FINISHING MILLS GROUNDWATER PHASE II INVESTIGATION REPORT

TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

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1.0 INTRODUCTION

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has completed a comprehensive Finishing Mills Groundwater Investigation on a portion of the Tradepoint Atlantic property. The Tradepoint Atlantic property consists of approximately 3,100 acres that has been divided into investigation areas A and B and associated parcels as shown in **Figure 1**. The Finishing Mills Groundwater Investigation area (the Site) is comprised of 339.8 acres of the approximately 2,175-acre Area B subdivision (see **Figure 1**). The Finishing Mills area includes three separate parcels of land defined as Parcel B6 (148 acres), Parcel B21 (61 acres), and Parcel B22 (131 acres). A small section of Parcel B22 (23 acres) was also included within the study area of the Area B Groundwater Investigation (Work Plan dated October 6, 2015; Phase II Report dated September 30, 2016). The Site is bounded to the west by the Humphreys Creek Impoundment (Parcel B14), the NCMC building (Parcel A4), and the Tin Mill Canal (Parcel B16); to the north by the Interstate 695, to the south by the current main employee services and human resources building and the former Roll Grinder Facility (Parcel B3) and the former Plant/Mason's Garage (Parcel B2), and to the east by the former Maintenance of Way Yard (Parcel A10) and Sparrows Point Road.

The Groundwater Investigation was performed in accordance with procedures outlined in the approved Phase II Investigation Work Plan – Finishing Mills Groundwater Investigation. This Work Plan (dated July 7, 2016) was approved by the Maryland Department of the Environment and the United States Environmental Protection Agency on June 28, 2016 in compliance with requirements pursuant to the following:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (effective September 12, 2014); and

- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (effective November 25, 2014).

An application to enter the Tradepoint Atlantic property into the Maryland Department of the Environment Voluntary Cleanup Program (MDE-VCP) was submitted to MDE on September 10, 2014. The property's current and anticipated future use is Tier 3 (Industrial), and plans for the property include demolition and redevelopment over the next several years. The Finishing Mills area (with the exception of the 23 acres covered by the Area B Groundwater Work Plan) is also part of the acreage that remains subject to the requirements of the Multimedia Consent Decree between Bethlehem Steel Corporation, the United States Environmental Protection Agency (EPA), and the Maryland Department of the Environment (MDE) (effective October 8, 1997) as documented in correspondence received from EPA on September 12, 2014.

1.1. SITE HISTORY

From the late 1800s until 2012, the production and manufacturing of steel was conducted at Sparrows Point. Iron and steel production operations and processes at Sparrows Point included raw material handling, coke production, sinter production, iron production, steel production, and semi-finished and finished product preparation. In 1970, Sparrows Point was the largest steel facility in the United States, producing hot and cold rolled sheets, coated materials, pipes, plates, and rod and wire. The steel making operations at Sparrows Point ceased in fall 2012.

The Finishing Mills area was formerly occupied by the following major facilities: the Hot Strip Mills Area, the Continuous Sheet Mill (Cold Mill), and the Continuous Cold Tin Mill, each containing numerous steel facilities. The area also included Processing and Shipping Buildings, PORI Facilities, and the Contractor's Village. All buildings have been recently demolished or are in the process of being demolished, as construction development on sections of the Site (Parcel B22) is currently in progress. Several pits and basements across the Site have been filled-in, with others remaining open. The concrete slabs remain on grade.

1.2. OBJECTIVES

The objectives of this investigation were to:

1. Define groundwater flow directions and gradients;
2. Assess the presence or absence of impacts to groundwater within the Finishing Mills area;
3. Identify potential continuing sources of groundwater contamination including potential sources that may have been located in deeper subgrade structures; and
4. Characterize the quality of groundwater at the perimeter of the Site that potentially is discharging to other parcels and ultimately to surface water.

This report includes a summary of the work performed, including the environmental setting, site investigation methods, analytical results and data usability assessment, and findings and recommendations.

2.0 ENVIRONMENTAL SETTING

2.1. LAND USE AND SURFACE FEATURES

The Tradepoint Atlantic property consists of the former Sparrows Point steel mill. According to the Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos dated May 19, 2014, the property is zoned Manufacturing Heavy-Industrial Major (MH-IM). Surrounding property zoning classifications (beyond Tradepoint Atlantic) include the following: Manufacturing Light (ML); Resource Conservation (RC); Density Residential (DR); Business Roadside (BR); Business Major (BM); Business Local (BL); and Residential Office (RO). Light industrial and commercial properties are located northeast of the property and northwest of the property across Bear Creek. Residential areas of Edgemere and Fort Howard are located northeast of the property across Jones Creek and to the southeast across Old Road Bay, respectively. Residential and commercial areas of Dundalk are located northwest of the property across Bear Creek.

According to topographic maps provided by EAG, the Site rages in elevation from approximately 4 feet above mean sea level (amsl) to 34 amsl. The highest elevation within the study area is in the north east corner of the Site, adjacent to Wharf Road. The Site is comprised of approximately 63% natural land and associated surface soils and 37% slag fill based on the approximate shoreline of the Sparrows Point Peninsula in 1916, as shown on **Figure 2** (adapted from Figure 2-20 in the Description of Current Conditions (DCC) Report prepared by Rust Environmental and Infrastructure, dated January 1998). In general, the subsurface geology includes slag fill materials overlying natural soils, which include fine-grained sediments (clays and silts) and coarse grained sediments (sands).

Overall, elevations are fairly level across the Site, with drainage towards the Tin Mill Canal from the Finishing Mills Groundwater Investigation study area. There is a steep slope from Wharf Road to Parcel B6 with a rapid decrease in elevation in the northwest corner of the Finishing Mills area. The central portion of the Finishing Mills area (Parcels B22 and B6) appears to be at a relatively consistent elevation of 12 feet amsl. Parcel B21 tends to range from 8 to 12 feet amsl. The south portion of the study area tends to have elevations ranging from 8 to 18 feet amsl. The lowest elevations tend to be present in subgrade structures across the study area (approximately 0-4 feet amsl). Stormwater from the majority of the Finishing Mills is directed to the Tin Mill Canal, discharged through Outfall MP 114 and Outfall 214, and ultimately discharged to Bear Creek through Outfall 014. Stormwater in the southern section of Parcel B22 is directed west through Outfall 017, which discharges to Jones Creek. The stormwater discharges are covered under existing National Pollutant Discharge Elimination System (NPDES) discharge permits MD0001201 & MD0068462. A detailed discussion of the existing NPDES discharge locations is presented in the Stormwater Pollution Prevention Plan (SWPPP) Revision 3 developed for the Tradepoint Atlantic property by ARM dated August 19, 2016.

2.2. REGIONAL GEOLOGY

The Site is located within the Atlantic Coastal Plain Physiographic Province (Coastal Plain). The western boundary of the Coastal Plain is the "Fall Line", which separates the Coastal Plain from the Piedmont Plateau Province. The Fall Line runs from northeast to southwest along the western boundary of the Chesapeake Bay, passing through Elkton (MD), Havre de Grace (MD), Baltimore City (MD), and Laurel (MD). The eastern boundary of the Coastal Plain is the off-shore Continental Shelf.

The unconsolidated sediments beneath the Site belong to the Talbot Formation (Pleistocene), which is then underlain by the Cretaceous formations which comprise the Potomac Group (Patapsco Formation, Arundel Formation and the Patuxent Formation). The Potomac Group formations are comprised of unconsolidated sediments of varying thicknesses and types, which may be several hundred feet to several thousand feet thick. These unconsolidated formations may overly deeper Mesozoic and/or Precambrian bedrock. Depth to bedrock is approximately 700 feet within the Site.

2.3. SITE HYDROGEOLOGY/GEOLOGY

Three near-surface hydrogeologic, or groundwater, zones were identified from previous site investigations. According to the Site Wide Investigation Report of Nature & Extent of Releases to Groundwater from the Special Study Areas (SSAs) (URS 2005, revised 2007), these zones were designated shallow, intermediate, and lower. The hydrogeologic boundary elevations vary by several feet across the Sparrows Point facility.

The shallow water table below the Site occurs within recent sedimentary deposits or slag fill material, and includes the unconfined water table at the Site. Monitoring wells designated as shallow are screened within this shallow, unconfined unit. The "shallow" bottom-of-screen elevations generally range from +5 to -20 feet amsl. In some areas of the Site, the slag fill is directly underlain by and connected to the coarser grained beds or lenses within the Talbot Formation that comprise the Upper Talbot Channel Unit. In these areas, the slag fill and Upper Talbot Channel Units form a single groundwater flow system. In much of the investigation area, the slag fill material is underlain by finer-grained silts and clays that comprise the Talbot Clay Aquitard. In these areas, shallow groundwater flow may be separated from groundwater in any underlying coarse-grained beds or lenses.

The intermediate hydrogeologic zone includes the unconfined to partially confined groundwater in the Pleistocene Upper Talbot unit. The "intermediate" bottom-of-screen elevations generally range from -20 to -50 feet amsl. The presence of clay and silt layers within the intermediate hydrogeologic zone likely retard the vertical recharge of groundwater from the upper fill material.

The lower hydrogeologic zone includes the confined groundwater in the Lower Talbot or Upper Patapsco Sand unit. The "lower" bottom-of-screen elevations generally range from -50 to -141 feet amsl. The lower hydrogeologic zone was not investigated in the focused Finishing Mills Groundwater Investigation. Hydrogeologic zones at greater depth are known to exist based on a review of the regional geology; however, these deeper units are isolated from the upper three units and impacts have not been identified from former iron and steel operations.

Soil borings were advanced to depths in the shallow hydrogeologic zone ranging from 13 to 30 feet below the ground surface (bgs) to facilitate well installation. Soil borings were advanced to depths in the intermediate hydrogeologic zone ranging from 50 to 70 feet bgs. The soil borings were often advanced several feet lower than the final installation depth of the corresponding monitoring well. Historical shallow monitoring wells included in the Finishing Mills investigation were previously installed to depths between 13.5 and 18 feet bgs. Historical intermediate monitoring wells in the Finishing Mills investigation were previously installed to depths between 38 and 57 feet bgs. Well construction logs for newly installed wells are provided in **Appendix A,** and the construction details for existing (historical) wells are provided in **Appendix B**. Soil boring logs are provided in **Appendix C**.

