U	0	2.7	3.6E-07	1 U	0	5.3	7.2E-07	1 U	0	256	3.5E-05	218	2.9E-05	1 U	0
Cumulative Vapor Intrusion Cancer Risk					0		5E-07		0		8E-07		0		5E-05		3E-05		0
Non-Cancer Hazard																			
Tetrachloroethene	VOC	Nervous; Ocular	240	1 U	0	11.9	0.05	1 U	0	8	0.03	1 U	0	284	1	44.8	0.2	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		0		1		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	1 U	0	2.7	0.1	1 U	0	5.3	0.2	1 U	0	256	12	218	10	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		0		12		10		0

				A10-029(S)-PZ 10/15/2019		A10-034(S)-PZ 10/15/2019		A10-035(S)-PZ 10/11/2019		A10-036(P)-PZ 10/11/2019		A10-036(S)-PZ 10/10/2019		A10-037(P)-PZ 10/11/2019		A10-037(S)-PZ 10/10/2019		A10-038(P)-PZ 10/11/2019	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																			
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dioxane	SVOC		130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	0.76 J	2.1E-07	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	1.4	7.0E-10	1.3	6.5E-10	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Naphthalene	SVOC		200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	VOC		25	1 U	0	5.8	2.3E-06	0.59 J	2.4E-07	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Tetrachloroethene	VOC		650	1 U	0	160	2.5E-06	285	4.4E-06	1 U	0	1.5	2.3E-08	1 U	0	1 U	0	1 U	0
Trichloroethene	VOC		74	1 U	0	134	1.8E-05	1,670	2.3E-04	1 U	0	4.4	5.9E-07	1 U	0	1.3	1.8E-07	1 U	0
Cumulative Vapor Intrusion Cancer Risk					7E-10		2E-05		2E-04		0		6E-07		0		2E-07		0
Non-Cancer Hazard																			
Tetrachloroethene	VOC	Nervous; Ocular	240	1 U	0	160	0.7	285	1	1 U	0	1.5	0.006	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		1		1		0		0		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	1 U	0	134	6	1,670	76	1 U	0	4.4	0.2	1 U	0	1.3	0.06	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		6		76		0		0		0		0		0

Highlighted values indicate exceedances of the cumulative vapor intrusion crtieria: TCR>1E-05 or THI>1
Conc. = Concentration
NA indicates the parameter was not sampled
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.

Table 5 - Parcel A10 CVOC Characterization
Cumulative Vapor Intrusion Comparison

				A10-038(S)-PZ 10/11/2019		A10-039(P)-PZ 10/11/2019		A10-039(S)-PZ 10/15/2019		A10-040(P)-PZ 10/11/2019		A10-040(S)-PZ 10/15/2019		A10-041(P)-PZ 10/10/2019		A10-041(S)-PZ 10/15/2019		A18-002-PZ 7/9/2020		A18-008-PZ 7/7/2020	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																					
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.4 J	1.2E-08
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dioxane	SVOC		130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U	0	0.17	1.3E-11
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	1 U	0	1 U	0	0.78 J	3.9E-10	1 U	0	1.2	6.0E-10	1 U	0	1 U	0	4.1	2.1E-09	0.3 J	1.5E-10
Naphthalene	SVOC		200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.14	7.0E-09	0.1 U	0
Vinyl chloride	VOC		25	1 U	0	1 U	0	3.2	1.3E-06	1 U	0	1 U	0	1 U	0	1 U	0	0.48 J	1.9E-07	1 U	0
Tetrachloroethene	VOC		650	1 U	0	1 U	0	232	3.6E-06	1 U	0	1 U	0	1 U	0	1 U	0	6.3	9.7E-08	1 U	0
Trichloroethene	VOC		74	1 U	0	1 U	0	663	9.0E-05	1 U	0	1 U	0	1 U	0	1 U	0	394	5.3E-05	1 U	0
Cumulative Vapor Intrusion Cancer Risk					0		0		9E-05		0		6E-10		0		0		5E-05		1E-08
Non-Cancer Hazard																					
Tetrachloroethene	VOC	Nervous; Ocular	240	1 U	0	1 U	0	232	1	1 U	0	1 U	0	1 U	0	1 U	0	6.3	0.03	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		1		0		0		0		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	1 U	0	1 U	0	663	30	1 U	0	1 U	0	1 U	0	1 U	0	394	18	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		30		0		0		0		0		18		0

				A18-009-PZ 7/7/2020		A18-011-PZ 7/9/2020		A18-013-PZ 7/9/2020		A18-014-PZ 7/8/2020		A18-015-PZ 7/7/2020		A18-016-PZ 7/8/2020		A18-017-PZ 7/8/2020		SG06-PPM004 7/23/2020		A10-006A-PZ 1/21/2020	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																					
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	0.96 J	8.7E-08	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dioxane	SVOC		130,000	0.099 U	0	0.098 U	0	0.1 U	0	0.14	1.1E-11	0.12	9.2E-12	0.25	1.9E-11	0.15	1.2E-11	NA	NA	NA	NA
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	1 U	0	1 U	0	1 U	0	1 U	0	1.2	6.0E-10	1 U	0	1 U	0	1 U	0	1 U	0
Naphthalene	SVOC		200	0.099 U	0	0.17	8.5E-09	0.1 U	0	0.098 U	0	0.099 U	0	0.1 U	0	0.098 U	0	NA	NA	NA	NA
Vinyl chloride	VOC		25	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1.1	4.4E-07	1 U	0
Tetrachloroethene	VOC		650	1 U	0	1 U	0	1 U	0	1 U	0	57.5	8.8E-07	1.3	2.0E-08	14.8	2.3E-07	2.8	4.3E-08	1 U	0
Trichloroethene	VOC		74	1 U	0	1 U	0	1 U	0	1 U	0	298	4.0E-05	1	1.4E-07	88	1.2E-05	13.1	1.8E-06	1 U	0
Cumulative Vapor Intrusion Cancer Risk					0		9E-09		0		1E-11		4E-05		2E-07		1E-05		2E-06		0
Non-Cancer Hazard																					
Tetrachloroethene	VOC	Nervous; Ocular	240	1 U	0	1 U	0	1 U	0	1 U	0	57.5	0.24	1.3	0.005	14.8	0.06	2.8	0.01	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		0		0		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	1 U	0	1 U	0	1 U	0	1 U	0	298	14	1	0.05	88	4.0	13.1	0.6	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		14		0		4		1		0

Highlighted values indicate exceedances of the cumulative vapor intrusion crtieria: TCR>1E-05 or THI>1
Conc. = Concentration
NA indicates the parameter was not analyzed in the sample
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.

Table 5 - Parcel A10 CVOC Characterization
Cumulative Vapor Intrusion Comparison

				A10-006B-PZ 1/21/2020		A10-006F-PZ 1/21/2020		A10-006H-PZ 1/21/2020		A10-006I-PZ 1/21/2020		A10-006J-PZ 1/21/2020	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk													
1,1-Dichloroethane	VOC		330	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dioxane	SVOC		130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	0.95 J	4.8E-10	2.7	1.4E-09	1.3	6.5E-10	1 U	0	1.6	8.0E-10
Naphthalene	SVOC		200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	VOC		25	1 U	0	0.36 J	1.4E-07	1 U	0	1 U	0	1 U	0
Tetrachloroethene	VOC		650	31.8	4.9E-07	39.1	6.0E-07	1 U	0	1 U	0	2.3	3.5E-08
Trichloroethene	VOC		74	4	5.4E-07	14.5	2.0E-06	1 U	0	1 U	0	0.8 J	1.1E-07
Cumulative Vapor Intrusion Cancer Risk					1E-06		3E-06		7E-10		0		1E-07
Non-Cancer Hazard													
Tetrachloroethene	VOC	Nervous; Ocular	240	31.8	0.1	39.1	0.2	1 U	0	1 U	0	2.3	0.01
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	4	0.2	14.5	0.7	1 U	0	1 U	0	0.8 J	0.04
Cumulative Vapor Intrusion Non-Cancer Hazard					0		1		0		0		0

Highlighted values indicate exceedances of the cumulative vapor intrusion crtieria: TCR>1E-05 or THI>1
Conc. = Concentration
NA indicates the parameter was not analyzed in the sample
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
J: The positive result reported for this analyte is a quantitative estimate.

Attachment 1

A (north)

A' (south)

Elevation (feet)

A18-015-PZ

A10-027-/PZ

A10-035-PZ

SW-05-CPT/A10-025-SB

A10-037-PZ

A10-039-PZ

A10-006F-PZ

A10-041-PZ

20 15 10 5 0 -5 -10 -15 -20 -25 -30 -35 -40

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700

DISTANCE (feet)

Tradepoint Atlantic
Sparrows Point, MD
ARM Project 20010214

ARM Group LLC
Engineers and Scientists

Attachment 1

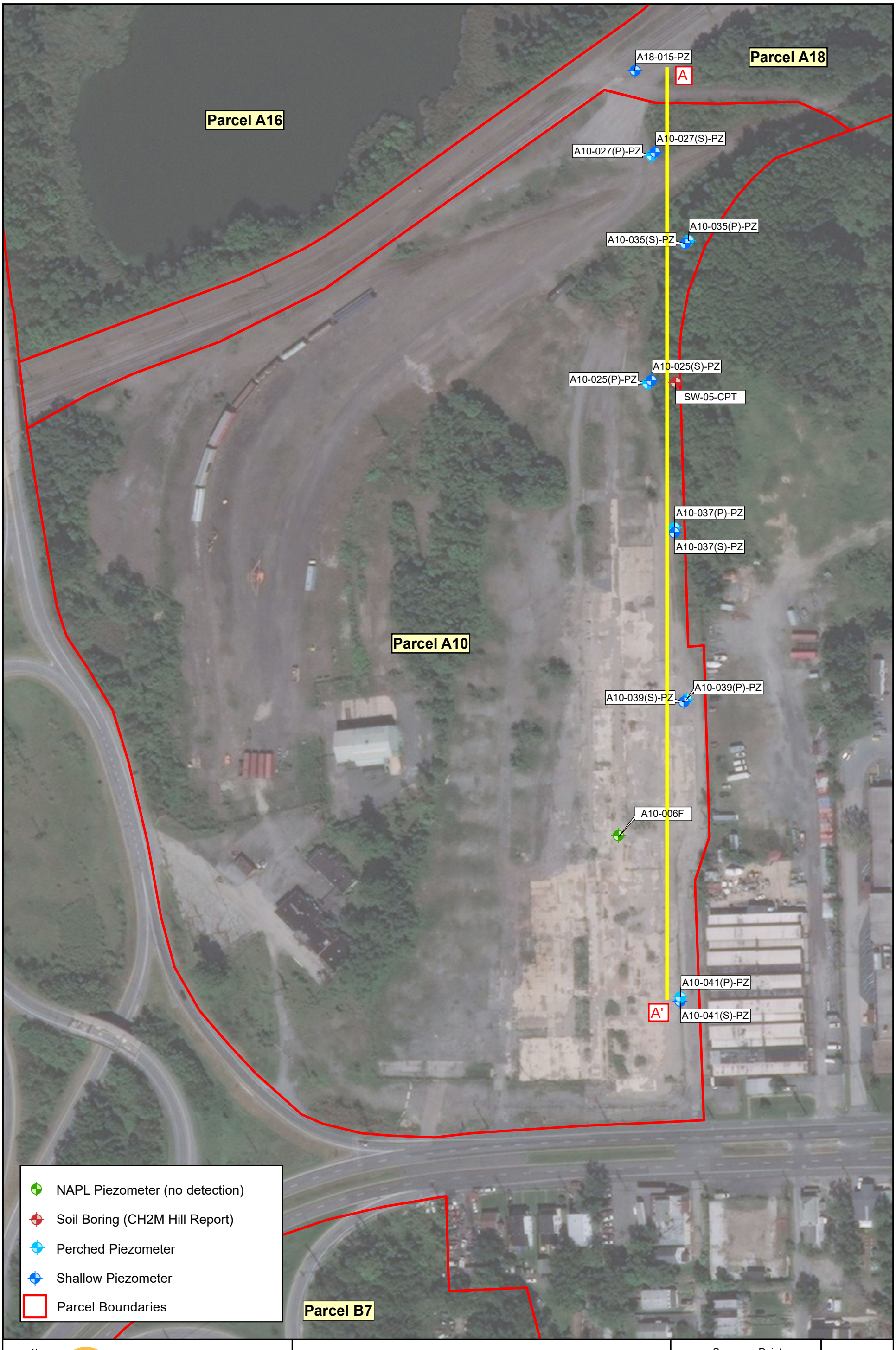
Geologic Cross section

Section A-A'

LEGEND

- Fill - Slag Gravel
- Native Sand
- Native Silt/Clay
- Shallow Well Groundwater Elevation Perched
- Well Groundwater Elevation

Cross-section is vertically exaggerated.
Groundwater levels measured November 6, 2019 and August 10, 2020



ARM Group LLC
Engineers and Scientists

Parcel A10 NAPL & CVOC Characterization: Cross Section Location

July 14, 2021

Sparrows Point
ARM Project 20010110

Tradepoint Atlantic
Baltimore County, MD

Figure
1

Attachment 2

Parcel A10 CVOC Investigation Piezometer Construction Logs

ARM Group LLC
Engineers and Scientists

Boring ID: A10-002-SB/PZ

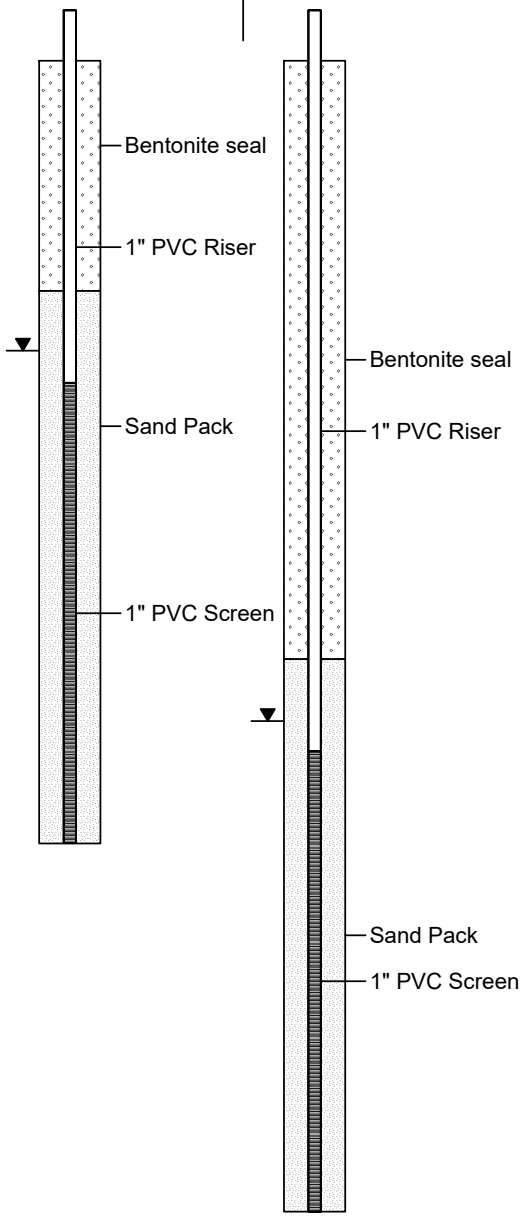
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin / L. Glumac (S)
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese / T. Niblett (S)
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 07/06/2016
Piezometer Installation Date	: 09/19/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: 9.20 / 17.57 (S)
48-Hr DTW (ft TOC)	: 9.50 / 17.35 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-	A10-002-SB-1	(0-0.5') CONCRETE		
		-		(0.5-6') CLAY, medium, brown, dry, medium plasticity, cohesive	CH	N / E (US ft) 571161.93 / 1464918.46
	20	-				
		-				571153.14 / 1464909.62 (S)
		0.0	A10-002-SB-5			
5		-				
		-		(6-7.9') SANDY CLAY, medium, reddish brown, dry, low plasticity, cohesive	SC	
	60	0.0				
		0.0		(7.9-8.8') SAND, fine, dense, reddish tan, moist, no plasticity, no cohesion	SP	
		0.0	A10-002-SB-10			
10		0.0		(8.8-16.4') CLAY, hard, light brown with light gray, dry, medium plasticity, cohesive	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
15		0.0				
		0.0		(16.4-17.9') SANDY CLAY, medium, light brown with light gray, dry, low plasticity, cohesive	CL	
	100	0.0				
		0.0		(17.9-19.2') SANDY CLAY, soft, dark gray, moist, medium plasticity, cohesive	CH	
		0.0				
20		-		(19.2-21') SILTY SAND, dense, dark gray, moist, no plasticity, no cohesion	SM	
		-				
	82	-		(21-25') SAND, very fine, dense, wet, reddish brown (21-22.6' bgs), dark red (22.6-22.9' bgs), reddish brown (22.9-23.2' bgs), dark red (23.2-23.6' bgs), reddish brown (23.6-24.3' bgs), light brown and pale brown (24.3-24.8' bgs), light gray (24.8-25' bgs), wet, no plasticity, no cohesion	SP	Wet at 19' bgs
		-				
25		-				



Boring terminated at 25' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.20' / 3.00' (S)
Riser: 0 - 7' bgs / 0 - 15' bgs (S)
Screen: 7 - 17' bgs / 15 - 25' bgs (S) [Slot Size: 0.010"]
Sand Pack: 5 - 17' bgs / 13 - 25' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 5' bgs / 0 - 13' bgs (S) [chips/granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-015-SB/PZ