3.0 SITE INVESTIGATION

A total of 71 groundwater samples were collected for analysis between May 24, 2016 and July 15, 2016 as part of the Finishing Mills Groundwater Investigation. This groundwater investigation utilized methods and protocols that followed the procedures included in the Quality Assurance Project Plan (QAPP) dated April 5, 2016 approved by the agencies to support the investigation and remediation of the Tradepoint Atlantic property. Information regarding the project organization, field activities and sampling methods, sampling equipment, sample handling and management procedures, the selected laboratory and analytical methods, quality control and quality assurance procedures, investigation-derived waste (IDW) management methods, and reporting requirements are described in detail in the approved Finishing Mills Groundwater Investigation Work Plan dated July 7, 2016, and the QAPP.

All site characterization activities were conducted under the site-specific health and safety plan (HASP) provided as Appendix G of the approved Work Plan.

3.1. MONITORING WELL LOCATIONS

Previous activities within and around the buildings and facilities located on the Tradepoint Atlantic property may have been historical sources of environmental contamination. Potential sources of releases to groundwater were located through a careful review of historical documents. Potential sources included, as applicable, 1) Recognized Environmental Conditions (RECs) shown on the REC Location Map provided in Weaver Boos' Phase I ESA, 2) additional findings (non-RECs) from the Phase I ESA which were identified as potential environmental concerns, 3) Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified from the DCC Report prepared by Rust Environmental and Infrastructure, and 4) potential source targets based on a review of previous manufacturing activities.

Four (4) sets of historical drawings were reviewed to identify potential sampling targets from previous manufacturing activities at the Site. These drawings included the 5000 Set (Plant Arrangement), the 5100 Set (Plant Index), the 5500 Set (Plant Sewer Lines), and a set of drawings indicating coke oven gas distribution drip leg locations. Drip legs are points throughout the distribution system where coke oven gas condensate was removed from the gas pipelines. The condensate from the drip legs was typically discharged to drums, although it is possible some spilled out of the drums and on to the ground. A summary of the specific drawings covering the Site is presented in **Table 1**.

As described in the approved Finishing Mills Groundwater Investigation Work Plan, a biased approach was developed and utilized to locate groundwater monitoring wells within the Site. The goal of this approach was to place wells and temporary monitoring collection points (piezometers) in locations that intersect the estimated groundwater flow areas from potential

sources of groundwater contamination. A set of permanent wells were located along the Finishing Mills boundary to characterize the quality of the groundwater potentially migrating from the investigation area. Estimated flow areas for potential sources were delineated hydrogeologically downgradient of their locations using the historical groundwater contour map of the Site adapted from Figure 3-11: Shallow Hydrogeologic Zone Groundwater Flow Contours June 2004 from the Site Wide Investigation Report of Nature & Extent of Releases to Groundwater from the Special Study Areas prepared by URS, dated January 2005 (revised 2007). The report also presented a contour map based on December 2003 groundwater elevations showing a similar groundwater flow pattern. **Figure 3** displays the locations in the Finishing Mills investigation area, along with the potential source areas identified prior to the investigation.

During the completion of fieldwork, it was necessary to shift some groundwater points from the approved locations given in the Work Plan, primarily due to access restrictions, refusal, and/or utility conflicts. **Table 2** provides the identification numbers of the monitoring wells and piezometers, the hydrogeologic zone, the coordinates of the proposed locations, and the final surveyed coordinates. The distance and direction of all field shifts are given based on the proposed/final coordinates.

3.2. WELL INSPECTION

Thirty-seven (37) historical site-wide wells were selected for inclusion within the study area. These wells were inspected to determine their suitability for sampling. During the well inspections, the present condition of the monitoring well, casing, and pad were observed. If the well was still present and appeared to be in good condition, the depth to water and depth to bottom of the well were recorded and the well was included for sampling in the Finishing Mills Groundwater Investigation. After performing well inspections of the existing historical wells, 15 of those wells were present and determined to be potentially suitable for sampling without additional reconstruction prior to development. Of the remaining 22 locations which were observed to be in poor condition or destroyed, 9 wells located in the shallow or intermediate zones were repaired or replaced. Well inspection forms for all historical wells are included in **Appendix D**.

3.3. WELL INSTALLATION

A total of 24 monitoring wells and 32 piezometers were installed across the Finishing Mills Groundwater study area (including six monitoring wells installed as part of the Area B Groundwater Investigation being included in this Finishing Mills Groundwater Investigation). Of these 56 sample collection points, 9 were installed as monitoring wells and 16 were installed as piezometers in new locations and screened in the shallow hydrogeologic zone. Of the 56 sample collection points, 7 were installed as monitoring wells and 15 were installed as piezometers in new locations and screened in the intermediate hydrogeologic zone. The remaining 9 locations

were installed to replace damaged existing (historical) wells. Of these 9 locations, 5 were screened within the shallow hydrogeologic zone and 4 were screened in the intermediate hydrogeologic zone. Monitoring well construction activities were conducted in accordance with the procedures and methods referenced in **Field SOP Numbers 005, 012, 013, 014, 016, 019, and 020**. Well construction logs are provided in **Appendix A**.

3.4. WELL DEVELOPMENT

Each historical existing well that was sampled was first redeveloped according to procedures referenced in **Field SOP Number 018** provided in Appendix A of the QAPP. After redevelopment, the depth to bottom in each well was recorded to compare to the original drilled depth. Similarly, all newly installed wells were developed prior to sampling in accordance with the procedures referenced in **Field SOP Number 018**. Well Development Forms for the historical wells and newly installed monitoring wells have been included in **Appendix E**.

3.5. WATER LEVEL MEASUREMENTS

The groundwater sample collection points used in this investigation were surveyed by a Maryland-licensed surveyor to obtain top of casing (TOC) elevation data. Supporting documentation from the surveys is included as **Appendix F**. A synoptic round of groundwater measurements was collected on October 3, 2016 from each well included in the monitoring network. Surveyed TOC and ground surface elevations for all applicable locations can be found in **Table 3**, along with the depth to water (DTW) measurements from this date. The hydrogeologic zones of each listed well are also indicated. The groundwater elevation data from these monitoring wells were used to create the groundwater contour maps indicating groundwater flow direction in the shallow and intermediate hydrogeologic zones (**Figure 4** and **Figure 5**, respectively).

As shown in **Figure 4**, the highest groundwater elevations in the shallow hydrogeologic zone are located towards the southeast portion of the Site. Shallow groundwater appears to flow from the southeast towards the northwest into the Tin Mill Canal. Shallow groundwater appears to remain fairly level in the middle portion of the Site (Parcel B22/B6), with a potential divide diverting groundwater in some areas to the northeast and southwest before redirecting toward the Tin Mill Canal. Shallow groundwater at the Site in the most northern portion of the Site (Parcel B6), appears to flow from the northwest to the south until intersecting with the Tin Mill Canal. The lowest shallow groundwater elevations appear to be in sampling locations adjacent to the Tin Mill Canal, with the lowest elevations being adjacent to the western portion of the Tin Mill Canal (towards the Bear Creek Outfall).

As shown in **Figure 5**, groundwater in the intermediate hydrogeologic zone appears to flow from the northeast portion of the Finishing Mills study area generally toward the southwest portion of the study area. Groundwater elevations in the intermediate zone appear to be lowest toward the

western portion of the Tin Mill Canal, directing water ultimately toward Bear Creek. A small mound appears to be present toward the south-central portion of the Site, directing groundwater radially in all directions. This indicates that intermediate groundwater in the southern portion of the Finishing Mills may preferentially flow to the east to discharge at Jones Creek.

3.6. GROUNDWATER SAMPLING

A total of 71 samples were collected for the Finishing Mills Groundwater Investigation. Of the 71 total sample collection points that were sampled as part of the study area, 41 were screened in the shallow hydrologic zone and 30 were screened in the intermediate hydrologic zone.

Groundwater samples were collected in accordance with methods referenced in **Field SOP Number 007** provided in Appendix A of the QAPP; which employed the use of laboratory supplied sample containers and preservatives, a peristaltic pump, dedicated polyethylene tubing, and a YSI water quality meter with a flow-through cell. The sampling and purge logs have been included in **Appendix G**. Calibration of the YSI meter was performed before the start of each day of the sampling event, and a calibration post-check was completed at the end of the day. Appropriate documentation of the YSI meter calibration has also been included in **Appendix G**.

All groundwater samples were submitted to Pace Analytical Services, Inc. (PACE), and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) via USEPA Method 8260B, TCL semi-volatile organic compounds (SVOCs) via USEPA Methods 8270D and 8270D SIM, Target Analyte List (TAL) Dissolved Metals via 6010C and 7470A, hexavalent chromium via USEPA Method 7196A, total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO) via USEPA Methods 8015B and 8015D and cyanide (total) via USEPA Method 9012A. Permanent groundwater wells were additionally analyzed for TAL Total Metals. Groundwater samples submitted for analysis of TAL Dissolved Metals were filtered in the field with an in-line 0.45 micron filter. In addition, monitoring well locations adjacent to the Tin Mill Canal were analyzed for polychlorinated biphenyls (PCBs) via USEPA Method 680. Sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

3.7. DEVIATIONS FROM SAMPLING PLAN

During the course of fieldwork, several deviations from the original sampling plan presented in the approved Finishing Mills Groundwater Investigation Work Plan dated July 7, 2016 were necessary based on the encountered field conditions. These deviations are documented below:

- During piezometer installation, several Geoprobe® advancement attempts and field shifts were made to install proposed piezometer FM-010-PZI. However, refusal was encountered at depths less than 15 feet bgs during each attempt. Further installation

attempts for intermediate piezometer FM-010-PZI were terminated and no installation was completed.

- Hexavalent chromium is typically analyzed via USEPA Method 7196A. Method 7196A is a colorimetric method used to determine the concentration of hexavalent chromium in groundwater. All initial hexavalent chromium samples in the Finishing Mills Groundwater Investigation were collected as total hexavalent chromium. However, high turbidities present in some unfiltered samples resulted in a matrix interference with this colorimetric method. On July 15, 2016, five groundwater sample locations (FM-008-PZS, FM-013-PZI, FM-015-PZS, TM10-PZM007, and SW-075-MWI) were resampled as dissolved hexavalent chromium via USEPA Method 7196A. In addition, samples from FM-008-PZS were collected using low-flow techniques on July 6, 2016 to be re-analyzed by method 7196A and by an alternative method (7199). The original hexavalent chromium data with high turbidities were noted to be suspect, and the data from the resamples are included in **Tables 8** and **9** and **Figures GW-8** and **GW-9**, where appropriate.

- On June 24, 2016, ARM personnel began low flow groundwater sampling techniques at historical well TM15-PZM031. The purge log from this well indicates the well was purged dry after approximately three minutes. After giving TM15-PZM031 approximately 20 minutes of equilibration time, sampling was attempted. The following samples were collected at this time: 3-40 mL HCl VOAs for sample parameters VOCs and GRO and 1-250 mL NaOH plastic bottle for sample parameter cyanide. The field log book indicates these were the only samples collected due to purging the well dry and the lack of sufficient water recovery. There was no attempt made to continue sample collection. The following samples were not collected from TM15-PZM031: DRO, SVOCs, TAL Metals (total and dissolved), hexavalent chromium, and PCBs.

3.8. MANAGEMENT OF INVESTIGATION-DERIVED WASTE

In accordance with **Field SOP Number 005** provided in Appendix A of the QAPP, all potentially impacted materials, or investigation derived waste (IDW) generated during this Groundwater Investigation was containerized in 55-gallon (DOT-UN1A2) drums. The types of IDW that were generated during this Groundwater Investigation included the following:

- soil cuttings generated the installation of the groundwater sampling points;
- purged groundwater;
- decontamination fluids; and
- used personal protective equipment

The soil IDW generated during well installation was categorized based on the specific parcel in which the installation took place. Based on this grouping, composite samples are anticipated to be gathered from the Finishing Mills IDW soil drums for TCLP analysis. Results from the solid TCLP analysis will be provided pending waste characterization results. A list of all results from the solid TCLP procedure pending waste characterization analysis will be included in **Table 4**.

IDW drums containing aqueous materials were characterized by preparing composite samples from randomly selected drums. Each composite sample included aliquots from four individual drums that were chosen from a set of 30 drums being stored on-site at the date of collection. A total of two aqueous composite samples were collected for TCLP analysis. A list of all results from the aqueous TCLP procedure can be found in **Table 5**, which indicates no exceedances of TCLP criteria.

The parcel specific IDW drum log from the groundwater investigation is included as **Appendix H**. All IDW procedures were carried out in accordance with methods referenced in the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP.

4.0 ANALYTICAL RESULTS

4.1. GROUNDWATER CONDITIONS

The analytical results for the detected parameters were compared to the site-specific project action limits (PALs) specified in the QAPP Worksheet 15 – Project Action Limits and Laboratory-Specific Detection/Quantitation Limits. The results are summarized in the attached **Table 6** (Shallow Zone Organics), **Table 7** (Intermediate Organics), **Table 8** (Shallow Zone Inorganics), and **Table 9** (Intermediate Inorganics). The laboratory's Certificates of Analysis (including Chains of Custody) and the Data Validation Reports (50% validated GW data) have been included as electronic attachments to this report. The validation reports contain a glossary of qualifiers for the final flags assigned to individual results in the attached summary tables.

4.1.1. Groundwater Conditions: Organic Compounds

As provided on **Table 6** and **Table 7**, several VOCs were identified above the laboratory's limits of detection (LODs) in groundwater samples collected from across the Site. Four VOCs (1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, and chloroform) exceeded the PALs in the shallow zone, with chloroform observed to be the most common exceedance (5 locations). A summary of the PAL exceedances in the shallow zone has been provided as **Figure GW-1**. Six VOCs (1,1-dichloroethane, 1,1-dichloroethene, bromodichloromethane, chloroform, MTBE, and trichloroethene) exceeded the PALs in the intermediate zone, with chloroform observed to be the most common exceedance (14 locations). A summary of the PAL exceedances in intermediate locations has been provided as **Figure GW-2.**

The highest detection of chloroform in the shallow hydrogeologic zone was 27.9 µg/L in FM01-PZM003. 1,1-dichloroethene and 1,2-dichloroethane exceeded their PALs in only one shallow hydrogeologic zone sample (FM-003-PZS) with the detections being 131 µg/L and 22.8 µg/L, respectively. 1,1-dichloroethane exceeded its PAL in three shallow zone samples with the highest detection being 20.1 µg/L in FM-003-PZS. The highest detection of chloroform in the intermediate hydrogeologic zone was 23.2 µg/L in SW-078-MWI. The chloroform analytical results may be suspect because chloroform is a common laboratory artifact. Chloroform can also be found in potable tap water as a by-product of disinfection, and there is the potential for releases of tap water from distribution systems present at the Site. Bromodichloromethane exceeded its PAL in three intermediate hydrogeologic zone samples (in each case co-located with chloroform) and had a maximum observed detection of 3.6 µg/L at sample location SW-078-MWI. 1,1-dichloroethene and 1,2-dichloroethane exceeded the applicable PALs in only one intermediate hydrogeologic zone sample (SW-080-MWS) with the detections being 15.8 µg/L and 21.8 µg/L, respectively. MTBE exceeded its PAL in only one intermediate hydrogeologic zone sample (FM-011-PZI) with a detection of 24.9 µg/L, and trichloroethene exceeded its PAL in only one intermediate sample (SW-076-MWI) with a detection of 12.0 µg/L.

Table 6 and **Table 7** provide summaries of SVOCs reported in groundwater above the laboratory's LODs. Six SVOCs (1,4-dioxane, 1,1-biphenyl, benzo[a]anthracene, benzo[b]fluoranthene, naphthalene, and pentachlorophenol) were detected above their respective PALs in the shallow zone wells, with benzo[a]anthracene and naphthalene observed to be the most common exceedances. A summary of the PAL exceedances in the shallow zone has been provided as **Figure GW-3.** Benzo[a]anthracene and naphthalene were detected above their PAL in the largest number of shallow zone samples (19), whereas, 1,1-biphenyl was only detected above the PAL in one shallow zone sample (TM15-PZM011). The highest detection of naphthalene in the shallow hydrogeologic zone was 113 µg/L at TM15-PZM007. The highest detection of 1,4-dioxane in the shallow hydrogeologic zone was 89.6 µg/L at sample location FM-003-PZS. Benzo[a]anthracene and benzo[b]fluroanthene were only present at trace concentrations (<1 ug/L). Five SVOCs (1,4-dioxane, benzo[a]anthracene, benzo[b]fluoranthene, indeno[1,2,3-c,d]pyrene, and naphthalene) were detected above their respective PALs in intermediate zone wells. Benzo[a]anthracene was detected above its PAL in five intermediate monitoring wells, with the highest detection (0.11 µg/L) at FM-005-PZI. 1,4-dioxane was detected above its PAL at eight intermediate zone locations, with the highest detection of 18.5 µg/L observed at SW-081-MWI. Indeno[1,2,3-c,d]pyrene only exceeded its PAL (0.034 µg/L) in one location (FM-005-PZI) with a detection of 0.036 µg/L flagged with a "J" qualifier. A summary of the PAL exceedances in the intermediate zones has been provided as **Figure GW-4.**

Table 6 and **Table 7** provide summaries of TPH-DRO/GRO reported in groundwater above the laboratory's LODs. In the shallow hydrogeologic zone, 38 PAL exceedances for DRO were observed along with two PAL exceedances for GRO (SW-075-MWS and TM15-PZM007). A summary of the TPH PAL exceedances in the shallow zone wells has been provided on **Figure GW-5**. A total of 25 DRO PAL exceedances were noted in the intermediate zone and GRO did not exceed its specified PAL in any samples collected from the intermediate zone locations. A summary of the DRO PAL exceedances in intermediate wells and piezometers has been provided on **Figure GW-6**.

Samples collected from all shallow and intermediate wells installed around the Tin Mill Canal were analyzed for PCBs. Dichlorobiphenyl, tetrachlorobiphenyl, trichlorobiphenyl, and total PCBs exceeded their respective PALs at sample location TM13-PZM007. PCBs (total) were detected above the laboratory LODs in one other sample (TM07-PZM005) screened in the shallow hydrogeologic zone. A summary of the PCB PAL exceedances in shallow zone locations has been provided on **Figure GW-7**. There were no detections of any PCB group above the laboratory LODs in the intermediate hydrogeologic zone sample.

4.1.2. Groundwater Conditions: Inorganic Constituents

Table 8 and **Table 9** provide summaries of inorganic constituents detected above the LODs in the groundwater samples collected from across the Finishing Mills study area. A total of eight

inorganic parameters (total and dissolved compounds) were detected above their respective PALs in the shallow zone monitoring wells. The inorganic compounds included cobalt, iron, manganese, nickel, thallium, vanadium, hexavalent chromium, and total cyanide. A summary of the PAL exceedances in shallow groundwater has been provided as **Figure GW-8**. A total of six inorganic compounds (arsenic, cobalt, iron, manganese, thallium, and hexavalent chromium) were detected above their respective PALs in the intermediate zone monitoring wells. A summary of the PAL exceedances in the intermediate and lower zones has been provided as **Figure GW-9**.

The reported concentrations of total versus dissolved metals were comparable for the majority of the groundwater samples. For simplicity, the summary figures **GW-8** and **GW-9** do not include duplicate exceedances of total and dissolved metals at each sample location. If both total and dissolved concentrations exceeded the PAL for a specific compound, the value for total metals is displayed on the figure for each sample.