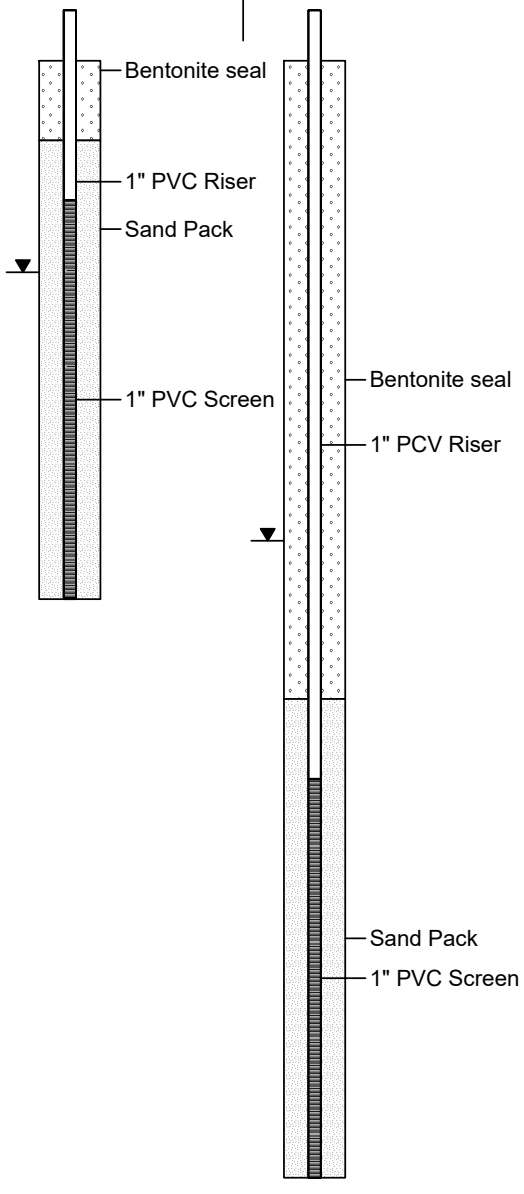
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin / L. Glumac (S)
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: D.Marchese/K.Pumphrey(S)
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 07/11/2016
Piezometer Installation Date	: 09/16/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: 9.1 / 14.33 (S)
48-Hr DTW (ft TOC)	: 9.1 / 14.11 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	80	1.8	A10-015-SB-1	(0-2.6') SILT and SAND, loose, dark brown to black, dry, no plasticity, no cohesion	SW	N / E (US ft) 571116.39 / 1464272.67
		11.0				
		5.4				
		0.0		(2.6-5') CLAY, medium to hard, black then tan/brown at 4' bgs, dry, low plasticity, cohesive	CL	571065.08 / 1464412.26 (S)
		0.0	A10-015-SB-5			
5	100	5.6		(5-7.5') CLAY, medium to hard, black, dry, medium plasticity, cohesive	CH	
		0.2				
		0.0		(7.5-10') SAND, very fine, very dense, yellowish red and tan, moist, no plasticity, no cohesion	SP	
		0.0				
		0.0				
10	100	0.0		(10-19.9') CLAY, soft to medium, pale brown and gray (10-13.5' bgs) then gray (13.5-15' bgs) then dark gray (15-19.9' bgs), dry, medium plasticity, cohesive	CH	
		0.0				
		0.0				
		0.0				
15	100	0.0				
		0.0				
		0.0				
		0.0				
20	100	-		(19.9-28') SAND, very fine, very dense, pale brown with red (23-24' bgs), wet, no plastity, no cohesion	SP	Wet at 20' bgs
		-				
		-				
		-				
25	0	-				
		-				
		-				
		-				
30				End of Boring		



Boring terminated at 28' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.80' / 2.09' (S)
Riser: 0 - 3.5' bgs / 0 - 18' bgs (S)
Screen: 3.5 - 13.5' bgs / 18 - 28' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 13.5' bgs / 16 - 28' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs / 0 - 16' bgs (S) [chips/granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-024-SB/PZ

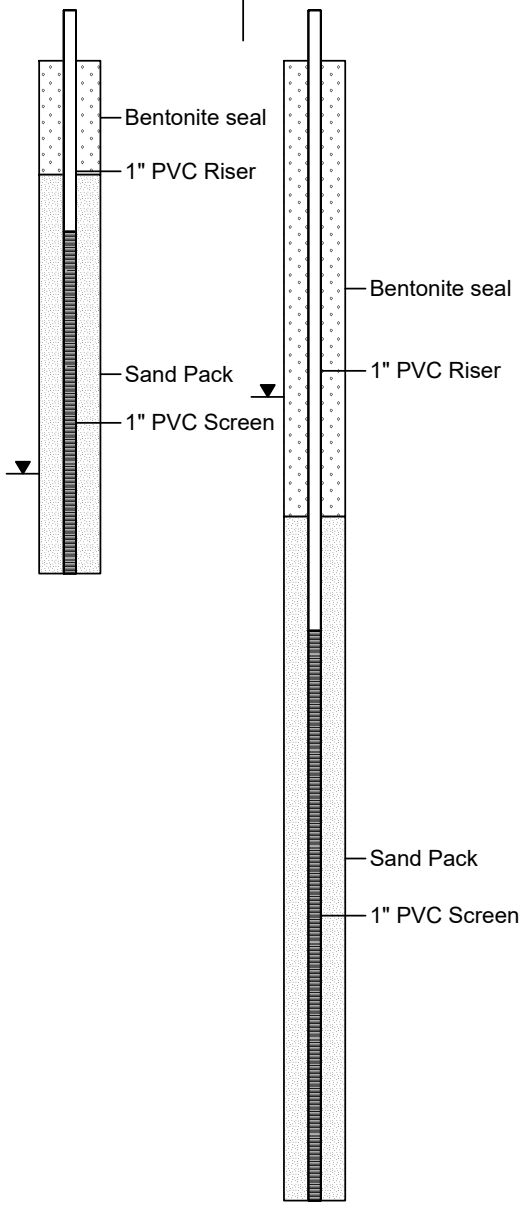
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac (P) / L. Perrin
Checked by	: W. Mader P.G., CPSS
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/13/2019 (P)
Piezometer Installation Date	: 07/07/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 11.8
48-Hr DTW (ft TOC)	: 9.5 (P) / 8.8

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1.9') ORGANIC SILT, soft, dark brown, moist, non plastic, non cohesive	OL	Small roots, some small wood fragments
		2.6	A10-024-SB-1			
	70	1.3		(1.9-2.5') SILTY SAND with small GRAVEL, loose, brown to dark brown and gray, dry, non plastic, non cohesive	SM	
		1.3			ML	Large wood fragments throughout
		0.3	A10-024-SB-5	(2.5-5') SILT, soft, black, moist, non plastic, non cohesive		
5		-		(5-7') WOOD fragments with CLAY, loose, dark brown, very moist, non plastic, non cohesive	CL	
		0.3				
	90	0.1		(7-8') SANDY CLAY, very soft, yellowish brown, very moist to wet, high plasticity, cohesive	CL	
		0.0		(8-10') CLAY, soft, yellowish brown, wet, high plasticity, cohesive	CL	
		0.0				
10		-		(10-15') SAND, fine to medium, dense, reddish yellow, wet, non plastic, non cohesive	SW	Wet at 11' bgs
		-				
	80	-				
		-				
		-				
15		-		(15-18') SANDY CLAY, soft, light gray, moist, low plasticity, cohesive	CL	N / E (US ft) 571653.78 / 1464643.92 (P)
		-				
	50	-				571659.56 / 1464636.91
		-		(18-20') SAND, fine, dense, reddish yellow and pale brown, wet, non plastic, non cohesive	SP	
		-				
20				End of Boring		



Boring terminated at 20' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.25' (P) / 2.90'
Riser: 0 - 3' bgs (P) / 0 - 10' bgs
Screen: 3 - 9' bgs (P) / 10 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 9' bgs (P) / 8 - 20' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs (P) / 0 - 8' bgs [chips/granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-025-SB/PZ

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac (P) / L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/13/2019 (P)
Piezometer Installation Date	: 07/07/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 10.7
48-Hr DTW (ft TOC)	: Dry (P) / 11.3

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		63.6	A10-025-SB-1	(0-0.7') ORGANIC SILT, soft, very dark, non plastic, non cohesive	OL	Tufts of grass and roots
		56.7		(0.7-1.5') SLAG GRAVEL, loose, gray, dry, non plastic, non cohesive	GP/SP	
	94	38.8		(1.5-2.5') SILT, very firm, reddish yellow with pale brown mottling, dry, low plasticity, cohesive	ML	
		13.9	A10-025-SB-4	(2.5-5') SAND grading to SANDY CLAY, fine, very firm, reddish yellow, dry to moist, non plastic grading to low plasticity, non cohesive grading to cohesive	SP-CL	
5		5.6				
		0.2				
		0.2		(5-10') SILTY CLAY, very firm to soft, reddish yellow with pale brown mottling, dry to wet, cohesive, medium plasticity	CL	
	100	0.3				
		0.0				
		0.0	A10-025-SB-10			
10		0.0		(10-15') CLAY, very soft, pale brown, very moist to wet, cohesive, high plasticity	CL	
		0.0				
	100	0.0				
		0.0				
		0.0				
15		-		(15-20') SAND, fine to medium, medium dense, reddish yellow, wet, non plastic, non cohesive	SW	Wet at 15' bgs
		-				N / E (US ft) 571908.55/ 1464908.75 (P)
	100	-				571918.14 / 1464914.72
		-				
		-				
20				End of Boring		

A10-025(P)-PZ: Bentonite seal; 1" PVC Riser; Sand Pack; 1" PVC Screen

A10-025-PZ: Bentonite seal; 1" PVC Riser; Sand Pack; 1" PCV Screen

Boring terminated at 20' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.60' (P) / 2.8'
Riser: 0 - 3' bgs (P) / 0 - 10' bgs
Screen: 3 - 10' bgs (P) / 10 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 10' bgs (P) / 8 - 20' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 8' bgs [chips/granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-027-SB/PZ

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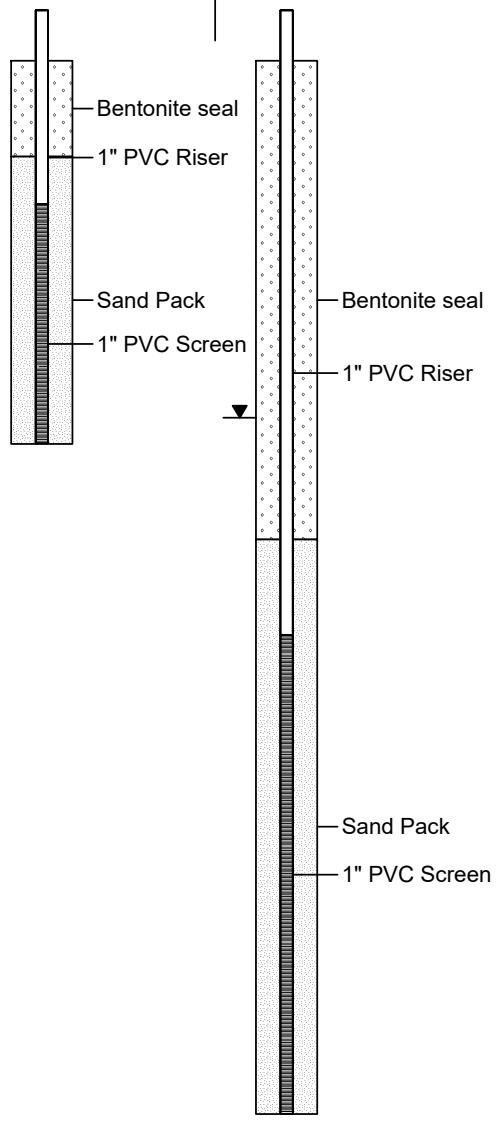
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac (P) / L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/13/2019 (P)
Piezometer Installation Date	: 07/08/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 11.40
48-Hr DTW (ft TOC)	: Dry (P) / 11.26

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-	A10-027-SB-1	(0-0.5') ORGANIC SILT, soft, brown, dry, non plastic, non cohesive	OL	Abundant very small roots
		-				
	60	2.1		(0.5-4') SILT with trace SAND, soft, brown grading to dark brown, dry, non plastic, non cohesive	ML	
		97.0	A10-027-SB-4			
5		0.1		(4-5') CLAY, soft, yellowish brown, moist, medium plasticity, cohesive	CL	
		0.3		(5-6') SAND with CLAY, fine to medium, medium dense, brownish yellow, moist, non plastic, non cohesive	SC	
		0.6				
	100	6.2		(6-10') CLAY, very firm to firm, brownish yellow with reddish yellow mottling, moist, high plasticity, cohesive	CL	
		0.5				
		0.2				
10		-		(10-15') CLAY with trace SAND, soft to very soft, brownish yellow (10-14.8' bgs), then light gray (14.8-15' bgs), moist, to very moist at 12.5' bgs, high plasticity, cohesive	CL	
		-				
	100	-				
		-				
		-				
15		-		(15-16.2') SAND, fine, loose, brown, wet, non plastic, non cohesive	SP	Wet at 15' bgs
		-			CL	
		-		(16.2-16.9') SANDY CLAY, soft, light gray, wet, medium plasticity, cohesive	SW	N / E (US ft) 572283.09 / 1464917.23 (P)
	80	-		(16.9-20') SAND, fine to medium, medium dense, yellowish red to reddish yellow, wet, non plastic, non cohesive		572288.37 / 1464921.09
20		-				
		-		(20-22') Apparent heaving sand, no sleeve collected, drillers advanced to 22' and set piezometer		
		-		End of Boring		
25						



Boring terminated at 22' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 1.97' (P) / 3.80'
Riser: 0 - 3' bgs (P) / 0 - 12' bgs
Screen: 3 - 8' bgs (P) / 12 - 22' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 8' bgs (P) / 10 - 22' bgs [Grain Size: WG #2]
Bentonite Seal: 0-2' bgs (P) [chips] / 0-10' bgs [chips/granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-029-SB/PZ

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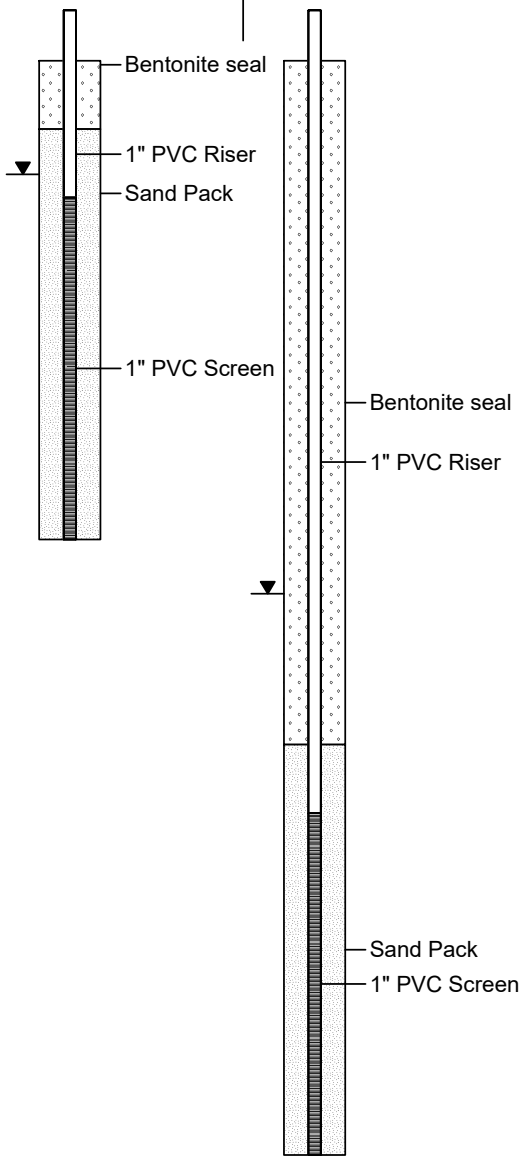
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin / T. Van Ness (S)
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 07/12/2016
Piezometer Installation Date	: 09/25/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: 7.27 / 18.95 (S)
48-Hr DTW (ft TOC)	: 6.82 / 18.90 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-	A10-029-SB-1	(0-0.5') ASPHALT	NA	
	70	5.5		(0.5-2.8') SAND, fine, medium, yellowish red, dry, no plasticity, no cohesion	SP	
		0.1				
		0.0	A10-029-SB-4	(2.8-3.1') SANDY CLAY, hard, dark gray to brown, dry, medium plasticity, cohesive, with brown CLAY from 3.1-3.5' bgs	SC	
5		0.0				
		0.0		(5.5-7.2') CLAYEY SAND, medium, brownish gray, moist, no plasticity, no cohesion	SC	
	72	-			SP	
		0.0		(7.2-10.3') SAND, dense, grayish brown grading to yellowish red, wet, no plasticity, no cohesion		
		0.0				
10		0.0				
		0.0		(10.3-11.5') SANDY CLAY, hard, yellowish red, dry, high plasticity, cohesive	SC	
	100	0.0			CH	
		0.0		(11.5-12.8') CLAY, medium to soft, yellowish red grading to gray, dry, high plasticity, cohesive	SC	
		0.0				
15		0.0				
		0.0		(12.8-15.5') SANDY CLAY, hard, gray with yellowish red mottling, dry, high plasticity, cohesive	CH	
	100	0.0				
		0.0		(15.5-22.5') CLAY, medium, gray grading to dark gray, moist, high plasticity, cohesive		
		0.0				
20		0.0				
		0.0				
	100	0.0				
		0.0		(22.5-24.8') SANDY CLAY, medium to hard, dark gray, moist, medium plasticity, cohesive	SC	
		0.0				
25		-		(24.8-32') SAND with GRAVEL, dense, pale brown, wet, no plasticity, no cohesion	SW	Wet at 24.8' bgs
	0	-				
		-				
		-				
30		-				
	0	-				
		-				
				End of Boring		
35						



N / E (US ft)
570739.81 / 1464684.22 (P)

570731.74 / 1464689.15

Boring terminated at 32' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.50' / 3.31' (S)
Riser: 0 - 4' bgs / 0 - 22' bgs (S)
Screen: 4 - 14' bgs / 22 - 32' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 14' bgs / 20 - 32' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs / 0 - 20' bgs (S) [granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-034-SB/PZ

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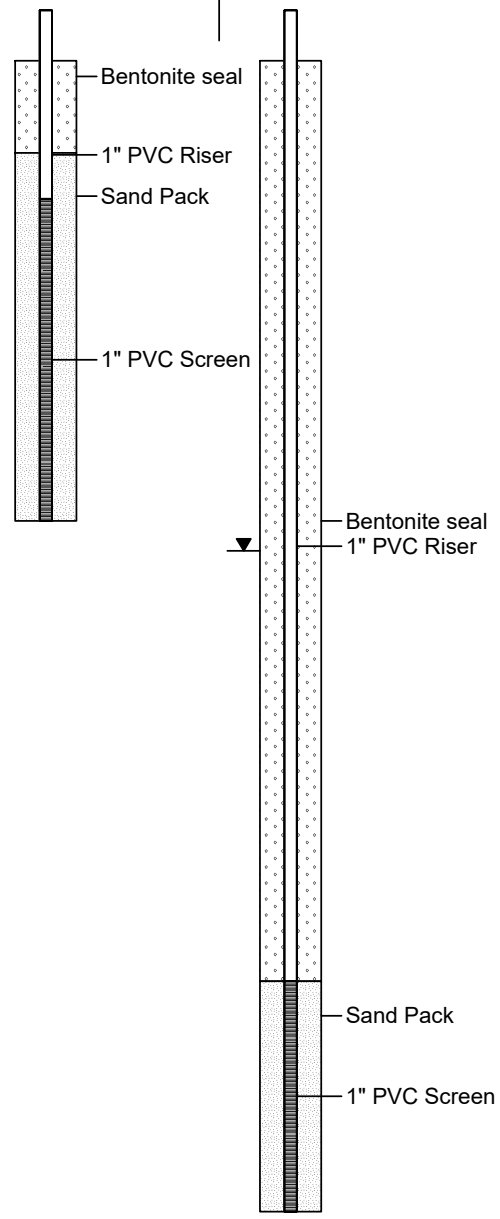
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac (P) / L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/13/2019 (P)
Piezometer Installation Date	: 07/07/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 13.42
48-Hr DTW (ft TOC)	: Dry (P) / 13.65

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-	No Samples Collected	(0-3.1') ASPHALT, loose, gray, dry, non plastic, non cohesive	-	N / E (US ft) 571282.94 / 1464800.33 (P) 571289.59 / 1464806.40
	40	-				
		3.5		(3.1-4') SLAG GRAVEL and SAND, loose, light gray and brown, dry, non plastic, non cohesive	GW	
5		3.7		(4-7.1') SANDY SILT, soft, dark brown, moist, non plastic, non cohesive	ML	
		-				
		-				
	60	0.3		(7.1-8') CLAY, very soft, brown, very moist to wet, medium plasticity, cohesive	CL	Very saturated
		0.3				
		0.3		(8-12') CLAY, very firm, yellowish brown and light gray mottling, dry, medium plasticity, cohesive	CL	
10		0.0				
		0.0				
	100	0.0		(12-13') CLAY, very soft, yellowish brown with trace reddish yellow, very moist to wet, medium plasticity, cohesive	CL	
		0.0			CL	
		0.0		(13-15') CLAY, very firm, yellowish brown and light gray mottling, dry, medium plasticity, cohesive	CL	
15		0.0				
		0.0		(15-17') CLAY, soft, yellowish brown, moist, medium plasticity, cohesive		
	100	0.0		(17-19') CLAY, very soft, yellowish brown, very moist to wet, high plasticity, cohesive	CL	
		0.0				
		0.0		(19-20') SANDY CLAY, very soft, very moist to wet, high plasticity, cohesive	CL	Wet at 19' bgs
20		-		(20-25') No recovery due to apparent heaving sand; drillers advanced to 25' and installed piezometer.		
	0	-				
		-				
		-				
25				End of Boring		



Boring terminated at 25' bgs due to due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.74' (P) / 3.0'
Riser: 0 - 3' bgs (P) / 0 - 20' bgs
Screen: 3 - 10' bgs (P) / 20 - 25' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 10' bgs (P) / 20 - 25' bgs [Grain Size: prepack]
Bentonite Seal: 0-2' bgs (P) [chips] / 0-20' bgs [chips (0-15' bgs), sleeve (15-20' bgs)]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-035-SB/PZ

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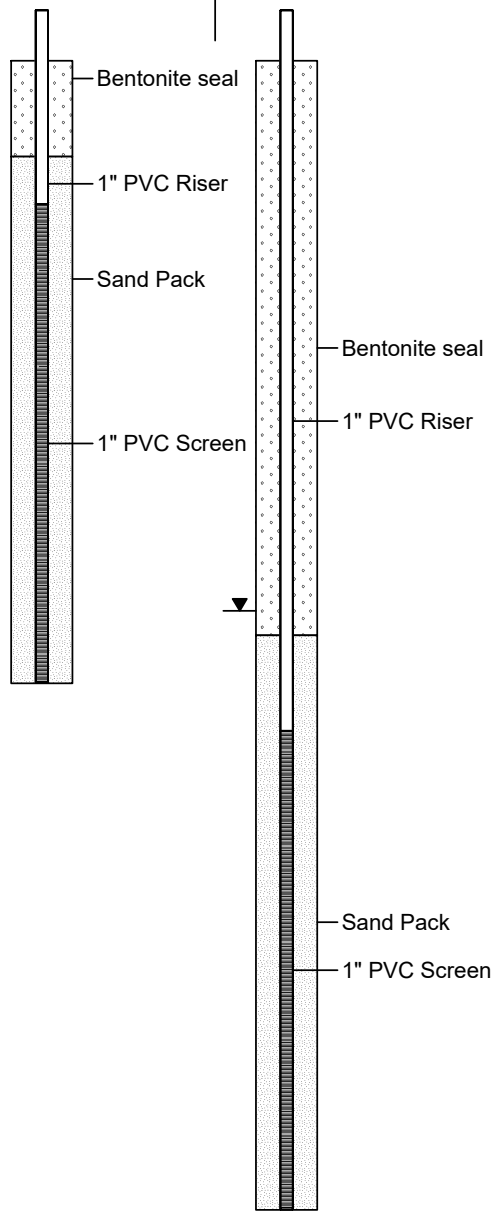
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: T. Van Ness
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/25/2019 (P)
Piezometer Installation Date	: 09/25/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 14.37 (S)
48-Hr DTW (ft TOC)	: Dry (P) / 14.36 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-	No Samples Collected	(0-3.8') CLAYEY SILT, hard, brown to light brown, dry, no plasticity, no cohesion	SM
	60	0.1			
		0.0			
		0.0		(3.8-5.1') SAND, dense, tan, dry then moist at 4.2' bgs, no plasticity, no cohesion	SP
5		0.1		(5.1-6.3') CLAY, hard, light gray, dry, low plasticity, cohesive	CL
		0.0		(6.3-15') SANDY CLAY, medium to soft grading to soft, gray, dry then moist at 14.5' bgs, high plasticity, cohesive	
	100	0.0			
		0.1			
10		0.1			SC
		0.1			
	100	0.1			
		0.1			
		0.1			
15		0.1		(15-17.3') SANDY SILT, soft, gray, moist, no plasticity, no cohesion	SM
		0.1			
	96	0.2		(17.3-24') SAND, medium, yellowish red to light brown, wet, no plasticity, no cohesion	
		0.1			
		0.2			
20		-			SP
	0	-			
		-			
		-			
				End of Boring	
25					



REMARKS

N / E (US ft)
572139.03 / 1464952.83 (P)

572136.01 / 1464951.49 (S)

Wet at 17.3' bgs

Boring terminated at 24' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.48' (P) / 2.87' (S)
Riser: 0 - 3' bgs (P) / 0 - 14' bgs (S)
Screen: 3 - 13' bgs (P) / 14 - 24' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs (P) / 12 - 24' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 12' bgs (S) [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

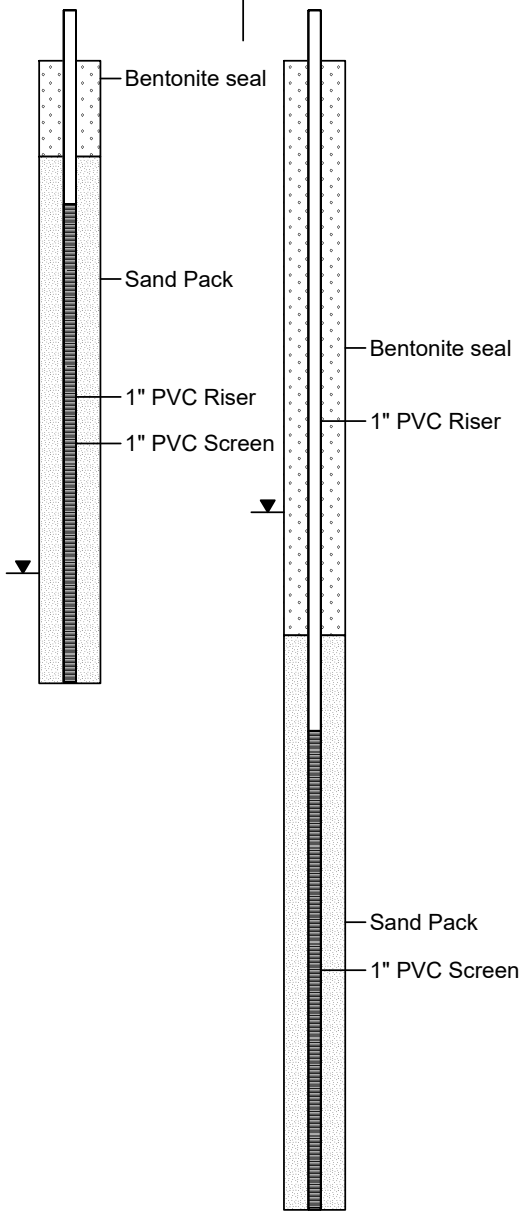
Boring ID: A10-036-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/13/2019 (P)
Piezometer Installation Date	: 09/13/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 12.81 (S)
48-Hr DTW (ft TOC)	: 12.83 (P) / 12.47 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-	No Samples Collected	(0-1') SILT and SAND, soft, brown, dry, no plasticity, cohesion	ML
		-		(1-6.7') GRAVEL and SAND, loose, light brown and light gray, dry, no plasticity, no cohesion	GW
	48	0.5			
		4.1			
5		3.8			
		-			
		2.4			
	80	0.6		(6.7-7.2') SILT and SAND, soft, brown, dry, no plasticity, cohesion	ML
		0.7		(7.2-11') SANDY CLAY, medium to soft, light brown to pale brown, moist, low plasticity, cohesive	SC
		0.2			
10		0.0			
		0.0		(11-15.5') CLAY, hard, yellowish red and light brown, dry, high plasticity, cohesive	CH
	100	0.0			
		0.0			
		0.0			
15		0.0			
		0.0		(15.5-17.3') SANDY CLAY, medium to soft, light brown to pale brown, moist, low plasticity, cohesive	SC
	78	0.0		(17.3-24') SAND, very fine, very dense, reddish yellow, wet, no plasticity, no cohesion	SP
		0.0			
		0.0			
20		-			
	0	-			
		-			
		-		End of Boring	
25					



REMARKS

N / E (US ft)
572107.59 / 1464661.93 (P)

572102.96 / 1464655.83 (S)

Wet at 17' bgs

Boring terminated at 24' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.12' bgs (P) / 3.04' (S)
Riser: 0 - 3' bgs (P) / 0 - 14' bgs (S)
Screen: 3 - 13' bgs (P) / 14 - 24' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs (P) / 12 - 24' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 12' bgs (S) [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-037-SB/PZ

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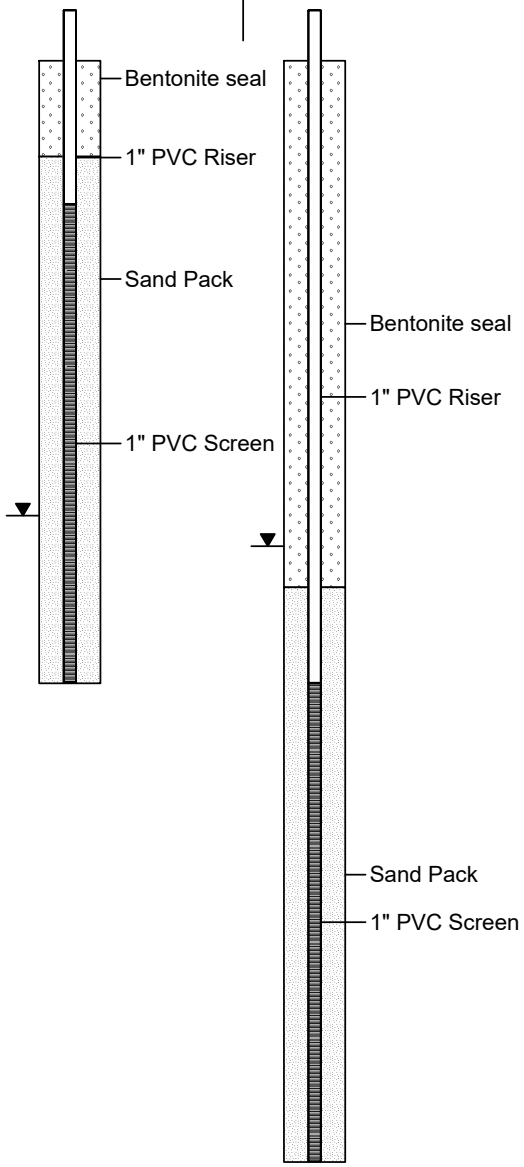
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Tim Niblett
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/19/2019 (P)
Piezometer Installation Date	: 09/19/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 13.38 (S)
48-Hr DTW (ft TOC)	: 11.12 (P) / 12.34 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-	No Samples Collected	(0-0.25') SILT, soft, brownish gray, dry, no plasticity, no cohesion	ML
	40	-		(0.25-6.25') SLAG, SAND and GRAVEL-sized, medium, black, dry, then moist at 6' bgs, no plasticity, no cohesion	GW
		0.0			
		0.0			
5		-			
		0.0		(6.25-7.4') SANDY CLAY, medium, black and dark gray, moist, low plasticity, cohesive	CL
	80	0.0			CL
		0.0		(7.4-7.7') SANDY CLAY, very soft, black and dark gray with yellowish red mottling, dry, low plasticity, cohesive	
		0.0			
10		0.0		(7.7-12.3) SANDY CLAY, hard to medium, then soft to medium (11.2-12.3' bgs), brown to tan, moist, low plasticity, cohesive	CL
		0.0			
	100	0.0		(12.3-16') SANDY CLAY, medium to hard, reddish brown, then gray (15.5-16' bgs), moist, low plasticity, cohesive	CL
		0.0			
15		0.0			
		0.0			
	90	0.0		(16-23') SAND, fine, dense, pinkish white (16-18.5' bgs), then pinkish white to reddish yellow (18.5-19' bgs), then reddish yellow and brown, wet, no plasticity, no cohesion	SP
		0.0			
20		0.0			
	0	-			
		-			
		-		End of Boring	
25					



REMARKS

N / E (US ft)
571671.56 / 1464951.36 (P)

571664.93 / 1464951.87 (S)

Wet at 16' bgs

Boring terminated at 23' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 1.60' (P) / 2.20' (S)
Riser: 0 - 3' bgs (P) / 0 - 13' bgs (S)
Screen: 3 - 13' bgs (P) / 13 - 23' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs (P) / 11 - 23' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 11' bgs (S) [chips/granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-038-SB/PZ

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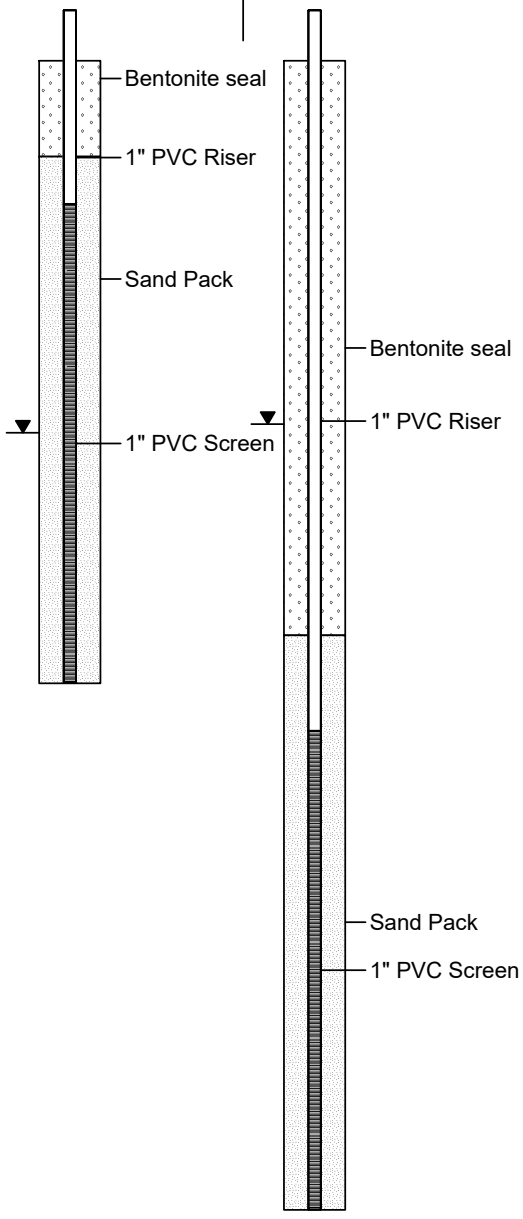
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/13/2019 (P)
Piezometer Installation Date	: 09/13/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 10.63 (S)
48-Hr DTW (ft TOC)	: 10.13 (P) / 10.35 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-	No Samples Collected	(0-0.5') Non-native fill material	
		-		(0.5-5') SILT and SAND, loose, black and dark brown, dry, no plasticity, no cohesion	SM
	52	0.0			
		1.3			
5		0.0			
		-		(5-10') SANDY CLAY, soft, light brown to light gray, moist, low plasticity, cohesive	SC
	100	0.0			
		0.0			
		0.0			
10		0.0		(10-11.3') GRAVEL and SAND, medium, black, wet, no plasticity, no cohesion	GW
		0.0		(11.3-12') SANDY CLAY, soft, light gray, moist, low plasticity, cohesive	SC
	92	0.0		(12-17') CLAY, hard, gray, dry, low plasticity, cohesive	CL
		0.0			
15		0.0			
		0.0			
	80	0.0		(17-24') SAND, very fine, very dense, reddish yellow and very pale brown, wet, no plasticity, no cohesion	SP
		0.0			
20		0.0			
	0	-			
		-			
		-			
		-		End of Boring	
25					



REMARKS

N / E (US ft)
571519.33 / 1464451.52 (P)

571521.14 / 1464455.47 (S)

Wet at 17' bgs

Boring terminated at 24' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.36' (P) / 2.76' (S)
Riser: 0 - 3' bgs (P) / 0 - 14' bgs (S)
Screen: 3 - 13' bgs (P) / 14 - 24' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs (P) / 12 - 24' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 12' bgs (S) [chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-039-SB/PZ

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: T. Van Ness
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/25/2019 (P)
Piezometer Installation Date	: 09/25/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: Dry (P) / 13.48 (S)
48-Hr DTW (ft TOC)	: 11.18 (P) / 13.45 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-	No Samples Collected	(0-1') CONCRETE	NA
	82	0.2		(1-2.9') SANDY CLAY, hard, gray to light brown, dry, low plasticity, cohesive	SC
		0.1			
		4.3		(2.9-4.5') CLAY, hard, dry, reddish brown, dry, hight plasticity, cohesive	CH
		0.0			
5		-		(4.5-6') CLAYEY SILT, medium, gray to light brown, moist, no plasticity, no cohesion	SM
		-		(6-7.5') SILTY CLAY, soft, gray to light brown, moist, medium plasticity, cohesive	
	56	0.0			
		0.0		(7.5-10.5') SANDY CLAY, hard to very hard, yellowish red, dry, high plasticity, cohesive	SC
		0.0			
10		-			
		0.0		(10.5-15') SANDY CLAY, medium to hard grading to very hard, brown grading to reddish brown, dry but moist from 11.8-12.2' bgs, high plasticity, cohesive	SC
	76	0.0			
		0.0			
		-			
15		-		(15-17.5') SANDY CLAY, medium to soft, light brown to gray, moist, low plasticity, cohesive	SC
		-			
	84	-		(17.5-24') SAND, fine, dense, gray to light brown (17.5-18' bgs), then brownish red (18-18.7' bgs), then tan to light brown (18.7-20' bgs), wet, no plasticity, no cohesion	SP
		-			
20		-			
	0	-			
		-			
		-			
		End of Boring			
25					

A10-039(P)-PZ: Bentonite seal; 1" PVC Riser; Sand Pack; 1" PVC Screen

A10-039(S)-PZ: Bentonite seal; 1" PVC Riser; Sand Pack; 1" PVC Screen

REMARKS:
N / E (US ft)
571395.21 / 1464973.61 (P)
571389.28 / 1464971.72 (S)
Wet at 17.5' bgs

Boring terminated at 24' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.15' (P) / 3.02' (S)
Riser: 0 - 3' bgs (P) / 0 - 14' bgs (S)
Screen: 3 - 13' bgs (P) / 14 - 24' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs (P) / 12 - 24' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 12' bgs (S) [granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-040-SB/PZ