Iron was the most common metal PAL exceedance in the shallow zone, and the highest dissolved iron concentration detected in this zone was 243,000 µg/L at FM-013-PZS, whereas the highest total iron concentration observed was 164,000 µg/L at SW-078-MWS. Manganese was the next most common exceedance (both total and dissolved). Dissolved manganese was detected above its PAL in 11 samples, and total manganese exceeded the PAL in 4 shallow samples. The highest total and dissolved manganese concentrations detected in the shallow zone were both 13,000 µg/L at SW-078-MWS. The highest dissolved and total cobalt concentrations observed were 880 µg/L and 882 µg/L, respectively, at SW-078-MWS. Cyanide was detected above its PAL in only one of the shallow zone wells, with the highest detection (1,350 µg/L) observed at SW-081-MWS. Nickel was only detected above its PAL in one shallow zone location (SW-078-MWS) with observed concentrations of 887 µg/L (dissolved) and 835 µg/L (total).

Manganese was detected above its PAL in all but one intermediate zone location (FM01-PZM041) with the highest observed detections of 8,350 µg/L (total) and 7,870 µg/L (dissolved) at TM11-PZM034. Iron was detected above its PAL in all but two (SW06-PZM053 and SW-077-MWI) intermediate zone samples. The highest detections were 121,000 µg/L (total) observed at TM07-PZM045 and 135,000 µg/L (dissolved) observed at FM-008-PZI. Arsenic was detected above the PAL at five intermediate locations (FM-005-PZI, FM-008-PZI, FM01-PZM041, TM07-PZM045, and TM11-PZM034). Cobalt was detected above its PAL at six locations (FM-009-PZI, FM-011-PZI, SW-076-MWI, SW-077-MWI, TM07-PZM045, and TM11-PZM034). Dissolved thallium was observed above its PAL in two locations (FM-002-PZI and TM09-PZM047), and total thallium was observed above its PAL at one location (SW-078-MWI). Elevated hexavalent chromium was detected at one intermediate location (FM-011-PZI), with the detection flagged with the "J" qualifier indicating that the result is an estimated value. The hexavalent chromium result is suspect because the dissolved chromium result in the same piezometer was significantly lower than the hexavalent chromium value, and results for this

compound have commonly been impacted by sample color (matrix interferences). Sample FM-013-PZI also had an initial elevated detection of hexavalent chromium which was suspect based on sample color and a non-detect result for dissolved chromium (with a reporting limit of 5 µg/L). This location was resampled on July 15, 2016, with a resulting non-detection for dissolved hexavalent chromium (although the reporting limit was not lowered from 10,000 µg/L).

4.1.3. Groundwater Conditions: Results Summary

Table 10 presents a summary of the groundwater PAL exceedances including the detection frequencies, maximum detections, and sample IDs of the maximum results. The groundwater PALs specified in the QAPP are based upon drinking water use, which is not a potential exposure pathway for groundwater at the Site. Therefore, alternative criteria were identified to screen groundwater results relative to other potential exposure pathways.

Groundwater data were screened to determine whether individual sample results may exceed the USEPA Vapor Intrusion (VI) Screening Levels (Target Cancer Risk (TCR) of 1E-5 and Target Hazard Quotient (THQ) of 1) as determined by the Vapor Intrusion Screening Level (VISL) Calculator version 3.5.1 (https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-levels-visls). The intermediate zone was not the focus of the VI screening because paired groundwater data was available from the overlying shallow zone which would be more indicative of the potential vapor intrusion risk. However, the VI screening results from the intermediate groundwater zone are included to assess the potential migration of VI contaminants.

The only parameter which exceeded the VI THQ criteria was total cyanide, which was detected above the acceptable VI limit (3.5 µg/L) at 25 locations. All but one cyanide exceedance (FM-004-PZI) occurred in the shallow hydrogeologic zone, with the highest detection (1,350 µg/L) observed at sample location SW-081-MWS. The only intermediate hydrogeologic zone exceedance at FM-004-PZI had a total cyanide concentration of 4.9 µg/L. None of the individual sample results exceeded the VI TCR criteria. The results of the sample screening against the VI criteria are summarized in **Table 11**. The well locations which exceeded the individual VI criteria are shown in **Figure GW-10**, along with the analytical results for the cyanide detections.

A cumulative VI risk analysis was also performed. Sample results were segregated based on cancer versus non-cancer risk, and a risk ratio was estimated for each detection by comparing the detected value to the VI TCR or THQ level. All detections were used in the evaluation of the cumulative cancer risk, and all detections exceeding 10% of the THQ level were included in the evaluation of non-cancer risk. Exceedances of the cumulative criteria would be noted if the total cancer risk exceeded 1E-5 or the Hazard Index (summed by target organ) exceeded 1 for any individual sample location. There were no sample locations within the Finishing Mills Groundwater study area where the screening level estimates of cumulative VI cancer risk were greater than or equal to 1E-5. There were 20 locations where the screening level estimates of

cumulative VI non-cancer hazard exceeded 1 (rounded to one significant digit). The only analyte which contributed to these exceedances was total cyanide. The VI risks (both individual and cumulative) were conservatively screened using total cyanide rather than free cyanide or cyanide amenable to chlorination. The concentrations of free cyanide that could contribute to VI risks would be expected to be significantly lower than the reported total cyanide. The results of the cumulative VI comparisons are provided in **Table 12**, with the target organ exceedances (Hazard Index >1) highlighted.

Shallow groundwater in most of the Finishing Mills study area appears to discharge to the Tin Mill Canal. The Tin Mill Canal has historically conveyed process wastewaters and stormwater from industrial areas, as well as treated effluent from the City of Baltimore Back River Wastewater Treatment Plant (BRWWTP), as influent to the Humphreys Creek Wastewater Treatment Plant (HCWWTP). At the HCWWTP, the influent is treated and ultimately discharged to Bear Creek through a permitted NPDES outfall (Outfall 014). The canal continues to convey treated BRWWTP effluent and stormwater from demolition and redevelopment areas to the HCWWTP for treatment. The NPDES permit specifies effluent discharge limits and the discharge at Outfall 014 is regularly monitored.

Groundwater data from the wells and piezometers located directly adjacent to the Tin Mill Canal were screened against the USEPA National Recommended Water Quality Criteria (NRWQC) (USEPA 2009) for ecological risk (Saltwater Aquatic Life Continuous Criterion Concentration) and human health risk (Consumption of Organism Only). This screening conservatively identifies parameters that may present a concern with respect to discharges of groundwater to surface water. The Tin Mill Canal is the focus of remedial investigation and planning for future remedial action with the ultimate goal of eliminating the need to use the treatment plant (HCWWTP) for stormwater runoff management after demolition and redevelopment are complete. The canal would still serve to convey runoff from commercial and industrial areas prior to discharge. The groundwater screening results should not be considered an indication of effluent quality at the point of discharge to Bear Creek following treatment in the HCWWTP (or in any stormwater management facility that may be constructed in place of the HCWWTP), or of the surface water quality in Bear Creek following discharge. The results from well locations adjacent to the Tin Mill Canal were screened against the NRWQC since the results from these wells are more representative of potential groundwater discharges to the canal. Also, for conservative purposes in this screening evaluation, total cyanide results were used for comparison to the NRWQC (which are expressed as free cyanide).

Results from 13 shallow well locations and one piezometer (FM-010-PZS) adjacent to the Tin Mill Canal were compared to the NRWQC Aquatic Life Salt Water Chronic criteria and Human Health for Consumption of Organism Only criteria, and each of the samples exceeded either criterion for at least one compound. A total of 21 analytes (total and dissolved compounds) exceeded the Aquatic Life Salt Water Chronic criteria (2-methylnaphthalene, aluminum,

anthracene, barium, benzo[a]anthracene, benzo[a]pyrene, carbon disulfide, chromium, cobalt, copper, total cyanide, fluorene, iron, lead, manganese, naphthalene, nickel, PCBs (total), phenanthrene, vanadium, and zinc). Anthracene, 2-methylnaphthalene, phenanthrene, and fluorene were only detected above the Aquatic Life Salt Water Chronic Criteria at one shallow zone sample location (TM15-PZM007). Chromium, nickel, and zinc exceeded their criteria only in the shallow well TM10-PZM007. Total PCBs only exceeded the applicable Salt Water Chronic Criterion in TM13-PZM007, and barium was detected above its criterion only in TM17-PZM005. Groundwater samples from 10 shallow wells and one piezometer adjacent to the Tin Mill Canal exceeded at least one NRWQC Human Health for Consumption of Organism Only criterion. A total of five analytes (total and dissolved compounds) exceeded these criteria in the shallow samples (arsenic, benzo[b]fluoranthene, benzo[k]fluoranthene, total cyanide, and thallium). The SVOC exceedances were limited to one shallow groundwater sample location (TM18-PZM005). The relevant groundwater locations adjacent to the Tin Mill Canal which exceeded the ambient water quality criteria are indicated in **Figure GW-11**, along with a summary of the exceedances. If both total and dissolved concentrations exceeded the criteria for a specific metal, the value for total metals is displayed on the figure for each sample.

Results from the well and piezometer locations adjacent to the Tin Mill Canal were averaged to develop arithmetic mean concentrations for the groundwater discharging to the canal. These average values (for each of the individual compounds which exceeded the NRWQC) were screened against the NRWQC since they would be more representative of potential surface water discharges due to mixing. The canal also conveys treated BRWWTP effluent and stormwater from demolition and redevelopment areas. Based on these downstream considerations, the evaluation of groundwater samples against the surface water standards is a highly conservative assessment of the potential for groundwater impacts at the discharge point to Bear Creek. The NRWQC comparisons for the averaged groundwater inputs are provided in **Table 13**, and exceedances by greater than factors of 2 and 10 are highlighted. Cyanide and naphthalene were the only analytes in shallow groundwater that exceeded the NRWQC (both for Salt Water Chronic Criteria) by a factor of more than 10.