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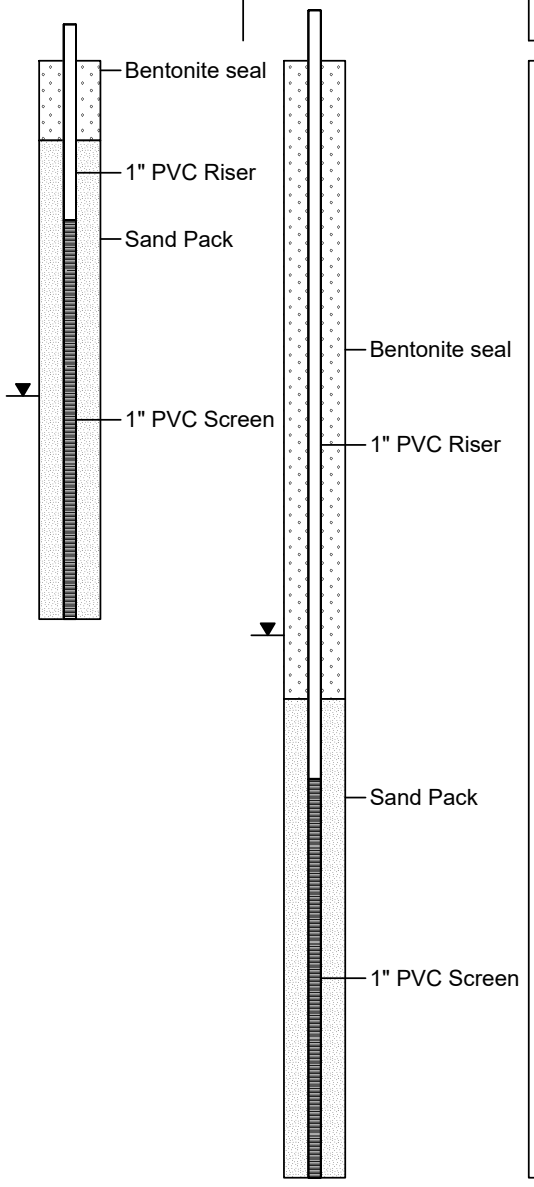
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Tim Niblett
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/19/2019 (P)
Piezometer Installation Date	: 09/19/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: 10.84 (P) / 16.71 (S)
48-Hr DTW (ft TOC)	: 9.13 (P) / 16.75 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		0.1	No Samples Collected	(0-0.5') ASPHALT	
	84	0.6		(0.5-7.3') SANDY CLAY, hard, yellowish red with light gray mottling, dry, low plasticity, cohesive	SC
		0.1			
		1.4			
5		1.4			
		0.0			
		0.0			
	100	0.0		(7.3-9') SAND, very fine, dense, light gray, wet, no plasticity, no cohesion	SP
		0.0			
		0.0		(9-21') CLAY, soft, then medium at 18.5' bgs, then soft at 20' bgs, light gray and pale brown grading to dark gray, dry, medium plasticity, cohesive	CH
10		0.0			
		0.0			
	100	0.0			
		0.0			
		0.0			
15		0.0			
		0.0			
	100	0.0			
		0.0			
		0.0			
20		0.0			
		0.0		(21-21.5') SILTY SAND, dense, dark gray, wet, no plasticity, no cohesion	SM
	100	0.0		(21.5-28') SAND, fine, very dense, dark gray, wet, no plasticity, no cohesion	SP
		0.0			
25		0.0			
	0	-			
		-			
		-			
				End of Boring	
30					



REMARKS

N / E (US ft)
571003.61 / 1464688.35 (P)

571003.46 / 1464672.02 (S)

Perched water bearing zone at 7.3' bgs

Wet at 21' bgs

Boring terminated at 28' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 0.91' (P) / 2.35' (S)
Riser: 0 - 4' bgs (P) / 0 - 18' bgs (S)
Screen: 4 - 14' bgs (P) / 18 - 28' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 14' bgs (P) / 16 - 28' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 16' bgs (S) [chips/granular]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-041-SB/PZ

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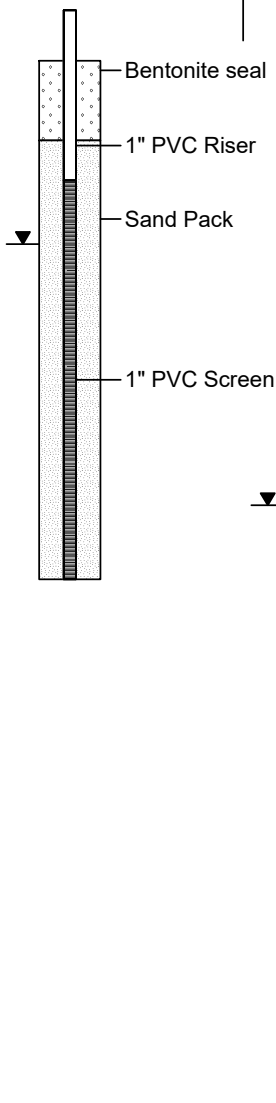
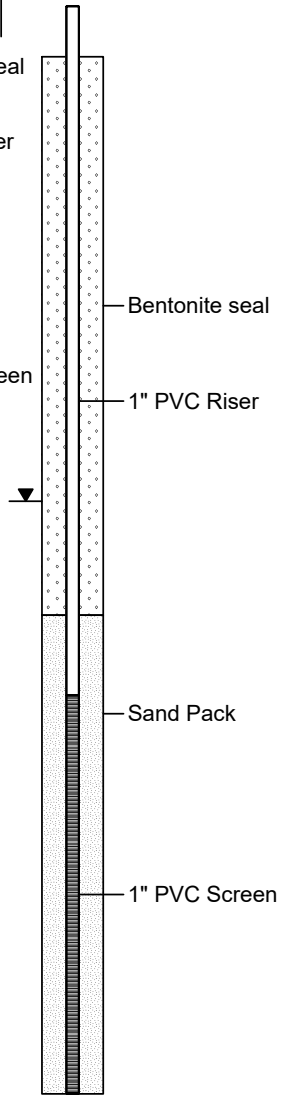
Client	: EnviroAnalytics Group
ARM Project No.	: 180716M
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, E.I.T.
Drilling Company	: GSI
Driller	: Tim Niblett
Drilling Equipment	: Geoprobe 7822DT

Piezometer Installation Date	: 09/19/2019 (P)
Piezometer Installation Date	: 09/19/2019 (S)
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
0-Hr DTW (ft TOC)	: 6.09 (P) / 14.02 (S)
48-Hr DTW (ft TOC)	: 6.30 (P) / 13.94 (S)

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-	No Samples Collected	(0-0.5') ASPHALT	
		-		(0.5-0.7') RED BRICK	
	54	0.0		(0.7-8') SAND, fine, dense, light brown and tan, then light brown to reddish yellow (3.9-6' bgs), then light gray (6-8' bgs), wet, no plasticity, no cohesion	SP
5		0.0			
		0.0			
	78	0.0			
		0.0		(8-18.8') CLAY, medium, then soft (15-17.8' bgs) then medium (17.8-18.8' bgs), light brownish gray, then dark gray at 15' bgs, dry, medium plasticity, cohesive	
10		0.0			
		0.0			
	100	0.0			CH
		0.0			
15		0.0			
		0.0			
	100	0.0			
		0.0			
		0.0		(18.8-19') CLAYEY SAND, medium, dark gray, moist, no plasticity, no cohesion	SC
20		-		(19-26') SAND, fine, dense, yellowish red, wet, no plasticity, no cohesion	
		-			
	0	-			SP
		-			
25		-			
	0	-			
				End of Boring	
30					





REMARKS

N / E (US ft)
570913.56 / 1464960.73 (P)

570907.42 / 1464960.10 (S)

Perched water bearing zone at 4' bgs

Wet at 19' bgs

Boring terminated at 26' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 1.70' (P) / 2.82' (S)
Riser: 0 - 3' bgs (P) / 0 - 16' bgs (S)
Screen: 3 - 13' bgs (P) / 16 - 26' bgs (S) [Slot Size: 0.010"]
Sand Pack: 2 - 13' bgs (P) / 14 - 26' bgs (S) [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs (P) / 0 - 14' bgs (S) [chips/granular]

A10-006 NAPL Investigation Area
Piezometer Construction Logs

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006-SB/PZ

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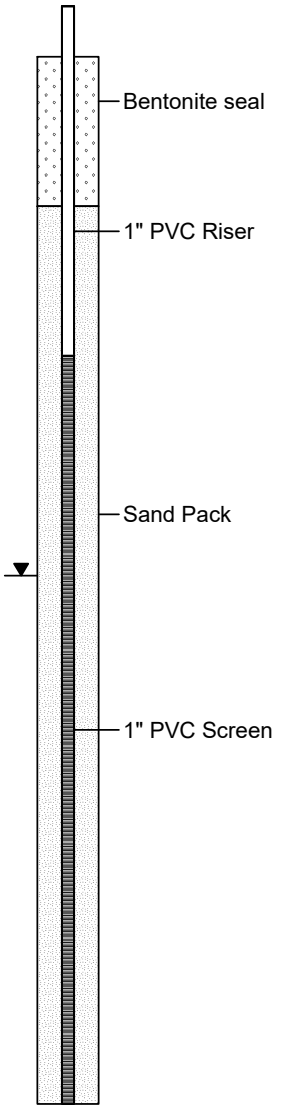
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, E.I.T.
Drilling Company	: Green Services, Inc.
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 7/7/2016
Piezometer Installation Date	: 7/7/2016
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571203.33
Easting (US ft)	: 1464836.17
0-Hr DTW	: 11.78' TOC
48-Hr DTW	: 9.82' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-	A10-006-SB-1	(0-0.5') CONCRETE, loose, white, dry, non plastic, non cohesive	-	
		4.6		(0.5-1.5') SILT with GRAVEL, soft, red then brownish yellow, dry, non plastic, non cohesive	ML	
	90	4.2		(1.5-2.5') SAND, fine to coarse grained, loose, black, dry, non plastic, non cohesive	SW	
		3.7		(2.5-5') CLAY, firm, yellowish brown, dry to moist, medium plasticity to high plasticity, cohesive	CL	
		2.3				
5		11.3		(5-7') CLAY grading to SANDY CLAY, firm to soft, yellowish brown, dry to very moist, medium plasticity, cohesive	CL	
		127.0	A10-006-SB-7			
	100	12.6		(7-7.5') SAND, fine grained, loose, brown, wet, non plastic, non cohesive	SP	Wet at 7' bgs High sheen and low viscosity product from 7-8' and 9-9.5' bgs, strong odor, amber color
		110.8		(7.5-9') CLAY, very firm, yellowish brown, dry, high plasticity, cohesive	CL	
		133.5		(9-9.5') SAND, fine grained, loose, yellowish brown, non plastic, non cohesive	SP	
10		-		(9.5-10') CLAYEY SAND, dense, yellowish brown, dry, non plastic, non cohesive	SP-SC	
		-		(10-15') CLAY, firm to very firm, yellowish brown grading to yellowish red and yellowish brown mottling, moist to dry, medium plasticity, cohesive	CL	
		-				
		-				
		-				
15				End of Boring		



Boring terminated at 15' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.88'
Riser: 0 - 4' bgs
Screen: 4 - 14' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 14' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: Granular/3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006A-SB/PZ

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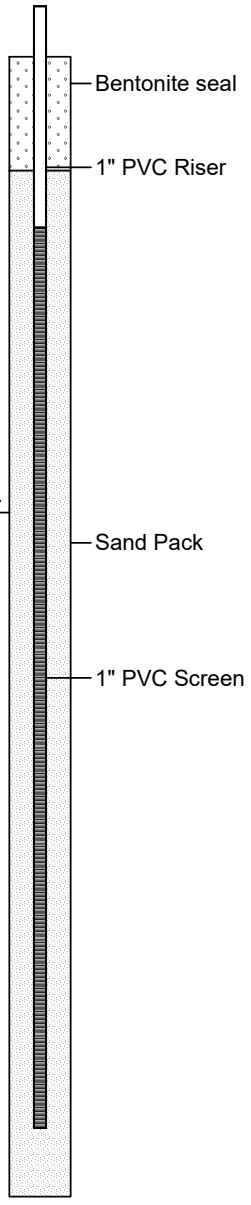
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 01/15/2019
Piezometer Installation Date	: 01/15/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571228.33
Easting (US ft)	: 1464836.17
0-Hr DTW	: 11.11' TOC
48-Hr DTW	: 10.50' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-0.5') CONCRETE, SAND and GRAVEL-sized, with trace BRICK, medium dense, very pale brown wtih some red, very moist, non-plastic, non-cohesive	NA	
		-		(0.5-8') Non-native SAND, fine to coarse, with SLAG, SAND and GRAVEL-sized, fine to coarse, medium dense, very dark brown and gray, dry, non-plastic, non-cohesive	SW/GW	
	60	9.0				
		24.3				
		0.5				
5		-				
		31.3				
	76	3.2				
		0.6		(8-9') SANDY CLAY, very firm, brownish gray, dry then very moist at 8.5' bgs, low plasticity, cohesive, trace sand at 8.5' bgs	CL	
		2.2		(9-10.5') CLAY with SAND, very firm, reddish yellow, dry, low plasticity, cohesive	CL	
10		-	None Collected	(10.5-12.5') CLAYEY SAND, dense, very pale brown, very moist, non-plastic, non-cohesive	SC	
	80	0.0				Wet at 12.5' bgs
		0.0		(12.5-15.2') SAND with CLAY, fine to medium, dense to medium dense, very pale brown and very light brownish gray, wet, non-plastic, non-cohesive	SW-SC	
		0.0				
15		0.0		(15.2-19.3') CLAY with trace SAND, very firm, very pale brown and light gray, moist, low plasticity, cohesive	CL	
		0.2				
	90	0.0				
		0.0				
		0.0				
20				(19.3-20') CLAYEY SAND, fine to coarse, medium dense, gray and yelllowish red, wet, non-plastic, non-cohesive	SC	
				End of Boring		



Boring terminated at 20' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.5'
Riser: 0 - 3' bgs
Screen: 3 - 19' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 19' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006B-SB/PZ

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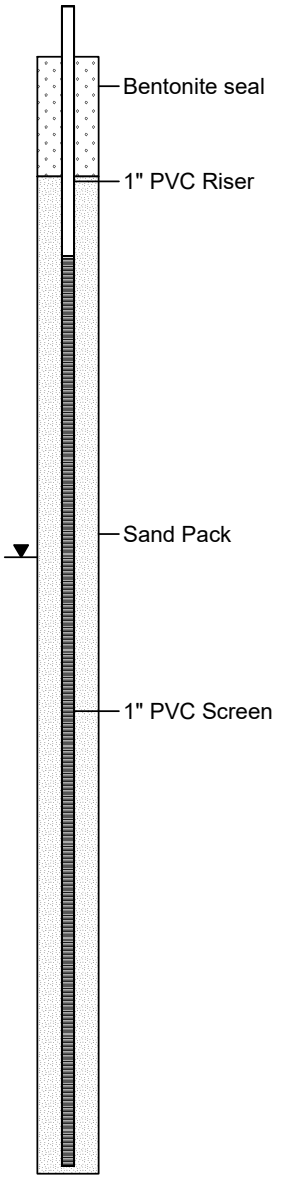
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 01/15/2019
Piezometer Installation Date	: 01/16/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571203.33
Easting (US ft)	: 1464861.17
0-Hr DTW	: 15.88' TOC
48-Hr DTW	: 14.92' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-	None Collected	(0-0.5') CONCRETE	NA	
	0	- - - - -		(0.5-5.5') SANDY CLAY, soft, gray and yellowish red, very moist, low plasticity, cohesive	CL	
5		- -				
	60	3.5		(5.5-20.5') CLAY, very firm, reddish yellow with some gray mottling grading to pale brown with reddish yellow, dry to moist, low plasticity, cohesive	CL	
		0.0 0.0 - 7.4				
10	74	0.1 0.1 0.1				
15		4.9 1.9				
	100	0.4 0.0 0.0 -				
20		0.0		(20.5-23') CLAYEY SAND, medium dense, light brownish gray, wet, non-plastic, non-cohesive	SC	Wet at 21' bgs
	80	0.0 0.0 0.0		(23-28') SAND, fine to coarse, medium dense, reddish yellow and yellowish red, wet, non-plastic, non-cohesive	SW	
25	0	- -				
				End of Boring		
30						



Boring terminated at 28' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.37'
Riser: 0 - 5' bgs
Screen: 5 - 28' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 28' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006C-SB/PZ

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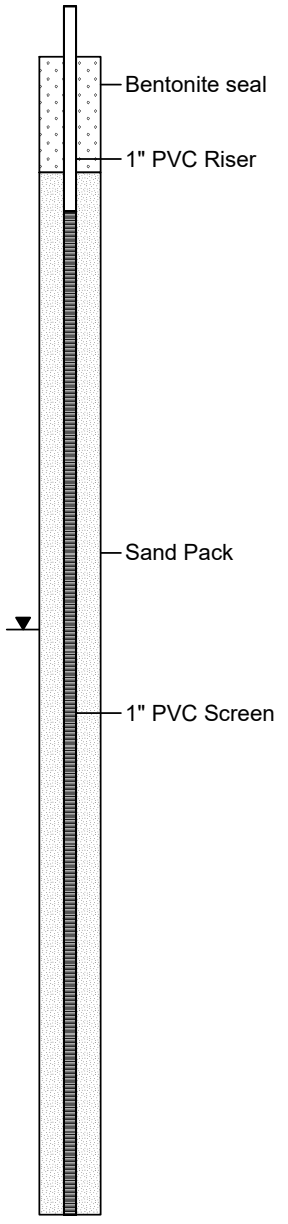
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 01/16/2019
Piezometer Installation Date	: 01/16/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571178.33
Easting (US ft)	: 1464836.17
0-Hr DTW	: 17.76' TOC
48-Hr DTW	: NA

LNAPL / DNAPL: 0hr-17.74' TOC 48hr-14.09' TOC

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	40	- - - 1.2	None Collected	(0-0.2') CONCRETE, SAND and GRAVEL-sized, loose, pale yellow, dry, non-plastic, non-cohesive	SP	
				(0.2-1') SLAG GRAVEL, fine, loose, very dark brown, wet, non-plastic, non-cohesive		
5	50	9.9 - - - 8.1		(1-11.5') SANDY CLAY, soft, light grayish brown, very moist, low plasticity, cohesive	CL	Light sheen with light odor 3.2-3.5' bgs
10	80	3.5 - 4.1 7.4		(11.5-13') CLAYEY SAND, dense, very light brown and light brownish gray, moist, non-plastic, non-cohesive	SC	Very light product at 9.5' bgs Trace NAPL 11-13' bgs
15	100	1.6 3.3 4.2 1.1 3.4		(13-21.5') CLAY with trace SAND, very firm, light grayish brown and reddish yellow, moist, low plasticity, cohesive	CL	
20	94	2.4 1.8 12.3 1.5 1.3		(21-24') SILT, very firm, gray, moist, low plasticity, cohesive	ML	Wet at 24' bgs
25	70	1.9 1.6 - - - - -		(24-30') SAND, fine to coarse, dense, reddish yellow and yellowish red then very pale brown at 28' bgs, wet, non-plastic, non-cohesive	SW	
30				End of Boring		



Boring terminated at 30' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.92'
Riser: 0 - 4' bgs
Screen: 4 - 30' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 30' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

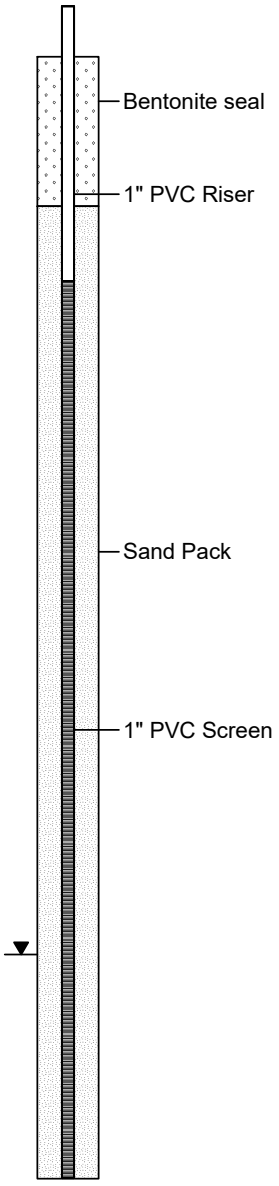
Boring ID: A10-006D-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 01/16/2019
Piezometer Installation Date	: 01/16/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571203.33
Easting (US ft)	: 1464811.17
0-Hr DTW	: DRY
48-Hr DTW	: 14.45' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-		(0-7') SLAG, SAND and GRAVEL-sized, medium dense to loose, very dark brown, dry to moist, non-plastic, non-cohesive	
		-			
	8	-			
		-			SW/GP
		0.0			
5		-			
		4.3			
	70	0.0	None Collected	(7-15') CLAY with SAND grading to CLAY, very firm, light brown to light brownish gray with reddish yellow, dry to moist, low plasticity, cohesive	
		0.0			
		0.0			
10		0.0			
		0.0			CL
		0.0			
	100	0.0			
		0.0			
		0.0			
15				End of Boring	



REMARKS: No water encountered

Boring terminated at 15' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.45'
Riser: 0 - 3' bgs
Screen: 3 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

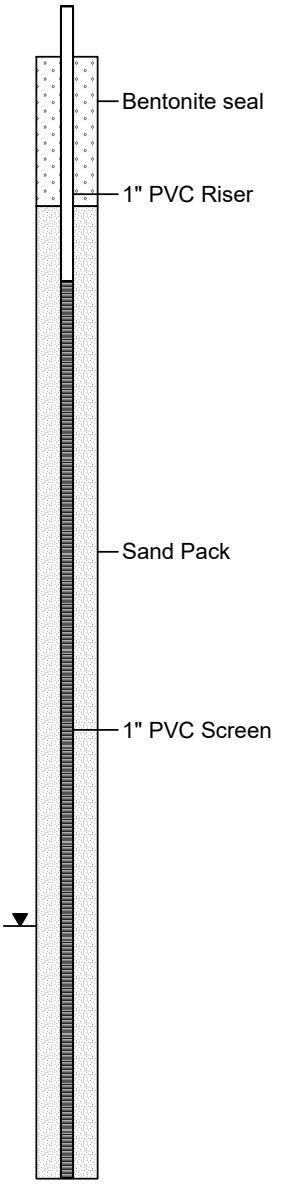
Boring ID: A10-006E-SB/PZ

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 01/16/2019
Piezometer Installation Date	: 01/16/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571180.46
Easting (US ft)	: 1464834.90
0-Hr DTW	: 11.05' TOC
48-Hr DTW	: 14.20' TOC
LNAPL / DNAPL: 0hr-Trace	48hr-8.65' TOC

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0				(0-0.2) CONCRETE, SAND-sized, loose, pale yellow, dry, non-plastic, non-cohesive	NA	
		-		(0.2-8') CLAY with SAND and fine SLAG GRAVEL, very firm then soft at 7' bgs, greenish brown and light brown, dry to moist, low plasticity, cohesive		
		-				
	60	0.0				Light odor 2.2-10' bgs
		0.4			CL/GP	
		3.5				
5						No water encountered
		-				
		7.3				Light to moderate NAPL 6-7.5' bgs
	76	24.0	None Collected			
		29.8		(8-9') SANDY CLAY, soft, very light brown, very moist, low plasticity, cohesive	CL	
		2.0		(9-13') CLAYEY SAND, dense, very moist to moist, light grayish brown with reddish yellow, non-plastic, non-cohesive		
10		48.6			SC	Trace NAPL 10-13' bgs
		13.2				
	90	3.8				
		2.3		(13-15') CLAY with fine SAND, very firm, light grayish brown and reddish yellow, moist, low plasticity, cohesive	CL	
		5.2				
15				End of Boring		



Boring terminated at 15' bgs due to maximum depth and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.58'
Riser: 0 - 3' bgs
Screen: 3 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 2 - 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

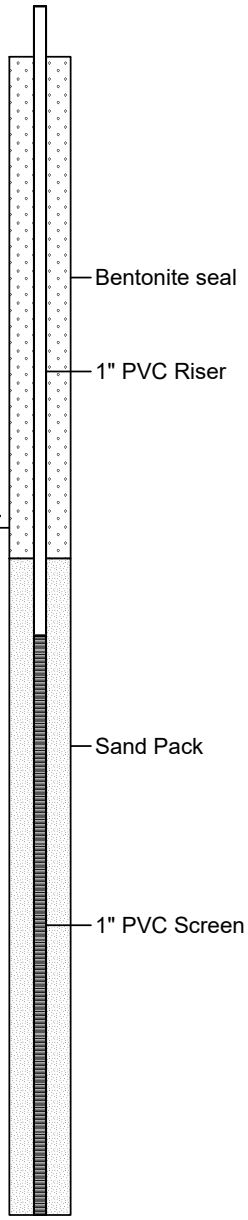
Boring ID: A10-006F-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 01/25/2019
Piezometer Installation Date	: 01/25/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571178.97
Easting (US ft)	: 1464861.01
0-Hr DTW	: 14.56' TOC
48-Hr DTW	: 15.15' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-0.3') CONCRETE	NA	
		-		(0.3-2.5') SLAG GRAVEL, fine, dense, dark brown, wet, non-plastic, non-cohesive	GP	
	50	0.0		(2.5-10.5') CLAY, soft then hard at 7.5' bgs, light grayish brown then reddish yellow with light grayish brown at 7.5+ ' bgs, moist then dry at 7.5' bgs, low plasticity, cohesive, with SAND 9-10' bgs	CL	
		0.0				
5		0.0				
		-				
	50	-				
		0.0				
		0.0				
		0.0				
10		-				
		0.0		(10.5-12.5') CLAYEY SAND, dense, reddish yellow, very moist, non-plastic, non-cohesive	SC	
	80	0.0		(12.5-19') CLAY with SAND, very firm, reddish yellow with light grayish brown, moist, low plasticity, cohesive	CL	
		0.0				
		0.0				
15		0.0	None Collected			
		-				
		0.2				
	90	0.0				
		0.0				
		0.0				
20		-		(19-22.5') SANDY SILT, soft, light brownish gray, moist, low plasticity, cohesive	ML	
		0.0				
	80	0.0		(22.5-30') SAND, fine to medium, medium dense, yellowish red, wet, non-plastic, non-cohesive	SW	Wet at 22.5' bgs
		0.0				
		0.0				
25		-				
		-				
	30	-				
		0.0				
30		0.0		End of Boring		



Boring terminated at 30' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.95'
Riser: 0 - 15' bgs
Screen: 15 - 30' bgs [Slot Size: 0.010"]
Sand Pack: 13 - 30' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 13' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006G-SB/PZ

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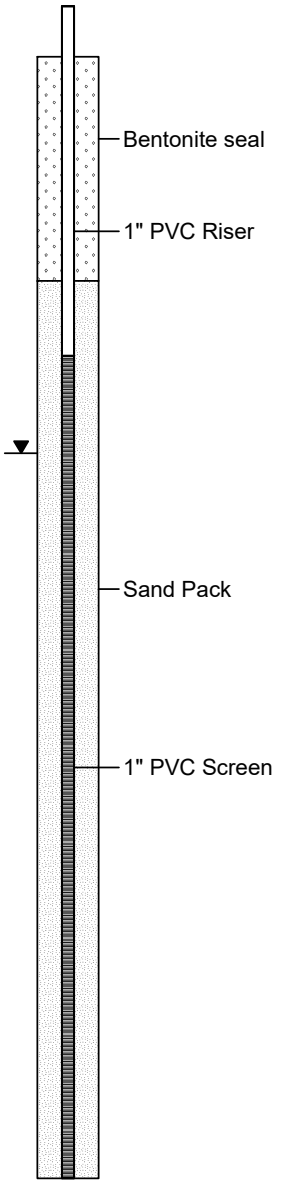
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 01/25/2019
Piezometer Installation Date	: 01/25/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571178.97
Easting (US ft)	: 1464861.01
0-Hr DTW	: DRY
48-Hr DTW	: 7.04' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0				(0-0.3') CONCRETE	NA
		-		(0.3-2.5') SLAG GRAVEL, fine, dense, very dark brown, wet, non-plastic, non-cohesive	GP
		-			
	50	-		(2.5-10.5') CLAY, firm to hard, light brownish gray and reddish yellow, moist, low plasticity, cohesive, with SAND 9-10' bgs	
		0.0			
		0.0			
5					
		-			CL
		-			
	60	0.7	None Collected		
		0.0			
		0.0			
10					
		-		(10.5-11.3') CLAYEY SAND, medium dense to dense, pale brown, very moist, non-plastic, non-cohesive	SC
		0.1		(11.3-15') CLAY with SAND, very firm, reddish yellow with light brownish gray, moist, low plasticity, cohesive	
	88	0.0			CL
		0.0			
		0.0			
15				End of Boring	



REMARKS: No water encountered

Boring terminated at 15' bgs due to maximum depth and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 1.74'
Riser: 0 - 3' bgs
Screen: 3 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 2- 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006H-SB/PZ

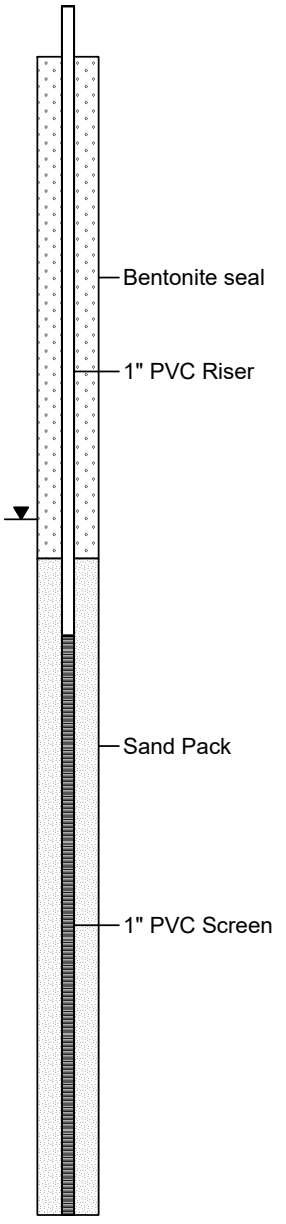
(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 02/11/2019
Piezometer Installation Date	: 02/11/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571153.00
Easting (US ft)	: 1464835.90
0-Hr DTW	: 15.73' TOC
72-Hr DTW	: 15.00' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0	70	- 0.0 0.0 0.0 0.0	None Collected	(0-0.5') SLAG, medium dense, black, dry, non-plastic, non-cohesive	GW
				(0.5-5.5') SANDY SILT, medium dense, light gray and light brown, dry, low plasticity, cohesive	ML
5	68	- 0.0 0.0 0.0 0.0		(5.5-10.6') SILTY SAND, medium dense, reddish yellow, dry, low plasticity, cohesive	SM
10	74	- 0.0 0.0 0.0 0.0		(10.6-15.2') CLAY, dense, reddish yellow, low plasticity, cohesive	CL
15	92	0.0 0.0 0.0 0.0 0.0		(15.2-17') CLAYEY SAND, medium dense, reddish yellow, dry, non-plastic, non-cohesive	SC
				(17-17.7') SAND, dense, reddish yellow, wet, non-plastic, non-cohesive	SP
20	96	0.0 0.0 0.0 0.0 0.0		(17.7-21.5) CLAYEY SAND, medium dense, reddish yellow, dry, non-plastic, non-cohesive	SC
				(21.5-24') CLAY, soft, dark gray, moist, low plasticity, cohesive	CL
25	20	- - - - 0.0		(24-30') SAND, dense, yellowish red, wet, non-plastic, non-cohesive	
30				End of Boring	



REMARKS: Wet at 17' bgs

Boring terminated at 30' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 3.02'
Riser: 0 - 15' bgs
Screen: 15 - 30' bgs [Slot Size: 0.010"]
Sand Pack: 13 - 30' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 13' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006I-SB/PZ

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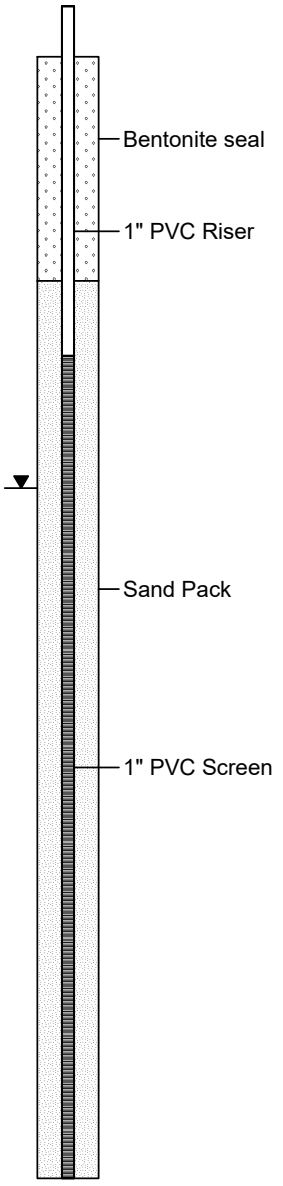
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 02/11/2019
Piezometer Installation Date	: 02/11/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571153.00
Easting (US ft)	: 1464835.90
0-Hr DTW	: 9.61' TOC
72-Hr DTW	: 8.59' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS
0		-		(0-0.5') SLAG, medium dense, black, dry, non-plastic, non-cohesive	GW
		-		(0.5-3.5') SLAG and SILT, medium dense, black, dry, non-plastic, non-cohesive	GW/ML
	50	-			
		0.0		(3.5-5.5') SILTY SAND, medium dense, yellowish red, dry, non-plastic, non-cohesive	SM
		0.0			
5		-		(5.5-10') SANDY SILT, medium dense, reddish yellow, dry, non-plastic, non-cohesive	ML
		0.0			
	74	0.0	None Collected		
		0.0			
		0.8			
10		0.0		(10-11') SANDY CLAY, medium dense, reddish yellow, dry, low plasticity, cohesive	CL
		0.0		(11-11.7') SAND, fine, dense, reddish yellow to light brown, very moist, non-plastic, non-cohesive	SP
	98	0.0		(11.7-13.1') SANDY CLAY, medium dense, reddish yellow, dry, low plasticity, cohesive	CL
		0.0		(13.1-15') SILT, medium dense, yellowish red to light brown, moist, low plasticity, cohesive	ML
		1.1			
15				End of Boring	



REMARKS: No water encountered

Boring terminated at 15' bgs due to maximum depth and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.82'
Riser: 0 - 3' bgs
Screen: 3 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 2- 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

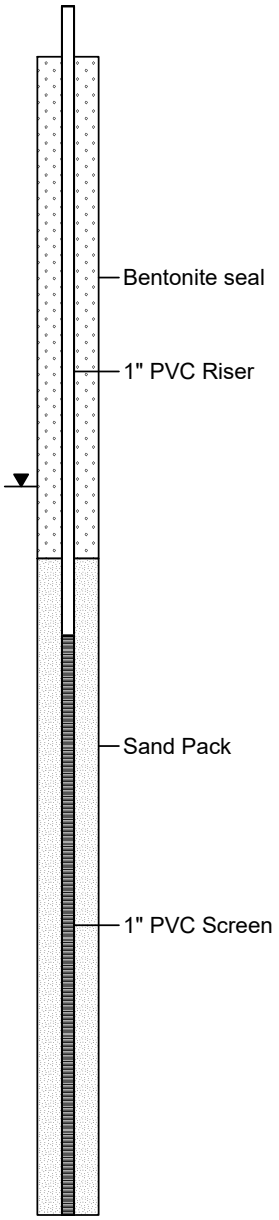
Boring ID: A10-006J-SB/PZ

Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 02/11/2019
Piezometer Installation Date	: 02/11/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571178.57
Easting (US ft)	: 1464809.90
0-Hr DTW	: 13.24' TOC
72-Hr DTW	: 13.94' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	50	- - - 0.0 0.0	None Collected	(0-5') SLAG, SAND and GRAVEL-sized, loose, black to dark brown with some yellowish red, dry, non-plastic, non-cohesive	SW/GW	
5	92	0.0 0.0 0.0 0.0 0.0		(5-15) SANDY CLAY, medium dense, reddish yellow 5.4-10.1' bgs, then light gray 10.1-15' bgs, dry, low plasticity, cohesive	CL	
10	92	- 0.3 0.2 0.0 0.0				
15	100	0.0 0.0 0.0 0.0 0.0		(15-24.4') SANDY CLAY, soft to medium soft, gray, very moist, low plasticity, cohesive	CL	
20	90	- 0.0 0.0 0.0 0.0				
25	88	- 0.0 0.0 0.0 0.0		(24.4-30') SAND, fine, dense, dark brown to light brown then reddish yellow at 25' bgs, wet, non-plastic, non-cohesive	SP	Wet at 24.4' bgs
30				End of Boring		



Boring terminated at 30' bgs due to water and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.81'
Riser: 0 - 15' bgs
Screen: 15 - 30' bgs [Slot Size: 0.010"]
Sand Pack: 13 - 30' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 13' bgs [Grain Size: 3/8" chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A10-006K-SB/PZ

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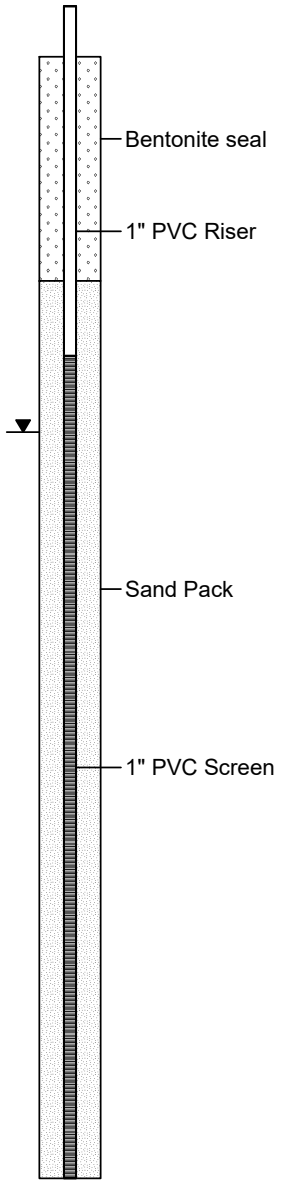
Client	: EnviroAnalytics Group
ARM Project No.	: 150298M-5-3
Project Description	: Sparrows Point - Parcel A10
Site Location	: Sparrows Point, MD
ARM Representative	: L. Glumac
Checked by	: M. Replogle, EIT
Drilling Company	: Allied Well Drilling
Driller	: Tim Moyer
Drilling Equipment	: Geoprobe 77DT