4.2. NON-AQUEOUS PHASE LIQUID

Each groundwater monitoring location was checked for the presence of non-aqueous phase liquid (NAPL) during development in accordance with **Field SOP Number 018** provided in Appendix A of the QAPP. Again prior to sampling each monitoring point, an oil-water interface probe was used to check for the presence of NAPL in accordance with the methods provided in **Field SOP Number 019**. During the NAPL checks, free product was not detected in any monitoring well or piezometer. Based on these observations, it was determined that NAPL was not present and additional delineation or action was not required.

5.0 DATA USABILITY ASSESSMENT

The approved site-wide QAPP specified a process for evaluating data usability in the context of meeting project goals. Specifically, the goal of the Groundwater Investigation is to determine if potentially hazardous substances or petroleum products (VOCs, SVOCs, PCBs, TAL metals, cyanide, or TPH-DRO/GRO) are present in Site media (groundwater) at concentrations that could pose an unacceptable risk to Site receptors. Individual results are compared to the Project Action Limits established in the QAPP (i.e., the most current USEPA RSLs) to identify the presence of constituents of potential concern in the groundwater.

Quality control (QC) samples were collected during field studies to evaluate field/laboratory variability. A summary of QA/QC samples associated with this investigation has been included as **Appendix I**. The following QC samples were submitted for analysis to support the data validation:

- Trip Blank – at a rate of one per day
  - Water – VOCs only
- Blind Field Duplicate – at a rate of one per twenty samples
  - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, PCBs, Hexavalent Chromium, and Cyanide
- Matrix Spike/Matrix Spike Duplicate – at a rate of one per twenty samples
  - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, PCBs, and Hexavalent Chromium
- Field Blank– at a rate of one per twenty samples
  - Water – VOCs, SVOCs, Metals, TPH-DRO, TPH-GRO, Hexavalent Chromium, and Cyanide

The QC samples were collected and analyzed in accordance with the QAPP Worksheet 12 – Measurement Performance Criteria, QAPP Worksheet 20 – Field Quality Control and QAPP Worksheet 28 – Analytical Quality Control and Corrective Action.

5.1. DATA VERIFICATION

A verification review was performed on documentation generated during sample collection and analysis. The verification included a review of field log books, field data sheets, and chain-of-custody (COC) forms to ensure that all planned samples were collected, and to ensure consistency with the field methods and decontamination procedures specified in the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP. In addition, calibration logs were

reviewed to ensure that field equipment was calibrated and/or checked once per day. The logs have been provided in **Appendix G** (YSI calibration log).

The laboratory deliverables were reviewed to ensure that all records specified in the QAPP as well as necessary signatures and dates are present. Sample receipt records were reviewed to ensure that the sample condition upon receipt was noted, and any missing/broken sample containers (if any) were noted and reported according to plan. The data packages were compared to the COCs to verify that results were provided for all collected samples. The data package case narratives were reviewed to ensure that all exceptions (if any) are described.

5.2. DATA VALIDATION

A representative 50% of the complete analytical dataset underwent USEPA Stage 2B data validation for the environmental sample analyses performed by PACE and supporting Level IV Data Package information by Environmental Data Quality Inc. (EDQI).

Sample analyses have undergone an analytical quality assurance review to ensure adherence to the required protocols. The Stage 2B review was performed as outlined in "Guide for Labeling Externally Validated Laboratory Analytical Data for Superfund Use", EPA-540-R-08-005. Results were validated or qualified according to general guidance provided in "USEPA National Functional Guidelines for Inorganic Superfund Data Review (ISM02.1)", USEPA October 2013. Region III references this guidance for validation requirements. This document specifies procedures for validating data generated for Contract Laboratory Program (CLP) analyses. The approved QAPP dated April 5, 2016 and the quality control requirements specified in the methods and associated acceptance criteria were also used to evaluate the non-CLP data.

The full Data Validation Reports (DVRs) provided by EDQI have been included as electronic attachments.

5.3. DATA USABILITY

The data were evaluated with respect to the quality control elements of precision, bias, representativeness, comparability, completeness and sensitivity relative to data quality indicators and performance measurement criteria outlined in QAPP Worksheet 12 – Measurement Performance Criteria. The following discussion details deviation from the performance measurement criteria, and the impact on data quality and usability.

The measurement performance criteria of precision and bias were evaluated in the data validation process as described in the Data Validation Reports provided as electronic attachments. Where appropriate, potential limitations in the results have been indicated through final data flags. These flags indicate whether particular data points were quantitative estimates, biased high/low, associated with blank contamination, etc. Individual data flags are provided

with the results in the detection summary tables and on exceedance figures. A qualifier code glossary is included with each data validation report provided by EDQI. Particular results may have been marked with the "R" flag if the result was deemed to be unreliable and was not included in any further data evaluation. A summary of the results that were rejected during data validation has been provided on **Table 14**. A discussion of data completeness (the proportion of valid data) is included below.

Representativeness is a measure of how accurately and precisely the data describe the Site conditions. Representativeness of the samples submitted for analysis was ensured by adherence to standard sampling techniques and protocols, as well as appropriate sample preservation prior to analysis. Sampling was conducted in accordance with the QAPP Worksheet 21 – Field SOPs and Appendix A of the QAPP. Specific Field SOPs applicable to the assessment of representativeness include **Field SOP Numbers 006, 007, 010, 011, 012, 013, 014, 016, 017, 018, 019, 024, 026, and 027**. Review of the field notes and laboratory sample receipt records indicated that collection groundwater at the Site was representative, with no significant deviations from the SOPs.

Comparability describes the degree of confidence in comparing two sets of data. Comparability is maintained across multiple datasets by the use of consistent sampling and analytical methods across multiple project phases. Comparability of sample results was ensured through the use of approved standard sampling and analysis methods outlined in the QAPP. QA/QC protocols help to maintain the comparability of datasets, and in this case were assessed via blind duplicates, blank samples, and spiked samples, where applicable. No deviations from the QAPP were noted in the data set.

Sensitivity is a determination of whether the analytical methods and quantitation limits will satisfy the requirements of the project. The laboratory reports were reviewed to verify that reporting limits met the quantitation limits for specific analytes provided in QAPP Worksheet #15 – Project Action Limits and Laboratory-Specific Detection/Quantitation Limits. In general the laboratory reporting limits met the detection and quantitation limits specified in the QAPP.

Completeness is expressed as a ratio of the number of valid data points to the total number of analytical data results. Non-usable ("R" flagged) data results were determined through the data validation process. The approved QAPP specifies that the completeness of data is assessed by professional judgement, but should be greater than or equal to 90%. Data completeness for each compound is provided in **Appendix J**. All but three analytes (acetone, 3,3'-dichlorobenzidine, and methyl acetate) evaluated for the Finishing Mills Groundwater Investigation had a computed completeness ratio of 100%. These three analytes have commonly had results rejected during other investigations of the Tradepoint Atlantic property. The lowest data completeness ratio was computed for acetone (92.96%), but the value was above the goal specified in the QAPP. Based on the completeness evaluation, there were no significant data gaps.

6.0 FINDINGS AND RECOMMENDATIONS

The objectives of this Phase II Groundwater Investigation were to define groundwater flow directions and gradients, identify the presence or absence of groundwater impacts, identify any potential continuing sources of groundwater contamination, and characterize potential groundwater to surface water discharges in the Finishing Mills (the study area). During the Finishing Mills Groundwater Investigation, a total of 71 groundwater samples were collected and analyzed to define the current conditions of groundwater and to assess the nature and extent of contamination. The sampling and analysis plan for the Finishing Mills Groundwater Investigation was developed to provide a representative survey of groundwater beneath the Site, with groundwater collection points distributed throughout the Finishing Mills area. The monitoring well locations were positioned within or downgradient of features with the greatest potential for release of hazardous substances and/or petroleum products to the environment. Groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, TPH-DRO/GRO, TAL-Dissolved Metals, TAL-Metals (total), hexavalent chromium, and total cyanide. Monitoring well locations adjacent to the Tin Mill Canal wells were also analyzed for PCBs.

The samples collected during this study have provided analytical data regarding current groundwater conditions within the Site, and facilitated the identification of potential contaminant releases. The extent of groundwater impacts has been adequately characterized to support risk assessment and associated response action planning, if necessary, as well as future development planning. However, additional sampling is recommended in key areas of the Site to characterize the nature of the cyanide impacts and specifically the proportion of free cyanide to determine if the levels of total cyanide identified herein pose unacceptable risks to future workers via vapor intrusion and/or ambient water quality receptors via groundwater discharge to surface water.

VOCs were not found to be significant contaminants in the groundwater. Only four VOCs were detected above their respective PALs in the shallow zone samples (1,1-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, and chloroform), and only six VOCs were detected above the PALs in the intermediate zone samples (1,1-dichloroethane, 1,1-dichloroethene, bromodichloromethane, chloroform, MTBE, and trichloroethene). None of these PAL exceedances are considered significant since the levels are relatively low and isolated or limited in extent, and potable use of water will be restricted. None of the VOC detections were found to exceed the VI criteria. Only carbon disulfide exceeded its applicable surface water quality criteria in any individual samples, but the average concentration representing the potential shallow groundwater quality adjacent to the Tin Mill Canal was less than the NRWQC. Therefore, VOC impacts are not of concern in the study area.

SVOC impacts were found to be widespread but generally of low concentration. Six SVOCs were detected above their respective PALs in the shallow zone samples (1,4-dioxane, 1,1-biphenyl, benzo[a]anthracene, benzo[b]fluoranthene, naphthalene, and pentachlorophenol). Five

SVOCs were detected above their respective PALs in the intermediate zone samples (1,4-dioxane, benzo[a]anthracene, benzo[b]fluoranthene, indeno[1,2,3-c,d]pyrene, and naphthalene). There were no samples collected within the Finishing Mills Groundwater study area where SVOCs contributed to a potential vapor intrusion concern (i.e. where the cumulative VI cancer risk was greater than 1E-5 or non-cancer hazard was greater than 1). The surface water quality criteria were exceeded for several SVOCs in individual samples adjacent to the Tin Mill Canal, but only naphthalene exceeded its criterion by greater than a factor of 10 for the computed average shallow groundwater concentration (and the NRWQC exceedance was by less than a factor of 11). Therefore, SVOC impacts are not a significant concern within the study area.

DRO was detected above its PAL in 38 shallow zone wells, and GRO was detected above its PAL in two of the shallow samples. DRO was also detected above its PAL in 25 intermediate zone groundwater samples while GRO was not detected above its PAL in the intermediate zone. The two shallow exceedances of the GRO PAL were relatively low and both were located at the northern end of the Site, but the sample locations were not proximal to each other and were positioned on opposite sides of the Tin Mill Canal. The DRO exceedances were larger in magnitude and more widespread across the Site. Free product was not detected in any monitoring well or piezometer during this investigation. Therefore, free product has not been identified as a significant source of continuing releases of dissolved petroleum hydrocarbons in the study area. Based on the widespread presence of DRO exceedances in the shallow and intermediate hydrogeologic zones, further evaluation of the potential significance of the DRO impacts is recommended. However, the nature and extent of DRO contamination has been adequately described, and no additional investigation or sampling is warranted with respect to TPH-DRO/GRO.

Four PCB groups (dichlorobiphenyl, tetrachlorobiphenyl, trichlorobiphenyl, and total PCBs) were detected above their respective PALs in the shallow hydrogeologic zone. These exceedances of the PALs were all identified at a single location (TM13-PZM007). There were no PCB detections in any of the intermediate hydrogeologic zone wells analyzed surrounding the Tin Mill Canal. Overall, based on the low-level and sporadic detections of PCBs, these compounds are not a significant environmental concern in groundwater within the study area.

The following eight compounds were observed as inorganic PAL exceedances in the shallow zone: hexavalent chromium, cobalt (total and dissolved), iron (total and dissolved), manganese (total and dissolved), nickel (total and dissolved), thallium (total and dissolved), vanadium (total and dissolved), and total cyanide. The following six compounds were observed as inorganic PAL exceedances in the intermediate zone samples: hexavalent chromium, arsenic (total and dissolved), cobalt (total and dissolved), iron (total and dissolved), manganese (total and dissolved), and thallium (total and dissolved). The levels of cyanide in the northern and western portions of the study area and along the Tin Mill Canal indicate a potential for the presence of sources of continuing releases of contaminant mass to the shallow groundwater within this area.

Given the time that has passed since operations ceased within this portion of the Site, and the relative mobility of cyanide in groundwater, it seems likely that a residual contaminant source would be required to sustain the high concentrations observed in SW-081-MWS (1,350 µg/L).

Total cyanide exceeded the VISL at 24 locations in the shallow hydrogeologic zone, indicating a potential vapor intrusion concern. All VISL exceedances were in the shallow hydrogeologic zone samples with the exception of FM-004-PZI. The VISL for hydrogen cyanide is 3.5 µg/L and the highest detection of total cyanide was 1,350 µg/L at sample location SW-081-MWS. However, the total cyanide concentration reported in the groundwater includes all forms of cyanide, not just hydrogen cyanide, and therefore may not be representative of actual vapor intrusion potential. Supplemental sampling is recommended to be completed in select areas to determine the extent to which cyanide in the groundwater is present as free cyanide that could contribute to VI risk.

A number of metals (total and dissolved), SVOCs, VOCs and total cyanide exceeded the NRWQC at individual isolated locations. However, only naphthalene and total cyanide exceeded their criteria by greater than a factor of 10 for the average shallow groundwater concentrations in wells near the canal, and the naphthalene exceedance was by less than a factor of 11. The average groundwater concentrations are more representative of groundwater quality for assessment of the potential for surface water impacts. The location and extent of groundwater containing total cyanide concentrations exceeding the surface water quality criteria have been adequately defined to facilitate further evaluation of the potential for impacts to surrounding surface water bodies at the Site. The NRWQC for cyanide in surface water are expressed as free cyanide. Therefore, additional groundwater sampling, primarily in the northern and western portions of the study area, should be completed to characterize the concentrations of free cyanide (as specified in the NRWQC) and/or available cyanide (as specified in the NPDES permit via EPA Method OIA-1677).

7.0 REFERENCES

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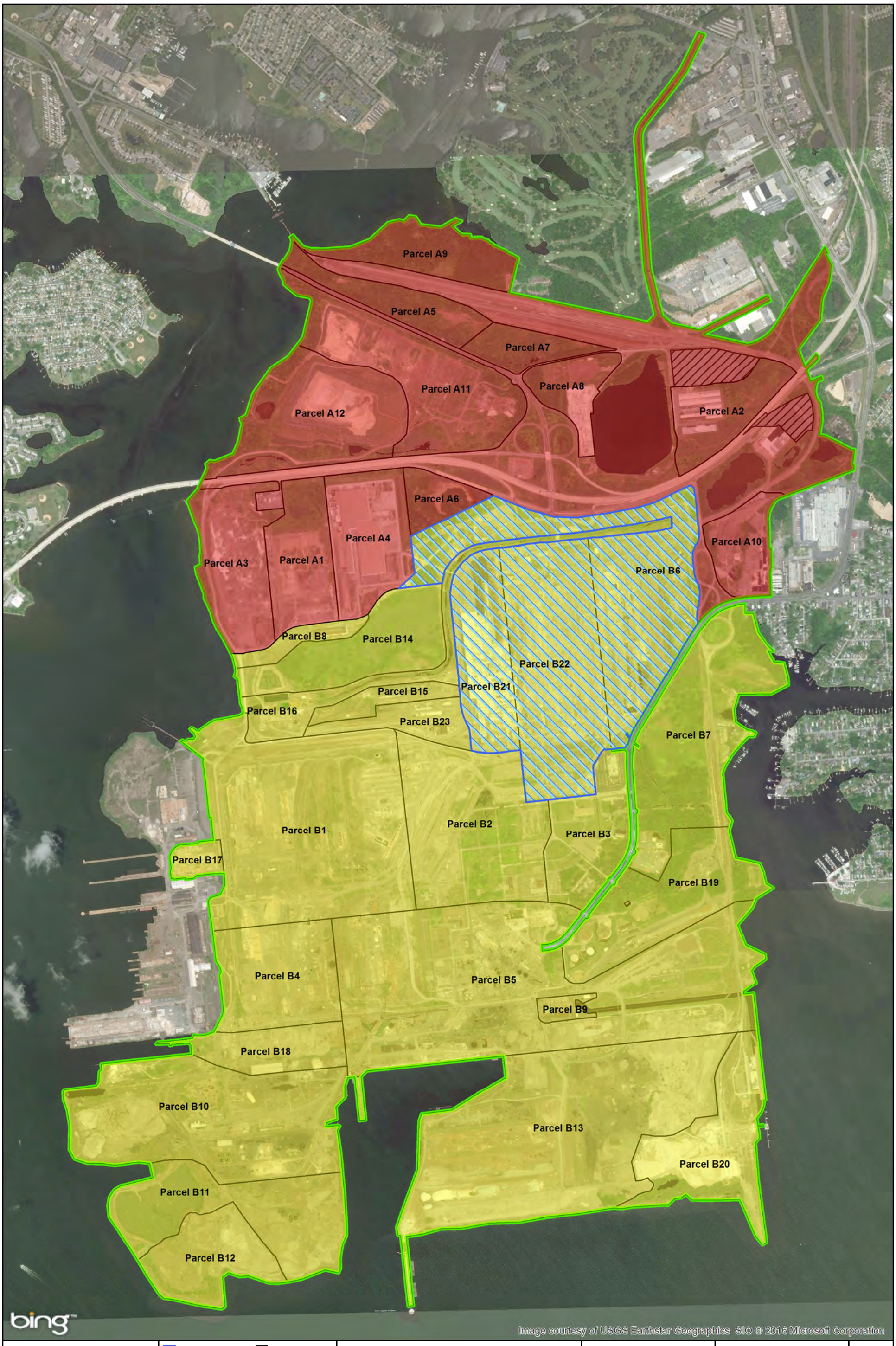
FIGURES



N

ARM Group Inc.
Earth Resource Engineers and Consultants

0 375 750 1,500
Feet

FMGW Study Area
Site Boundary
Parcel Boundaries
Private Property
Area A
Area B

Tradepoint Atlantic
Area A and Area B Parcels

October 6, 2016

EnviroAnalytics Group	Tradepoint Atlantic
Area A: Project 150298M Area B: Project 150300M	Baltimore County, MD

Figure 1

ARM Group Inc.
Earth Resource Engineers and Consultants

0 375 750 1,500 Feet

Site Boundary
Area A Boundaries
Area B Boundaries
Land
Marsh
Water

Approximate Shoreline 1916

August 1, 2016

Adapted from Figure 2-5 of the Description of Current Conditions Report prepared by Rust Environmental and Infrastructure, dated January 1998