Soil Boring Installation Date	: 02/11/2019
Piezometer Installation Date	: 02/11/2019
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571178.57
Easting (US ft)	: 1464809.90
0-Hr DTW	: 7.85' TOC
72-Hr DTW	: 7.53' TOC

No LNAPL or DNAPL at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample ID/Interval	DESCRIPTION	USCS	REMARKS
0	50	-	None Collected	(0-6') SLAG, SAND and GRAVEL-sized, loose, black with some yellowish red, dry, non-plastic, non-cohesive	SW/GW	No water encountered
		-				
		-				
		0.8				
		0.4				
5	60	-		(6-9') SANDY CLAY, medium dense, reddish yellow, dry, low plasticity, cohesive	CL	
		-				
		0.4				
		0.0				
		0.0		(9-10.6') SILTY SAND, medium dense, reddish yellow, moist, non-plastic, non-cohesive	SM	
10	68	-		(10.6-15') SANDY CLAY, medium dense, light gray, very moist, low plasticity, cohesive	CL	
		-				
		0.0				
		0.0				
		0.0				
15				End of Boring		



Boring terminated at 15' bgs due to maximum depth and piezometer installation.
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface
AMSL: Above mean sea level

Riser Stickup: 2.51'
Riser: 0 - 3' bgs
Screen: 3 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 2- 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 2' bgs [Grain Size: 3/8" chips]

Parcel A18 Piezometer Construction Logs

ARM Group LLC
Engineers and Scientists

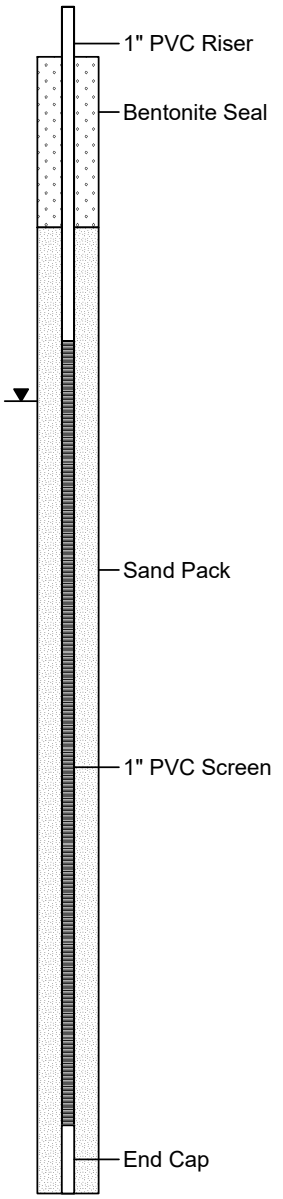
Boring ID: A18-002-SB/PZ

Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 05/01/2020
Piezometer Installation Date	: 05/01/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572520.54
Easting (US ft)	: 1465587.49
Static DTW	: 12.26' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS
0		-	A18-002-SB-1	(0-0.5') SAND, fine to coarse, loose, yellow, dry, no plasticity, no cohesion	SW
		-		(0.5-1.3') SILT with SAND, organic matter, soft, black, moist, no plasticity, no cohesion	ML
	64	0.0		(1.3-3') SLAG, SAND and GRAVEL sized, medium dense, gray and light gray, dry, no plasticity, no cohesion	SW/GW
		0.0		(3-3.9') SLAG, SAND and GRAVEL sized, medium dense, black, shimmery, dry, no plasticity, no cohesion	SW/GW
		0.0	A18-002-SB-5	(3.9-5') SAND, fine to coarse, loose, yellow, dry to very moist, no plasticity, no cohesion	SW
5		0.0		(5-6.3') CLAY with SAND, soft, pale brown, very moist to wet, no plasticity, no cohesion	CL
		0.1		(6.3-6.7') Clayey SAND, medium dense, pale brown, very moist to wet, no plasticity, no cohesion	SC
	94	0.0		(6.7-10') CLAY, hard, pale brown with reddish yellow, dry, low plasticity, cohesive	CL
		0.0		(10-10.5') CLAYEY SAND, loose to medium dense, pale brown, wet, no plasticity, no cohesion	SC
		0.0	A18-002-SB-10	(10.5-15') CLAY with SAND grading to CLAY with trace SAND, soft grading to firm, pale brown with some gray, very moist, low plasticity, cohesive	CL
10		-			
		0.1			
	90	0.0			
		0.0			
		0.0			
15		-		(15-20') SAND, very fine to medium, medium dense, yellowish red then very pale brown and reddish yellow at 16.5' bgs, wet, no plasticity, no cohesion	SW
	90	0.0			
		0.0			
		0.0			
20		0.0		End of Boring	



REMARKS: Wet at 15' bgs

Boring terminated at 20' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.1' ags
Riser: 0 - 5' bgs
Screen: 5 - 20' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 20' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A18-008-SB/PZ

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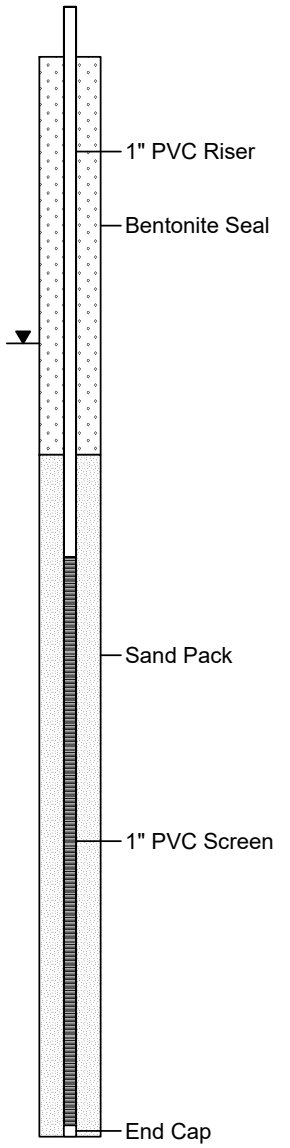
Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 04/28/2020
Piezometer Installation Date	: 04/28/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572657.31
Easting (US ft)	: 1465252.39
Static DTW	: 11.12' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS
0	70	-	A18-008-SB-1	(0-0.3') BRICK GRAVEL, fine to coarse, loose, red, dry, non-plastic, non-cohesive	GW
		0.0		(0.3-2') Non-native SAND and SLAG GRAVEL, medium dense, brown with gray, dry, non-plastic, non-cohesive	SW/GW
		0.0		(2-6.9') SLAG GRAVEL, fine to coarse, with some SAND-sized SLAG, medium dense, gray and light gray, dry to very moist, non-plastic, non-cohesive	
		0.0			
		0.0	A18-008-SB-5		GW/SW
5	70	-			
		0.0		(6.9-7.3') CLAYEY SAND, medium dense, reddish yellow, very moist, non-plastic, non-cohesive	SC
		0.0		(7.3-11.5') CLAY with SAND grading to CLAY, soft then hard at 7.8' bgs, grayish brown then grayish brown with reddish yellow at 7.8' bgs, very moist then dry at 7.8' bgs, low plasticity, cohesive	CL
		0.0			
10	90	-			
		0.0		(11.5-12.5') SAND with CLAY, medium dense, reddish yellow, wet, non-plastic, non-cohesive	SW-SC
		0.0		(12.5-14.7') CLAY, hard, reddish yellow and light grayish brown, dry to moist, low plasticity, cohesive	CL
		0.0			
15	0	-		(14.7-15') SAND, very fine to medium, medium dense, yellow, wet, non-plastic, non-cohesive	SW
		-		(15-19') NO RECOVERY due to heaving sands	SW
		-			
		-			
				End of Boring	
20					



REMARKS: Wet at 11.5' bgs

Boring terminated at 19' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.04' ags
Riser: 0 - 9' bgs
Screen: 9 - 19' bgs [Slot Size: 0.010"]
Sand Pack: 7 - 19' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 7' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A18-009-SB/PZ

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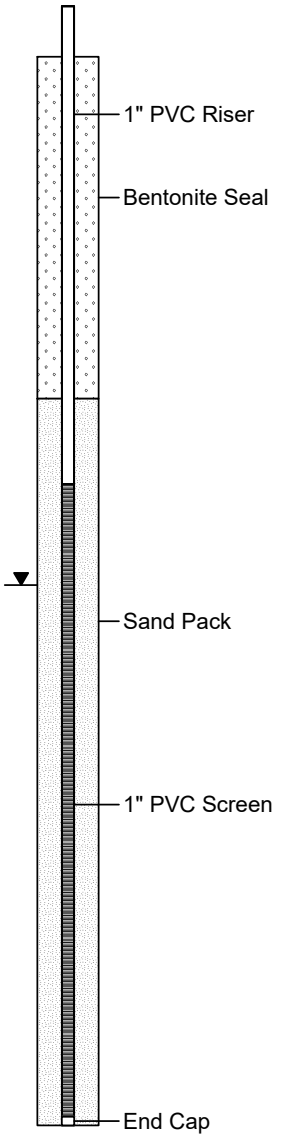
Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 04/29/2020
Piezometer Installation Date	: 04/29/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 574199.53
Easting (US ft)	: 1465575.06
Static DTW	: 17.72' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS
0	80	-	A18-009-SB-1	(0-2.5') Non-native SAND with SLAG GRAVEL, medium dense, dark brown, gray, and red, dry, no plasticity, no cohesion	SW/GW
		2.7			
		5.3		(2.5-5') SLAG GRAVEL, fine to coarse, gray and light gray with trace brown, dry grading to very moist, no plasticity, no cohesion	GW
		6.3			
		1.9	A18-009-SB-5		
5	100	0.0		(5-7.5') CLAY, soft grading to very firm, reddish yellow and pale brown, very moist grading to dry, low plasticity, cohesive	CL
		0.0			
		0.0			
		1.2		(7.5-8.2') CLAYEY SAND, medium dense, reddish yellow, moist, no plasticity, no cohesion	SC
		1.1	A18-009-SB-10	(8.2-15') CLAY, hard, reddish yellow with pale brown, dry, low plasticity, cohesive	CL
10	100	0.0			
		0.0			
		0.0			
		0.0			
15	40	-		(15-18') No recovery	NR
		-			
		-			
		-		(18-20') SAND, very fine to medium, medium dense, yellow, wet, no plasticity, no cohesion	SW
		-			
20	0	-		(20-22.3') NO RECOVERY, heaving SANDS	SW
		-			
		-		(22.3-23') CLAYEY SAND, medium dense, light yellowish brown, wet, no plasticity, no cohesion	SC
		-			CL
		-		(23-24') CLAY with SAND, soft to firm, light yellowish brown, very moist to wet, low plasticity, cohesive	SW-SC
25				(24-25') SAND with CLAY, loose to medium, light yellowish brown, wet, no plasticity, no cohesion	



REMARKS: Wet at 18' bgs

Boring terminated at 25' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.68' ags
Riser: 0 - 5' bgs
Screen: 5 - 25' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 25' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A18-011-SB/PZ

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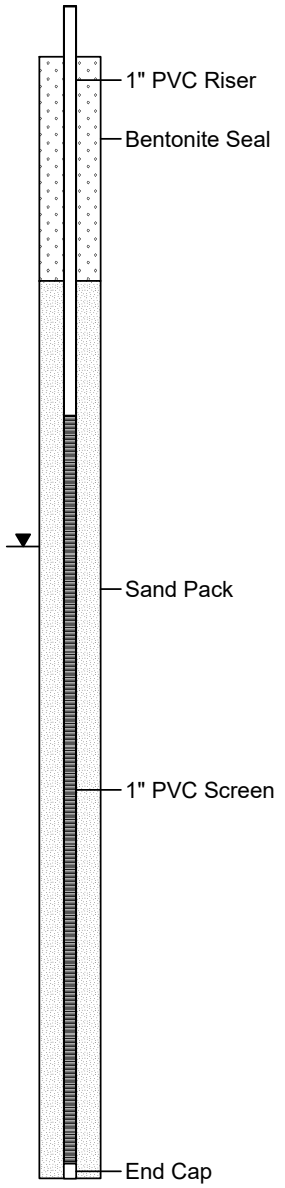
Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 05/01/2020
Piezometer Installation Date	: 05/01/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572922.11
Easting (US ft)	: 1466180.32
Static DTW	: 12.61' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-011-SB-1	(0-0.5') CLAYEY SAND with trace ORGANICS and GRAVEL, medium dense, brown, moist, non-plastic, non-cohesive	SC	
		0.4		(0.5-15') SLAG, SAND and GRAVEL-sized, medium dense, brown, dark brown, and gray, dry to moist then wet at 8.5' bgs, non-plastic, non-cohesive, thin sand layer at 9' bgs		
	86	0.2				
		0.1				
		0.0	A18-011-SB-5			
5		-				
		0.2				
	84	0.2			GW/SW	
		0.2				Wet at 8.5' bgs
		53.3				
10		-				
		0.0				
	76	0.0				
		0.0				
		0.0				
15				End of Boring		



Boring terminated at 15' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.03'
Riser: 0 - 5' bgs
Screen: 5 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

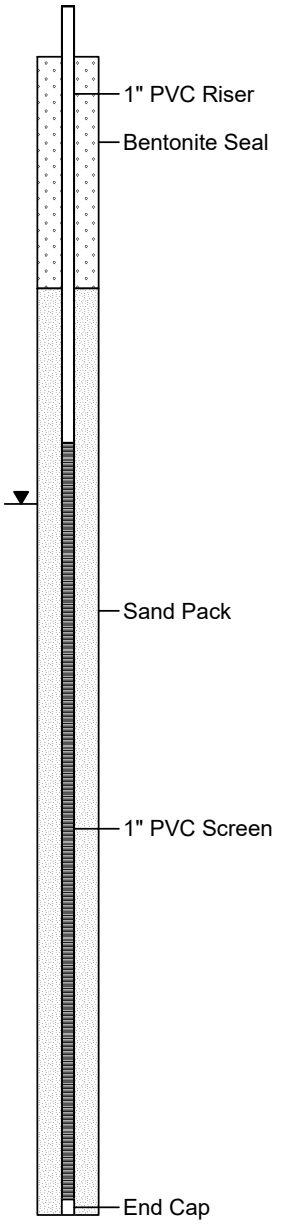
Boring ID: A18-013-SB/PZ

Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 04/28/2020
Piezometer Installation Date	: 04/28/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 571939.78
Easting (US ft)	: 1463965.85
Static DTW	: 11.41' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A14-013-SB-1	(0-3') Non-native SAND with SLAG/BRICK, SAND and GRAVEL-sized, medium dense, verydark brown, red, and yellow, dry, no plasticity, no cohesion	SW/GW	
	84	2.7				
		16.4				
		69.8		(3-8') SLAG, SAND and GRAVEL-sized, medium dense, light gray, white, and brown, dry, no plasticity, no cohesion		
		6.2	A14-013-SB-5			
5		0.3			SW/GW	
		0.5				
	50	0.6				Wet at 7.5' bgs
		0.3		(8-12) No Recovery		
		0.2				
10		-			NR	
		-				
	60	-		(12-15') CLAY, soft grading to very firm, gray grading to very pale brown with reddish yellow mottling, wet grading to moist, medium plasticity, cohesive		
		0.2			CL	
		0.3				
15				End of Boring		



Boring terminated at 15' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.81' ags
Riser: 0 - 5' bgs
Screen: 5 - 15' bgs [Slot Size: 0.010"]
Sand Pack: 3 - 15' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 3' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A18-014-SB/PZ

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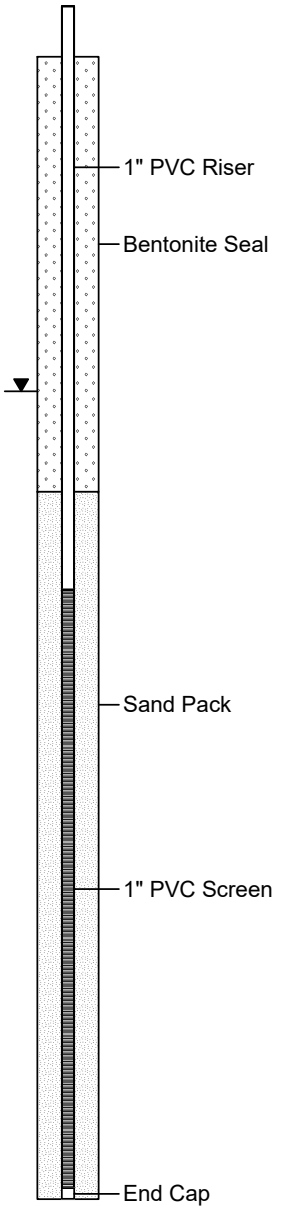
Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 05/04/2020
Piezometer Installation Date	: 05/04/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572387.84
Easting (US ft)	: 1465209.12
Static DTW	: 12.43' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	94	0.2	A18-014-SB-1	(0-2.3') Non-native SAND and SLAG GRAVEL, medium dense, dark brown and very dark brown, dry grading to wet, no plasticity, no cohesion	SW/GW	
		0.0				
		0.1		(2.3-14.5') CLAY, hard then soft at 8' bgs, pale brown and reddish yellow, dry then very moist at 8' bgs, low plasticity, cohesive, CLAY with SAND from 14-14.5' bgs		
		0.0				
5		0.0	A18-014-SB-5			
	40	-				
		-				
		-			CL	
		0.0				
		0.0	A18-014-SB-10			
10	100	0.0				
		1.7				
		0.1				
		0.1				
		0.0				
15	100	0.0		(14.5-20') SAND, very fine to medium, medium dense, reddish yellow 14.5-15' bgs, pale brown 15-18' bgs then reddish yellow grading to yellowish red, wet, no plasticity, no cohesion	SW	Wet at 14.5' bgs
		0.0				
		0.0				
		0.0				
		0.0				
20	0	-		(20-21') NO RECOVERY, heaving sands	SW	
				End of Boring		



Boring terminated at 21' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.14' ags
Riser: 0 - 9' bgs
Screen: 9 - 21' bgs [Slot Size: 0.010"]
Sand Pack: 7 - 21' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 7' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A18-015-SB/PZ