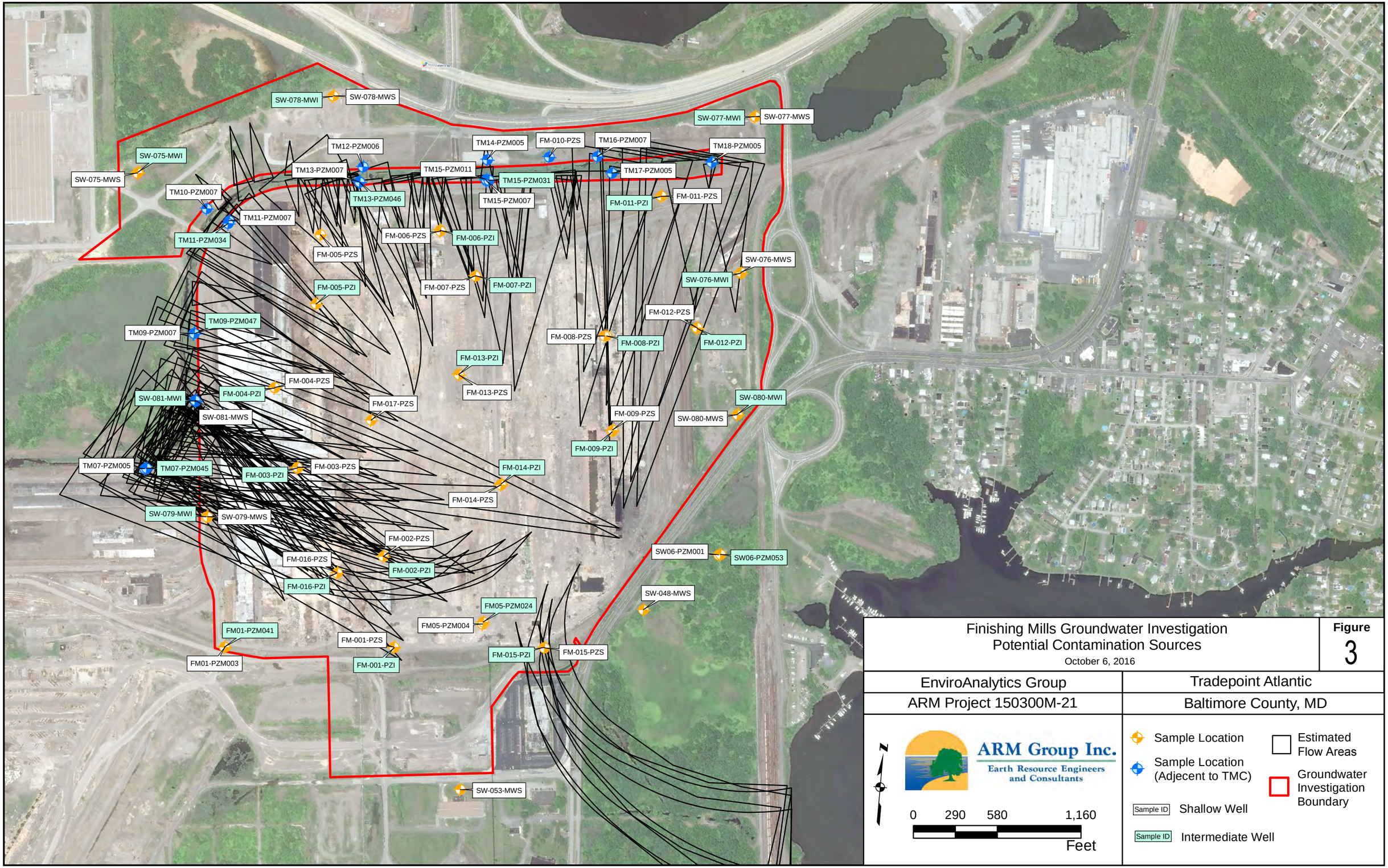
EnviroAnalytics Group

Area A: Project 150298M
Area B: Project 150300M

Tradepoint Atlantic

Baltimore County, MD

Figure 2



Finishing Mills Groundwater Investigation
Potential Contamination Sources
October 6, 2016

Figure 3

EnviroAnalytics Group
ARM Project 150300M-21

Tradepoint Atlantic
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

- Sample Location
- Sample Location (Adjecent to TMC)
- Sample ID — Shallow Well
- Sample ID — Intermediate Well
- Estimated Flow Areas
- Groundwater Investigation Boundary

SW-078-MWS
5.51 ft

SW-077-MWS
3.03 ft

FM-010-PZS
2.72 ft

TM16-PZM007
2.82 ft

TM14-PZM005
2.6 ft

TM18-PZM005
3.67 ft

SW-075-MWS
6.09 ft

TM12-PZM006
1.47 ft

TM15-PZM011
2.32 ft

TM15-PZM007
2.28 ft

TM17-PZM005
4.03 ft

TM13-PZM007
1.14 ft

TM10-PZM007
1.07 ft

FM-011-PZS
5.65 ft

FM-006-PZS
1.99 ft

TM11-PZM007

FM-005-PZS
1.46 ft

SW-076-MWS
11.43 ft

FM-007-PZS
9.38 ft

TM09-PZM007
0.88 ft

FM-008-PZS
6.13 ft

FM-012-PZS
6.19 ft

FM-013-PZS
7.05 ft

FM-004-PZS
2.59 ft

SW-081-MWS
1.48 ft

SW-080-MWS
9.91 ft

FM-017-PZS
7.97 ft

FM-009-PZS
5.88 ft

TM07-PZM005
0.49 ft

FM-003-PZS
8.82 ft

FM-014-PZS
7.33 ft

SW-079-MWS
2.01 ft

SW06-PZM001
8.2 ft

FM-002-PZS
7.54 ft

FM-016-PZS
5.9 ft

SW-048-MWS
11.07 ft

FM05-PZM004
5.6 ft

FM01-PZM003
6.26 ft

FM-001-PZS
6 ft

FM-015-PZS
10.2 ft

SW-053-MWS
9.88 ft

TM11-PZM007 was not surveyed for groundwater elevation

Finishing Mills Groundwater Investigation
Shallow Groundwater Contour Map
October 6, 2016

Figure 4

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150300M-21	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

Piezometer
Well
Groundwater Contour
Groundwater Investigation Boundary

Water Level Measurements
Recorded October 3, 2016

SW-078-MWI
1.21 ft

SW-077-MWI
2.19 ft

SW-075-MWI
1.09 ft

TM13-PZM046
1.15 ft

TM15-PZM031
0.51 ft

FM-011-PZI
5.74 ft

TM11-PZM034
3.02 ft

FM-006-PZI
2.8 ft

SW-076-MWI
6.04 ft

FM-007-PZI
5.42 ft

FM-005-PZI
0.79 ft

FM-008-PZI
4.99 ft

TM09-PZM047
0.69 ft

FM-012-PZI
1.24 ft

FM-013-PZI
0.64 ft

FM-004-PZI
0.77 ft

SW-081-MWI
0.74 ft

FM-009-PZI
5.36 ft

SW-080-MWI
5.87 ft

TM07-PZM045
0.65 ft

FM-003-PZI
0.7 ft

SW-079-MWI
0.68 ft

FM-014-PZI
0.77 ft

FM-002-PZI
0.68 ft

SW06-PZM053
0.93 ft

FM-016-PZI
0.72 ft

FM05-PZM024
4.47 ft

FM01-PZM041
0.78 ft

FM-001-PZI
0.69 ft

FM-015-PZI
0.63 ft

Finishing Mills Groundwater Investigation
Intermediate Groundwater Contour Map

October 6, 2016

Figure 5

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150300M-21	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

Piezometer
Well
Groundwater Contour
Groundwater Investigation Boundary

Water Level Measurements
Recorded October 3, 2016

Note:
Sample* indicates nonvalidated

SW-078-MWS*

SW-077-MWS*

SW-075-MWS
Chloroform: 0.98 J

TM12-PZM006*

TM14-PZM005*

FM-010-PZS

TM16-PZM007

TM18-PZM005

TM17-PZM005

TM13-PZM007

TM15-PZM007*

TM15-PZM011*

TM10-PZM007

TM11-PZM007*

FM-006-PZS

FM-011-PZS*

FM-005-PZS*

SW-076-MWS

FM-007-PZS*
Chloroform: 0.67 J

FM-008-PZS*

FM-012-PZS

TM09-PZM007*

FM-004-PZS

FM-013-PZS
Chloroform: 0.87 J

SW-081-MWS

FM-017-PZS

FM-009-PZS

SW-080-MWS*
1,1-Dichloroethane: 5.5

FM-003-PZS*
1,1-Dichloroethane: 20.1
1,1-Dichloroethene: 131
1,2-Dichloroethane: 22.8

TM07-PZM005

FM-014-PZS

SW-079-MWS*

FM-016-PZS*
1,1-Dichloroethane: 7.9
Chloroform: 1.8

FM-002-PZS

SW06-PZM001

FM05-PZM004

SW-048-MWS

FM01-PZM003
Chloroform: 27.9

FM-001-PZS

FM-015-PZS*

SW-053-MWS

Finishing Mills Groundwater Investigation
Shallow - VOC Exceedances (ug/L)
October 28, 2016

Figure
GW-1

EnviroAnalytics Group

Tradepoint Atlantic

ARM Project 150300M-21

Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

Piezometer

Well

Groundwater Investigation Boundary

Note:
Sample* indicates nonvalidated

SW-078-MWI*
Bromodichloromethane: 3.6
Chloroform: 23.2

SW-077-MWI
Bromodichloromethane: 1.2
Chloroform: 13.5

SW-075-MWI
Chloroform: 4.5

TM13-PZM046
Chloroform: 5.3

TM15-PZM031*

FM-011-PZI
Methyl tert-butyl ether (MTBE): 24.9

FM-006-PZI

TM11-PZM034
Bromodichloromethane: 0.54 J
Chloroform: 7.5

SW-076-MWI
Trichloroethene: 12.0

FM-007-PZI

FM-005-PZI

FM-008-PZI
Chloroform: 1.3

FM-012-PZI
Chloroform: 1.3

TM09-PZM047*

FM-013-PZI*
Chloroform: 3.8

FM-004-PZI

SW-081-MWI

SW-080-MWI*
1,1-Dichloroethane: 15.8
1,1-Dichloroethene: 21.8
Chloroform: 2.8

FM-009-PZI
Chloroform: 5.8

TM07-PZM045

FM-003-PZI
Chloroform: 1.8

FM-014-PZI

SW-079-MWI*
Chloroform: 2.4

SW06-PZM053
Chloroform: 5.9

FM-002-PZI*
Chloroform: 0.26 J

FM-016-PZI*

FM05-PZM024

FM01-PZM041

FM-001-PZI*
Chloroform: 1.1

FM-015-PZI
Chloroform: 0.96 J

Finishing Mills Groundwater Investigation
Intermediate - VOC Exceedances (ug/L)