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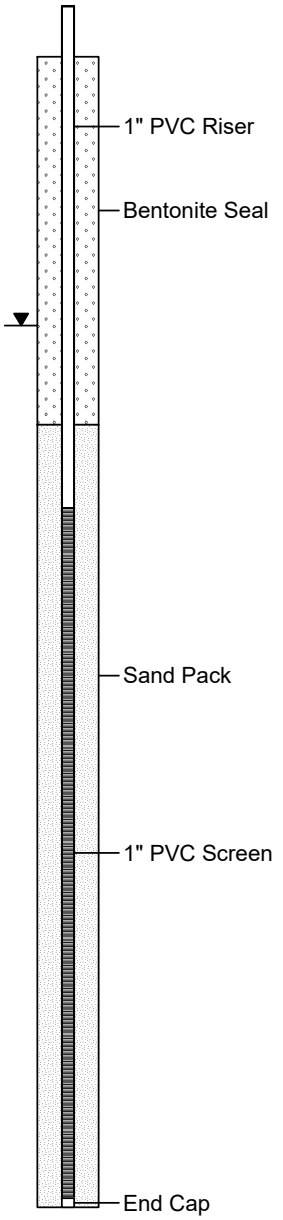
Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 05/04/2020
Piezometer Installation Date	: 05/04/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572420.10
Easting (US ft)	: 1464893.48
Static DTW	: 12.42' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0	52	-	A18-015-SB-1	(0-7.1') SLAG, SAND and GRAVEL-sized with non-native SAND, medium dense to loose, brown and gray, dry grading to moist, no plasticity, no cohesion, fine gravel 0-1' bgs then fine to coarse	SW/GW	
		-				
		0.0				
		4.9	A18-015-SB-4			
		1.1				
5	84	-				
		0.1				
		0.0		(7.1-9') SILT, firm, grayish brown, moist, low plasticity, cohesive	ML	
		0.1				
		0.0	A18-015-SB-10	(9-17.5') CLAY, hard to very firm, reddish yellow with pale brown, dry then moist at 16.2' bgs, low plasticity, cohesive	CL	
10	100	0.0				
		0.0				
		0.2				
		0.0				
		0.0				
15	76	-				
		0.3				
		0.0		(17.5-20') SAND, fine to coarse, medium dense, reddish yellow to yellowish red, wet, no plasticity, no cohesion	SW	Wet at 17.5' bgs
		0.0				
		0.0				
20	0	-		(20-25') NO RECOVERY, heaving sands	SW	
		-				
		-				
		-				
25		-		End of Boring		



Boring terminated at 25' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 3.29' ags
Riser: 0 - 10' bgs
Screen: 10 - 25' bgs [Slot Size: 0.010"]
Sand Pack: 8 - 25' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 8' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

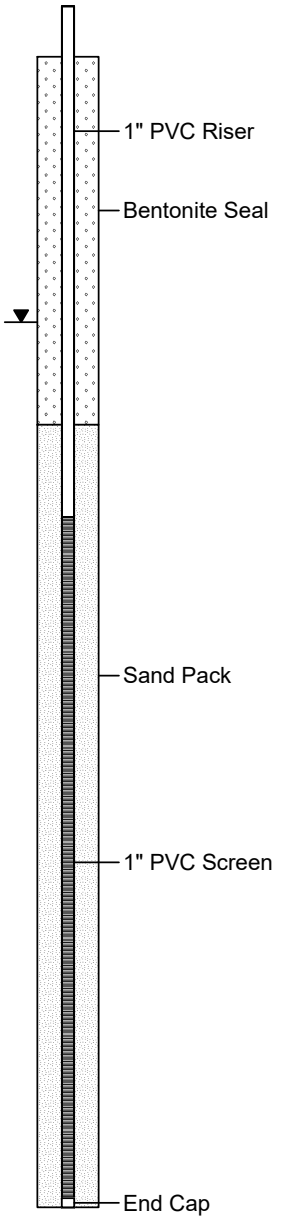
Boring ID: A18-016-SB/PZ

Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 05/04/2020
Piezometer Installation Date	: 05/04/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572454.52
Easting (US ft)	: 1465393.18
Static DTW	: 11.35' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	A18-016-SB-1	(0-0.2') SILT, firm, trace SAND, brownish gray, dry, low plasticity, cohesive	ML/SM	
	90	0.0		(0.2-0.5') Silty SAND, trace SLAG, loose, light brown and brown, dry, no plasticity, no cohesion	SW/GW	
		0.3		(0.5-1.8') Non-native SAND with some SLAG GRAVEL, loose to medium dense, very dark brown, dry, no plasticity, no cohesion	SW	
		0.0				
		0.1	A18-016-SB-5			
5		-		(1.8-2.4') SAND, medium to very coarse, yellow and pale brown, dry, no plasticity, no cohesion	SW/GW	
		-				
	50	0.0		(2.4-9.6') Shimmery SLAG, SAND and GRAVEL sized, medium dense, black, dry, no plasticity, no cohesion, with thin yellow and pale brown SAND lenses at 4.9' bgs and 8.3' bgs		
		0.0				
		0.0	A18-016-SB-10			
10		0.0		(9.6-17.5') CLAY, trace SAND, soft then hard at 10' bgs, brownish gray then pale brown with reddish yellow at 10' bgs, very moist then dry at 10' bgs, low plasticity, cohesive	CL	
		0.0				
	100	0.0				
		0.0				
		0.0				
15		-				
		-				
	52	0.2		(17.5-20') SAND, very fine to medium, medium dense, pale brown and light gray then reddish yellow at 19' bgs, wet, no plasticity, no cohesion	SW	Wet at 17.5' bgs
		0.1				
		0.1				
20		-		(20-25') NO RECOVERY, heaving sands	NR	
		-				
	0	-				
		-				
		-				
25				End of Boring		



Boring terminated at 25' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.79' ags
Riser: 0 - 10' bgs
Screen: 10 - 25' bgs [Slot Size: 0.010"]
Sand Pack: 8 - 25' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 8' bgs [Grain Size: bentonite chips]

ARM Group LLC
Engineers and Scientists

Boring ID: A18-017-SB/PZ

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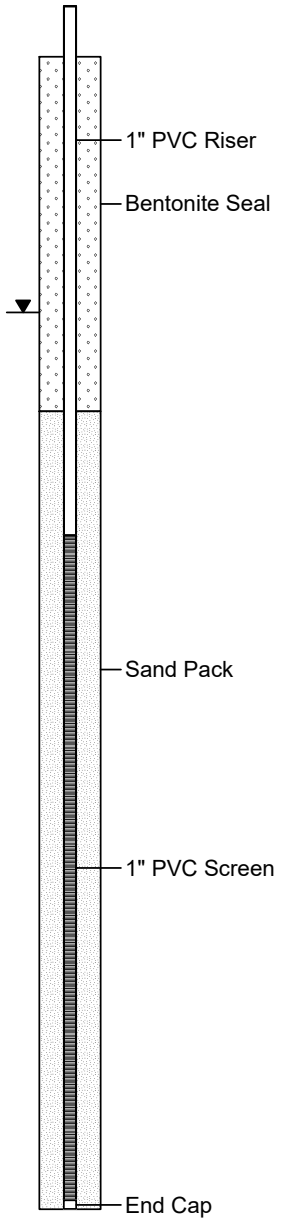
Client	: Tradepoint Atlantic
ARM Project No.	: 20010118
Project Description	: Sparrows Point - Parcel A18
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: M. Hritz, E.I.T.
Drilling Company	: GSI
Driller	: D. Marchese
Drilling Equipment	: Geoprobe 7822DT

Soil Boring Installation Date	: 05/04/2020
Piezometer Installation Date	: 05/04/2020
Casing/Riser/Screen Type	: PVC
Borehole Diameter	: 2.25"
Riser/Screen Diameter	: 1"
Northing (US ft)	: 572366.00
Easting (US ft)	: 1465040.42
Static DTW	: 11.75' TOC

No LNAPL or DNAPL detected at 0 or 48 hours

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS
0		-	A18-017-SB-1	(0-5') SLAG, SAND and GRAVEL-sized with non-native SAND, medium dense, dark brown with gray, dry then very moist at depth, no plasticity, no cohesion	
	78	0.4			SW/GW
		0.0			
		0.0			
		0.0	A18-017-SB-5		
5		0.6		(5-19') CLAY with trace SAND, hard then soft at 17.2' bgs, pale brown and reddish yellow, dry then very moist at 17.2' bgs, low plasticity, cohesive	
	100	0.6			
		1.8			
		0.1			
		0.0	A18-017-SB-10		
10		0.5			
		0.7			CL
	100	0.0			
		0.0			
		0.0			
15		-			
		-			
	56	0.0			
		0.0			
		0.0		(19-20') SAND, fine to coarse, medium dense, pale brown and yellowish red, wet, no plasticity, no cohesion	SW
20		-		(20-26') NO RECOVERY, heaving sands	
		-			
	0	-			SW
		-			
		-			
25		-			
	0			End of Boring	



REMARKS: Wet at 19' bgs

Boring terminated at 26' bgs due to water and piezometer installation
TOC: Top of PVC casing
DTW: Depth to water
bgs: Below ground surface

Riser Stickup: 2.99' ags
Riser: 0 - 11' bgs
Screen: 11 - 26' bgs [Slot Size: 0.010"]
Sand Pack: 9 - 26' bgs [Grain Size: WG #2]
Bentonite Seal: 0 - 9' bgs [Grain Size: bentonite chips]

Attachment 3

Parcel A10 CVOC Investigation Purge Logs

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-002(P)-P2	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 11.93	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 14.94	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1322		14.10	22.24	7.13	0.513	0.33	27.9		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-002(P)-P2	0940 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: Purged dry @ 1324

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: A10 CVOC	Project Number: 180716M
Well Number: A10-002(S)-P2	Date: 10/15/19
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 17.64	Flow Rate (mL/min): 230
Product Thickness (ft): —	Length of time Purged (min):
Depth to Bottom (ft): 27.89	Condition of Pad/Cover: — /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1122	0	17.64	20.6	5.69	0.978	8.13	30.9		turb. gl
1127	0.3	17.69	20.2	5.59	0.965	5.56	15.6		
1132	0.6	17.74	20.3	5.48	0.975	4.65	16.3		
1137	0.9	17.79	19.6	5.44	0.969	4.23	15.5		clear
1142	1.2	17.84	19.6	5.39	0.971	3.98	16.2		
1147			19.3	5.38	0.968	3.90	16.1		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-002(S)-P2	1152	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: CVOC

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 160716m
Well Number: A10-015(P)-P2	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 12.14	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 15.76	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1014		dry	21.00	7.14	0.568	0.29	-13.4		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-015(P)-P2	1145 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments: Purged dry @ 1014, readings were collected from the collected gw in the flow through cell

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-015(S)-P2	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 14.40	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 28.65	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1024		14.48	16.67	6.68	0.558	0.41	26.7		
1029		14.48	15.99	6.46	0.630	0.49	32.9		
1034		14.48	15.90	6.43	0.673	0.44	33.3		
1039		14.48	15.82	6.38	0.698	0.37	35.1		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-015(S)-P2	1044	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716 M
Well Number: A10 - 024 (P) - P2	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 9.99	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 10.14	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
		TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments: Not enough gw to fill one VOA
Purged dry immediately

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A10 CVOC GW	Project Number: 190716M
Well Number: A10-024(S)-PZ	Date: 10-11-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 10.10	Flow Rate (mL/min)
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 22.40	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1329		12.11	17.82	5.97	0.544	1.47	44.1		
1333		13.09	17.37	6.16	0.532	0.90	29.8		
1338		13.22	17.23	6.20	0.532	0.78	26.4		
1343		13.41	17.09	6.20	0.532	0.49	24.7		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-024(S)-19	1348	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-025(P)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): dry	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 12.01	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
		TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: dry

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A 10 CVOC	Project Number: 180716
Well Number: A10-025(S)-P2	Date: 10/15/19
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): none	QED Controller Settings:
Depth to Water (ft): 13.51	Flow Rate (mL/min) 240
Product Thickness (ft): —	Length of time Purged (min)
Depth to Bottom (ft): 20.23	Condition of Pad/Cover: T

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
0915	0	13.51	15.8	6.48	1.125	11.22	-112.9		V turbid
0920	0.3		15.9	6.01	0.948	8.54	-76.8		mod turbid
0925	0.5		15.9	5.60	0.888	6.76	-18.3		Δflow ~150
0930	0.4		15.8	5.50	0.868	6.22	-0.6		l. turb
0935	0.75		15.8	5.54	0.865	5.98	4.9		purged dry @
0940									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-025(S)-P2	0950	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments:
CVOC
air bubbles in tubing after 1 well volume but recharging v. fast

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft
_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name	Project Number:
Well Number: A10-027(P)-P2	Date:
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): dry	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 9.93	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
		TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: dry

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 5" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 Choc GW	Project Number: 180716M
Well Number: A10-027(SP)-PZ	Date: 10-9-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): ~~11.35~~ 13.45	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 23.34	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1040		13.57	17.19	6.43	0.724	2.30	92.8		
1045		13.58	16.71	6.46	0.744	1.88	88.4		
1050		13.58	16.80	6.45	0.749	1.60	87.6		
1055		13.59	16.83	6.41	0.748	1.28	93.1		
1100		13.59	16.74	6.44	0.747	1.13	87.0		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-027(P)-PZ	1115	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: AIO CVOC GW	Project Number: 180716M
Well Number: AIO-029(P)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 11.56	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 16.70	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ±10	Turbidity (NTU) ± 10% or < 5	Comments
1207		15.05	23.01	7.17	0.887	0.83	44.4		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
AIO-029(P)-PZ	0855 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: Purged dry @ 1208

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: AIO CVOC	Project Number: 180716m
Well Number: AIO-029(S)-PZ	Date: 10/15/19
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 18.98	Flow Rate (mL/min): 210
Product Thickness (ft): —	Length of time Purged (min):
Depth to Bottom (ft): 35.34	Condition of Pad/Cover: — /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1350	0	18.98	22.5	6.08	1.208	8.22	-32.9		turbid
1355	.3	18.98	21.1	5.59	0.978	5.59	-26.3		l. turbid
1400	.6	18.98	20.7	5.47	0.942	4.53	-20.8		clear
1405	.9		20.2	5.45	0.931	4.01	-19.5		
1410	1.2		20.3	5.44	0.930	3.83	-19.1		
1415			20.1	5.43	0.931	3.72	-18.4		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AIO-029(S)-PZ	1420	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: CVOC

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-034(P)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): dry	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 11.90	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
		TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: dry

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 CVOC	Project Number: 80716m
Well Number: A10-0346(s)-PZ	Date: 10/15/17
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 15.72	Flow Rate (mL/min): 260
Product Thickness (ft): —	Length of time Purged (min):
Depth to Bottom (ft): 27.76	Condition of Pad/Cover: — /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1210	0	15.72	19.5	4.68	1.142	8.75	134.0		
1215	0.3	15.73	20.0	4.11	1.085	5.81	175.8		clear
1220	0.6	15.74	19.8	4.16	1.070	4.76	179.2		
1225	0.9	15.76	19.7	4.15	1.064	4.37	180.5		
1230	1.2	15.77	19.6	4.12	1.061	4.14	182.3		
1235			19.4	4.11	1.066	4.02	183.8		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-0346(s)-PZ	1240	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: CVOC

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-035(P)-P2	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 14.45	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 14.90	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
not enough gw recharged after 24 hr to fill one VOA		TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments: Purged dry immediately, not enough gw in flow through cell to collect parameters

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-035(S)-PZ	Date: 10-11-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 14.27	Flow Rate (mL/min)
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 26.49	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1253		14.35	16.36	5.66	0.939	2.55	90.5		
1258		14.35	15.88	5.55	0.836	1.27	88.7		
1303		14.35	15.78	5.48	0.857	0.70	92.0		
1308		14.35	15.80	5.50	0.854	0.54	89.7		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-035(S)-PZ	1313	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-036(P)-P2	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 10.08	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 15.04	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
0836		13.20	20.38	7.24	1.521	1.21	13.2		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-036(P)-P2	1055 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: Purged dry @ 0836

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: A10 CMC GW	Project Number: 180716.M
Well Number: A10-036(S)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 12.75	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 26.41	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
0905		12.84	18.38	6.48	0.482	1.19	62.3		
0910		12.84	18.42	6.14	0.446	0.45	69.2		
0915		12.84	18.33	6.13	0.439	0.27	69.1		
0920		12.85	18.33	6.08	0.436	0.24	69.9		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-036(S)-PZ	0925	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-037(P)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 11.57	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 15.02	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1400		14.61	19.36	6.63	0.253	1.17	91.3		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-037(P)-PZ	1020 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: Purged dry @ 1401

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-037(S)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 12.56	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 24.76	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1420		12.76	18.53	6.81	0.308	1.99	53.1		
1425		12.76	17.46	6.09	0.255	0.78	73.7		
1430		12.76	17.26	6.01	0.239	0.53	79.2		
1435		12.77	17.29	6.01	0.236	0.43	80.9		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-037(S)-PZ	1440	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-036(P)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 10.05	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 15.02	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1104		12.10	20.04	7.02	0.544	0.63	22.9		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-036(P)-PZ	1120 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments: Purged dry @ 1109

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A10 CVOC GW	Project Number: 180716M
Well Number: A10-036(S)-PZ	Date: 10-11-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 10.10	Flow Rate (mL/min)
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 30.50	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1221		10.68	17.80	6.74	0.541	1.63	48A		
1226		10.68	17.64	5.87	0.484	0.90	77.9		
1231		10.68	17.56	5.76	0.479	0.56	79.5		
1236		10.69	17.48	5.67	0.474	0.43	82.2		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-036(S)-PZ	1241	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 Choc GW	Project Number: 190716M
Well Number: A10-039(P)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 11.48	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 14.95	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1340		13.05	21.47	7.55	0.821	0.72	-52.2		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-039(P)-PZ	1000 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCE	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments: Purged dry @ 1341

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ft x _____gal/ft = _____(gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: AIO CVOC	Project Number: 180716
Well Number: AIO-039(S)-PZ	Date: 10/15/19
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 13.56	Flow Rate (mL/min) 250
Product Thickness (ft): —	Length of time Purged (min)
Depth to Bottom (ft): 26.29	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1000	0	13.56	17.8	5.78	0.915	7.98	-21.5		M. turbid
1005	0.3	13.62	17.9	5.58	0.911	6.12	-35.4		
1010	0.6	13.69	17.9	5.56	0.916	5.08	-44.0		
1015	0.9	13.77	17.9	5.55	0.915	4.64	-47.3		
1020	1.2	13.85	17.6	5.54	0.916	4.35	-49.5		
1025	1.5		17.6	5.53	0.914	4.08	-50.7		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AIO-039(S)-PZ	1030	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments:
CVOC

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft
_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 cVOC GW	Project Number: 180716M
Well Number: A10-040(P)-P2	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 9.55	Flow Rate (mL/min)
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 15.02	Condition of Pad/Cover /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1151		12.62	23.22	6.50	0.615	0.86	61.9		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-040(P)-P2	0915 (grab sample collected 10-11-19)	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments: Purged dry at 1153

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Permanent Wells

Project Name: A10 CVOC	Project Number: 180716.m
Well Number: A10-040(S)-PZ	Date: 10/5/19
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 16.98	Flow Rate (mL/min): 250
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 28.49	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1300	0	16.98	20.3	6.26	1.488	7.87	-42.6		Turbid
1305	0.3	17.01	21.3	6.31	1.449	5.39	-99.8		Clear
1310	0.6	17.04	21.1	6.26	1.376	4.53	-106.5		
1315	0.9	17.07	21.2	6.20	1.316	4.02	-104.0		
1320	1.2	17.1	20.8	6.16	1.272	3.78	-101.2		
1325	1.5		20.5	6.14	1.254	3.69	-99.6		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-040(S)-PZ	1330	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: CVOC

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling

Permanent Wells

Project Name: ~~A10-041(P)-PZ~~ A10 cVOC GW	Project Number: 180716M
Well Number: A10-041(P)-PZ	Date: 10-10-19
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 6.64	Flow Rate (mL/min):
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 14.70	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1247		6.92	22.26	7.76	0.593	0.50	32.5		
1252		6.94	22.84	7.46	0.516	0.26	30.6		
1257		7.02	22.90	7.46	0.503	0.36	25.9		
1302		7.05	23.04	7.43	0.499	0.30	25.3		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected
A10-041(P)-PZ	1307	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 5" I.D. = 1.47 gal/ft

_____ft x _____gal/ft = _____(gal)

Permanent Wells

Project Name: A10 CVOC	Project Number: 180716 m
Well Number: A10-041(S)-PZ	Date: 10/15/19
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 14.22	Flow Rate (mL/min): 250
Product Thickness (ft):	Length of time Purged (min):
Depth to Bottom (ft): 28.43	Condition of Pad/Cover:

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1040	0	14.22	20.6	5.56	0.810	8.24	32.0		turbid
1045	0.3	15.22	19.7	4.88	0.768	5.56	81.7		~~clear~~
1050	0.6	16.22	18.8	4.66	0.763	4.96	107.0		clear
1055	0.9		18.4	4.31	0.789	4.31	116.9		
1100	1.2		18.5	4.41	0.809	4.04	120.5		
1105			18.4	4.50	0.825	3.85	122.0		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-041(S)-PZ	1110	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) Field Filtered	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) Field Filtered	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: CVOC

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ft x _____gal/ft = _____(gal)

A10-006 NAPL Investigation Area
Purge Logs

Low Flow Sampling
Permanent Wells

AKM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A10 CVOC GW Delin.	Project Number: 180716-1-3
Well Number: A10-006A-P2	Date: 1-21-20
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 2.63	Flow Rate (mL/min) 200
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 15.19	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1122	0.2		12.0	6.07	0.642	7.81	-58.1		
1127	0.4		12.4	7.11	0.536	5.80	-31.3		
1132	0.6		12.6	6.60	0.480	4.81	16.5		
1137	0.4		12.0	6.42	0.456	4.27	32.0		
1142	1.0		12.8	6.36	0.462	3.81	39.0		
1147	1.2		12.7	6.34	0.462	3.55	39.2		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-006A-P2	1152	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
		Matrix Spike			
		Duplicate			

Sampled By: TCV

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A10 CVOC GW Delin	Project Number: 180716-1-3
Well Number: A10-006B-P2	Date: 1-21-20
Well Diameter (in):	One Well Volume (gal):
Depth to Product (ft):	QED Controller Settings:
Depth to Water (ft): 2.37	Flow Rate (mL/min) 250
Product Thickness (ft):	Length of time Purged (min)
Depth to Bottom (ft): 28.14	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1222	0.25		12.3	5.45	0.370	7.35	151.7		
1227	0.5		13.9	5.07	0.401	5.55	202.0		
1232	0.75		13.9	4.95	0.431	4.78	210.7		
1237	1.0		14.4	4.86	0.439	4.36	218.4		
1242	1.25		14.1	4.85	0.442	4.13	223.3		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A10-006B-P2	1247	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: TCV

Comments:

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: AIO Test Pit	Project Number: 180716 M-1-3
Well Number: AIO-006F-PZ	Date: 1/21/20
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 15.93	Flow Rate (mL/min) 400
Product Thickness (ft): —	Length of time Purged (min)
Depth to Bottom (ft): 30.49	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1123	0	15.93	11.54	5.94	0.225		96		
1128	0.4		11.13	5.97	0.225		46		
1133	0.8		10.75	5.97	0.233		46		
1138	1.2		10.27	5.97	0.245		55		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
	1143	TCL-VOCs	3 - 40 mL VOA	HCl	y
		TPH-GRO	3 - 40 mL VOA	HCl	n
		TPH-DRO	2 - 1 L Amber	none	n
		TCL-SVOCs	2- 1 L Amber	none	y
		Oil & Grease	2- 1 L Amber	HCl	n
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments:

DO + turb inoperable (Horiba)

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: A10 TEST PIT	Project Number: 180716M-1-3
Well Number: A10-0016H-PZ	Date: 1/21/20
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 15.77	Flow Rate (mL/min) 350
Product Thickness (ft): —	Length of time Purged (min)
Depth to Bottom (ft): 31.09	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
~~1221~~	0	15.77	7.22	6.36	0.196		39		
1226	0.4		7.08	6.69	0.210		68		
1231	.8		7.01	6.85	0.206		80		
1236	1.2		6.96	6.81	0.210		89		
1241	1.6		6.94	6.82	0.211		94		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
	1246	TCL-VOCs	3 - 40 mL VOA	HCl	y
		TPH-GRO	3 - 40 mL VOA	HCl	n
		TPH-DRO	2 - 1 L Amber	none	n
		TCL-SVOCs	2- 1 L Amber	none	y
		Oil & Grease	2- 1 L Amber	HCl	n
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments:

DO+turb inoperable (Horiba)

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

AKM Group Inc.
Earth Resource Engineers and Consultants

Project Name: AIO test pit	Project Number: 1807/6m-1-3
Well Number: AIO-006I-PZ	Date: 1/21/20
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 9.35	Flow Rate (mL/min) 375
Product Thickness (ft): —	Length of time Purged (min)
Depth to Bottom (ft): 15.01	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1204	0	9.35	7.84	6.63	0.196		47		
1209	.4		7.49	6.71	0.183		51		
1214	.8								
1219	1.2								

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
	1300	TCL-VOCs	3 - 40 mL VOA	HCl	y
		TPH-GRO	3 - 40 mL VOA	HCl	n
		TPH-DRO	2 - 1 L Amber	none	n
		TCL-SVOCs	2- 1 L Amber	none	y
		Oil & Grease	2- 1 L Amber	HCl	n
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: purge dry @ 1212
DO turb inoperable (Horiba)

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft
_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: AO Test Pit	Project Number:
Well Number: AO-SOIL-PZ	Date: 1/21/20
Well Diameter (in): 1	One Well Volume (gal):
Depth to Product (ft): —	QED Controller Settings:
Depth to Water (ft): 14.91	Flow Rate (mL/min) 200
Product Thickness (ft): —	Length of time Purged (min)
Depth to Bottom (ft): 28.63	Condition of Pad/Cover: /

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1052	0	14.91	12.71	4.52	0.391	0	285	0.0	
1057	0.4		12.45	4.61	0.397		286		
1102	0.8		12.33	4.63	0.410		290		
1107	1.2		12.82	4.62	0.415		289		

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
	1112	TCL-VOCs	3 - 40 mL VOA	HCl	y
		TPH-GRO	3 - 40 mL VOA	HCl	n
		TPH-DRO	2 - 1 L Amber	none	n
		TCL-SVOCs	2- 1 L Amber	none	y
		Oil & Grease	2- 1 L Amber	HCl	n
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments:

DO + turb inoperable (Horiba)

Casing Volume: 1" I.D. = 0.041 gal/ft - 2" I.D. = 0.163 gal/ft - 4" I.D. = 0.653 gal/ft - 6" I.D. = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Parcel A18 Phase II Investigation Purge Logs

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AIB Phase II	Project Number:	20010118
Well Number:	AIB-002-PZ	Date:	8/9/20
Well Diameter (in):	1	One Well Volume (gal):	
Depth to Product (ft):	NA	QED Controller Settings:	
Depth to Water (ft):	12.95	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	40
Depth to Bottom (ft):	18.70	Condition of Pad/Cover:	

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1141	0.2	12.95	30.24	6.84	— ↑	2.26	138	overrange	
		Horiba was leaking							
1146	0.7	12.97	29.74	5.59	0.503	1.16	163	overrange	
1151	1.2	12.97	29.22	5.48	0.504	0.73	183	overrange	
1156	1.7	12.97	27.83	5.22	0.541	0.69	170	overrange	
1201	2.1	12.97	27.99	5.31	0.538	0.66	164	overrange	
1206	2.5	12.97	28.27	5.32	0.542	0.65	164	215.1	
1211	2.8	12.97	28.53	5.31	0.541	0.63	165	121.8	
1216	3.1	12.97	28.79	5.41	0.540	0.80	161	88.6	
1221	3.4	12.97	28.84	5.47	0.540	0.93	158	61.0	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AIB-002-PZ	1230	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
		Matrix Spike			N
		Duplicate			N

Sampled By: LLP

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	A18 Phase II	Project Number:	2001018
Well Number:	A18-008-P2	Date:	7/7/20
Well Diameter (in):	1	One Well Volume (gal):	—
Depth to Product (ft):	NA	QED Controller Settings:	—
Depth to Water (ft):	11.66	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	40
Depth to Bottom (ft):	21.40	Condition of Pad/Cover:	—

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1321	0.1	11.72	25.72	5.39	0.586	2.01	43	overrange	
1326	0.6	11.72	24.98	5.38	0.589	1.29	48	overrange	
1331	1.1	11.72	23.81	5.34	0.601	0.84	54	89.4	
1336	1.6	11.73	23.64	5.32	0.602	0.73	58	70.7	
1341	2.1	11.73	23.96	5.28	0.598	0.61	64	57.8	
1346	2.6	11.73	19.56	5.17	0.667	0.68	72	44.7	
1351	3.1	11.73	19.23	5.08	0.680	0.65	80	35.1	
1356	3.6	11.73	20.49	5.01	0.669	0.53	90	23.5	
1401	4.1	11.73	21.30	4.98	0.652	0.42	98	19.4	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-008-P2	1410	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LCP

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AIB phase II	Project Number:	20010 11B
Well Number:	AIB-009-P2	Date:	9/7/20
Well Diameter (in):	1	One Well Volume (gal):	—
Depth to Product (ft):	NA	QED Controller Settings:	—
Depth to Water (ft):	18.33	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	25
Depth to Bottom (ft):	26.98	Condition of Pad/Cover:	—

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1154	0.1	19.45	24.16	7.63	0.586	3.72	-10	210.1	
1159	0.6	19.45	24.14	6.65	0.572	2.19	90	60.9	
1204	1.1	19.45	24.20	6.60	0.570	2.64	109	51.5	
1209	1.6	19.45	23.92	6.56	0.573	2.54	120	49.7	
1214	2.1	19.45	24.46	6.56	0.563	2.38	127	52.0	
1219	2.6	19.45	23.97	6.55	0.572	2.39	128	53.9	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AIB-009-P2	1220	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	~~Y~~ N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells
Temp

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AIB Phase II	Project Number:	20010118
Well Number:	AIB-011-PZ	Date:	7/9/20
Well Diameter (in):	1	One Well Volume (gal):	
Depth to Product (ft):	NA	QED Controller Settings:	
Depth to Water (ft):	13.02	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	25
Depth to Bottom (ft):	17.66	Condition of Pad/Cover:	good

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1421	0.1	13.02	27.92	11.29	0.689	5.80	-101	24.6	
1426	0.5	13.02	26.77	11.14	0.706	3.92	-120	15.4	
1431	0.9	13.02	26.02	11.15	0.709	3.83	-115	7.96	
1436	1.3	13.02	26.35	11.14	0.703	3.49	-113	4.98	
1441	1.7	13.02	26.46	11.16	0.698	3.70	-113	4.02	
1446	2.1	13.02	26.64	11.17	0.691	3.60	-114	2.11	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AIB-011-PZ	1455	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
		Matrix Spike			N
		Duplicate			N

Sampled By: LCP

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	A18 Phase II	Project Number:	20010118
Well Number:	A18-013-P2	Date:	7/9/20
Well Diameter (in):	1	One Well Volume (gal):	
Depth to Product (ft):	NA	QED Controller Settings:	
Depth to Water (ft):	12.33	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	25
Depth to Bottom (ft):	17.51	Condition of Pad/Cover:	

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
935	0.2	12.80	25.90	6.70	0.436	4.51	-86	172.3	
940	0.7	12.83	26.33	6.78	0.410	4.25	-96	89.5	
945	1.2	12.83	26.84	6.84	0.394	4.21	-98	33.7	
950	1.6	12.83	27.13	6.86	0.386	4.08	-98	10.7	
955	2.0	12.93	27.31	6.87	0.382	4.12	-97	9.3	
1000	2.4	12.93	27.49	6.89	0.379	4.10	-97	8.7	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-013-P2	1005	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	~~N~~ N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: **1" I.D.** – 0.041 gal/ft - **2" I.D.** – 0.163 gal/ft - **4" I.D.** – 0.653 gal/ft - **6" I.D.** – 1.47 gal/ft

_____ft x _____ gal/ft = _____(gal)

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AIG Phase 2	Project Number:	20010113
Well Number:	A18-014-P2	Date:	7/8/20
Well Diameter (in):	1	One Well Volume (gal):	
Depth to Product (ft):	NA	QED Controller Settings:	
Depth to Water (ft):	13.30	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	40
Depth to Bottom (ft):	24.15	Condition of Pad/Cover:	

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
846	0.1	13.31	21.86	4.55	0.601	4.88	136	overrange	
851	0.6	13.31	21.92	4.59	0.596	1.89	99	overrange	
856	1.1	13.32	21.96	4.37	0.577	1.04	100	115.1	
901	1.6	13.32	22.09	4.45	0.575	0.90	92	89.7	
906	2.1	13.32	22.26	4.35	0.570	0.80	97	78.0	
911	2.6	13.32	22.04	4.91	0.582	0.71	83	80.5	
916	3.1	13.32	21.98	4.93	0.585	0.73	79	46.1	
921	3.6	13.32	21.96	4.94	0.588	0.70	74	39.5	
926	4.1	13.32	21.96	4.95	0.588	0.66	70	26.7	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-014-P2	926	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					Y
Duplicate					N

Sampled By: LP

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AOC Phase II	Project Number:	20010118
Well Number:	A18-015-P2	Date:	7/7/20
Well Diameter (in):	1	One Well Volume (gal):	
Depth to Product (ft):	NA	QED Controller Settings:	
Depth to Water (ft):	13.17	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	30
Depth to Bottom (ft):	21.90	Condition of Pad/Cover:	

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1506	0.25	13.19	27.30	5.50	0.509	1.04	74	overrange	
1511	0.75	13.19	27.40	5.35	0.503	0.75	98	107.1	
1516	1.25	13.19	27.81	5.33	0.507	0.57	103	67.5	
1521	1.75	13.19	28.30	5.34	0.505	0.49	106	59.7	
1526	2.25	13.20	28.50	5.43	0.500	0.49	106	52.1	
1531	2.75	13.20	28.54	5.45	0.499	0.48	106	50.3	
1536	3.25	13.20	28.60	5.46	0.497	0.48	107	49.6	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
A18-015-P2	1550 (1535)	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: LLP

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AIB phase 1F	Project Number:	2001018
Well Number:	AIB-016-P2	Date:	7/8/20
Well Diameter (in):	1	One Well Volume (gal):	—
Depth to Product (ft):	NA	QED Controller Settings:	—
Depth to Water (ft):	12.12	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	40
Depth to Bottom (ft):	26.13	Condition of Pad/Cover:	—

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1406	0.2	12.27	29.85	6.35	0.345	4.91	37	overrange	
1411	0.7	12.30	30.02	6.35	0.345	1.98	60	overrange	
1416	1.2	12.31	30.40	6.30	0.353	1.33	79	overrange	
1421	1.7	12.31	29.90	6.64	0.306	1.07	-16	144.2	
1426	2.2	12.31	30.58	6.65	0.307	1.03	18	98.4	
1431	2.7	12.31	31.25	6.74	0.295	0.91	-45	74.7	
1436	3.2	12.31	31.63	6.78	0.292	1.02	15	68.1	
1441	3.7	12.31	31.84	6.64	0.278	0.86	-34	60.3	
1446	4.2	12.31	31.93	6.74	0.277	0.84	-28	55.2	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AIB-016-P2	1500	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					N

Sampled By: CLP

Comments: Purged for 30 min prior

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
~~Permanent~~ Temp Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AIB Phase II	Project Number:	2001018
Well Number:	AIB-017-PZ	Date:	7/8/20
Well Diameter (in):	1	One Well Volume (gal):	—
Depth to Product (ft):	NA	QED Controller Settings:	—
Depth to Water (ft):	12.64	Flow Rate (mL/min)	
Product Thickness (ft):	NA	Length of time Purged (min)	40+
Depth to Bottom (ft):	28.00	Condition of Pad/Cover:	—

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1036	0.1	12.67	27.33	5.25	0.446	2.74	123	overrange	
1041	0.7	12.67	26.94	4.52	0.444	0.89	106	139.3	
1046	1.3	12.67	26.82	4.35	0.441	0.72	100	49.8	
1051	2.0	12.67	26.77	4.23	0.444	0.60	84	32.3	
1056	2.7	12.67	25.98	5.04	0.475	0.52	87	28.7	
1101	3.4	12.67	26.57	4.84	0.471	0.46	89	22.1	
1106	4.1	12.67	25.99	4.99	0.535	0.48	122	overrange	
1111	4.8	12.67	26.84	4.96	0.527	0.39	130	overrange	
1116	5.5	12.67	27.14	4.95	0.522	0.39	129	overrange	
	Purged longer to clear turbidity								

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
AIB-017-PZ	1120	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	Y
		TPH-DRO	2 - 1 L Amber	none	Y
		TCL-SVOCs	2- 1 L Amber	none	Y
		Oil & Grease	2- 1 L Amber	HCl	Y
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	N
		Total Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	Y
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	Y
		PCB	2 - 1 L Amber	None	N
		Matrix Spike			N
		Duplicate			~~N~~ Y

Sampled By: LMP

Comments:

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft
_____ ft x _____ gal/ft = _____ (gal)

Low Flow Sampling
Permanent Wells

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name:	AIB misc. GW	Project Number:	20010118
Well Number:	S606-PPM004	Date:	7/23/20
Well Diameter (in):	2	One Well Volume (gal):	—
Depth to Product (ft):	NA	QED Controller Settings:	—
Depth to Water (ft):	16.92	Flow Rate (mL/min)	303
Product Thickness (ft):	NA	Length of time Purged (min)	25
Depth to Bottom (ft):	16.92	Condition of Pad/Cover:	None / OK

PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (ms/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1236	0.0	12.65	29.18	11.31	0.776	2.22	-104	6.11	
1241	0.4		28.99	11.21	0.764	1.25	-114	5.25	
1246	0.8		28.84	11.16	0.745	1.04	-110	4.71	
1251	1.2		28.24	11.31	0.750	1.07	-115	4.48	
1256	1.6		28.09	11.30	0.745	1.09	-112	4.07	
1251	2.0		28.22	11.30	0.741	1.14	-111	3.95	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
S606-PPM004	1255	TCL-VOCs	3 - 40 mL VOA	HCl	
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		Oil & Grease	2- 1 L Amber	HCl	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		Total Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (Dissolved) **Field Filtered**	1 - 250 mL Plastic	none	
		PCB	2 - 1 L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: LMP

Comments: VOCs

Casing Volume: **1" I.D.** = 0.041 gal/ft - **2" I.D.** = 0.163 gal/ft - **4" I.D.** = 0.653 gal/ft - **6" I.D.** = 1.47 gal/ft

_____ ft x _____ gal/ft = _____ (gal)