October 28, 2016

Figure
GW-2

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150300M-21	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

- Piezometer
- Well
- Groundwater Investigation Boundary

Note:
Sample* indicates nonvalidated

TM12-PZM006*
Benzo[a]anthracene: 0.11
Naphthalene: 12.9
Pentachlorophenol: 1.1 J

SW-078-MWS*

TM14-PZM005*
Benzo[a]anthracene: 0.081 J
Naphthalene: 3.7
Pentachlorophenol: 2.6

FM-010-PZS
Benzo[a]anthracene: 0.046 J
Naphthalene: 7.9 J
Pentachlorophenol: 7.6

SW-077-MWS*
Benzo[a]anthracene: 0.03 J
Naphthalene: 1.7
Pentachlorophenol: 2.8

TM15-PZM011*
Benzo[a]anthracene: 0.04 J
Naphthalene: 29.5

TM13-PZM007
Benzo[a]anthracene: 0.073 J
Naphthalene: 23.3
Pentachlorophenol: 1.1 J

TM16-PZM007
Naphthalene: 2.9

TM18-PZM005
Benzo[a]anthracene: 0.16
Benzo[b]fluoranthene: 0.23
Indeno[1,2,3-c,d]pyrene: 0.055 J
Naphthalene: 0.83

SW-075-MWS
Naphthalene: 0.42

FM-011-PZS*

TM10-PZM007
Benzo[a]anthracene: 0.049 J
Benzo[b]fluoranthene: 0.045 J

TM15-PZM007*
1,1-Biphenyl: 3.6
Benzo[a]anthracene: 0.078 J
Naphthalene: 113
Pentachlorophenol: 1.0 J

TM17-PZM005
Benzo[a]anthracene: 0.024 J

TM11-PZM007*
1,4-Dioxane: 2.1
Naphthalene: 4.6

FM-005-PZS*
1,4-Dioxane: 0.94
Naphthalene: 3.0

FM-006-PZS

SW-076-MWS

FM-007-PZS*

FM-012-PZS

TM09-PZM007*
1,4-Dioxane: 1.9
Benzo[a]anthracene: 0.024 J
Naphthalene: 6.2

FM-004-PZS
1,4-Dioxane: 10.3
Benzo[a]anthracene: 0.11
Benzo[b]fluoranthene: 0.12 J
Naphthalene: 0.2

FM-013-PZS
1,4-Dioxane: 0.85
Naphthalene: 0.23

FM-008-PZS*
Naphthalene: 0.63

SW-081-MWS
Benzo[a]anthracene: 0.047 J
Naphthalene: 3.7 B

SW-080-MWS*

FM-009-PZS

FM-017-PZS
Benzo[a]anthracene: 0.042 J
Naphthalene: 0.33

TM07-PZM005

FM-003-PZS*
1,4-Dioxane: 89.6
Benzo[a]anthracene: 0.026 J

FM-014-PZS
1,4-Dioxane: 0.47
Benzo[a]anthracene: 0.039 J

SW-079-MWS*
Benzo[a]anthracene: 0.037 J
Naphthalene: 12.0

FM-002-PZS

SW06-PZM001

FM-016-PZS*
1,4-Dioxane: 15.8

FM05-PZM004
Benzo[a]anthracene: 0.044 J
Naphthalene: 108

SW-048-MWS

FM-001-PZS

FM01-PZM003
Benzo[a]anthracene: 0.022 J

FM-015-PZS*
Benzo[a]anthracene: 0.024 J
Naphthalene: 0.3 B

SW-053-MWS

Finishing Mills Groundwater Investigation
Shallow - SVOC Exceedances (ug/L)
October 28, 2016

Figure
GW-3

EnviroAnalytics Group
ARM Project 150300M-21

Tradepoint Atlantic
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

Piezometer
Well
Groundwater Investigation Boundary

Note:
Sample* indicates nonvalidated

SW-078-MWI*

SW-077-MWI

SW-075-MWI

TM13-PZM046
Naphthalene: 75.1

TM15-PZM031

FM-011-PZI
1,4-Dioxane: 0.6

TM11-PZM034

FM-006-PZI

FM-005-PZI
1,4-Dioxane: 1.4
Benzo[a]anthracene: 0.11
Benzo[b]fluoranthene: 0.12 J
Indeno[1,2,3-c,d]pyrene: 0.036 J

FM-007-PZI

SW-076-MWI

FM-008-PZI
Benzo[a]anthracene: 0.074 J
Benzo[b]fluoranthene: 0.058 J
Naphthalene: 1.8 J

FM-012-PZI

TM09-PZM047*

FM-004-PZI
1,4-Dioxane: 7.2
Benzo[a]anthracene: 0.027 J

FM-013-PZI*

SW-081-MWI
1,4-Dioxane: 18.5

FM-009-PZI

SW-080-MWI*
1,4-Dioxane: 4.8

TM07-PZM045

FM-003-PZI
1,4-Dioxane: 17.7

FM-014-PZI
1,4-Dioxane: 2.5

SW-079-MWI*
Benzo[a]anthracene: 0.02 J
Naphthalene: 0.18 B

SW06-PZM053
Benzo[a]anthracene: 0.033 J
Benzo[b]fluoranthene: 0.15

FM-002-PZI*
Benzo[a]anthracene: 0.024 J

FM-016-PZI*
1,4-Dioxane: 0.62

FM05-PZM024
Naphthalene: 4.8

FM01-PZM041

FM-001-PZI*

FM-015-PZI

Finishing Mills Groundwater Investigation
Intermediate - SVOC Exceedances (ug/L)

October 28, 2016

Figure
GW-4

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150300M-21	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

- Piezometer
- Well
- Groundwater Investigation Boundary

Note:
Sample* indicates nonvalidated

SW-078-MWS*
DRO: 97.8 J

SW-077-MWS*
DRO: 288

TM14-PZM005*
DRO: 553

FM-010-PZS
DRO: 924

TM16-PZM007
DRO: 1,280 J

TM12-PZM006*
DRO: 387

TM18-PZM005
DRO: 462 J

SW-075-MWS
DRO: 711 J
GRO: 94.5 J

TM15-PZM011*
DRO: 4,180

TM13-PZM007
DRO: 264 J

TM17-PZM005
DRO: 852 J

FM-011-PZS*

TM15-PZM007*
DRO: 1,870
GRO: 86.6 J

TM10-PZM007
DRO: 700

SW-076-MWS
DRO: 332

TM11-PZM007*
DRO: 658

FM-005-PZS*
DRO: 4,480

FM-006-PZS
DRO: 410 J

FM-007-PZS*
DRO: 131

FM-012-PZS
DRO: 2,460 J

TM09-PZM007*
DRO: 2,580

FM-008-PZS*
DRO: 939

FM-004-PZS
DRO: 3,380 J

FM-013-PZS
DRO: 1,020 J

FM-017-PZS
DRO: 625 J

SW-081-MWS
DRO: 1,120 J

SW-080-MWS*
DRO: 69.3 J

TM07-PZM005
DRO: 237 J

FM-009-PZS
DRO: 595 J

FM-003-PZS*
DRO: 197

FM-014-PZS
DRO: 156 J

SW-079-MWS*
DRO: 408

FM-002-PZS
DRO: 184 J

SW06-PZM001

FM-016-PZS*
DRO: 59.1 J

SW-048-MWS

FM05-PZM004
DRO: 1,610

FM01-PZM003
DRO: 47.9 B

FM-001-PZS
DRO: 48.4 J

FM-015-PZS*
DRO: 57.8 J

SW-053-MWS
DRO: 56.8 J

Finishing Mills Groundwater Investigation
Shallow - DRO & GRO Exceedances (ug/L)
October 28, 2016

Figure
GW-5

EnviroAnalytics Group

Tradepoint Atlantic

ARM Project 150300M-21

Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

Piezometer
Well
Groundwater Investigation Boundary

Note:
Sample* indicates nonvalidated

SW-078-MWI*
DRO: 76.1 J

SW-077-MWI

SW-075-MWI
DRO: 48.0 J

TM13-PZM046
DRO: 204 J

TM15-PZM031

FM-011-PZI
DRO: 114 J

TM11-PZM034
DRO: 351 J

FM-006-PZI
DRO: 96.0 J

SW-076-MWI
DRO: 68.7 J

FM-005-PZI
DRO: 190 J

FM-007-PZI
DRO: 61.7 J

FM-008-PZI
DRO: 101 J

FM-012-PZI
DRO: 77.3 J

TM09-PZM047*
DRO: 1,770

FM-004-PZI
DRO: 214 J

FM-013-PZI*
DRO: 74.5 J

SW-081-MWI
DRO: 554 J

FM-009-PZI
DRO: 126 J

SW-080-MWI*
DRO: 72.8 J

TM07-PZM045
DRO: 69.8 J

FM-003-PZI
DRO: 278 J

FM-014-PZI
DRO: 55.9 J

SW-079-MWI*
DRO: 74.0 J

SW06-PZM053
DRO: 48.8 J

FM-002-PZI*

FM-016-PZI*
DRO: 70.5 J

FM05-PZM024

FM01-PZM041
DRO: 49.6 J

FM-001-PZI*

FM-015-PZI
DRO: 161 J

Finishing Mills Groundwater Investigation
Intermediate - DRO Exceedances (ug/L)
October 28, 2016

Figure
GW-6

EnviroAnalytics Group

Tradepoint Atlantic

ARM Project 150300M-21

Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

Piezometer

Well

Groundwater Investigation Boundary

TM10-PZM007
TM11-PZM007
TM12-PZM006
TM13-PZM007
Dichlorobiphenyl: 0.145
PCBs (total): 0.748
Tetrachlorobiphenyl: 0.062
Trichlorobiphenyl: 0.542
TM14-PZM005
FM-010-PZS
TM16-PZM007
TM18-PZM005
TM15-PZM011
TM17-PZM005
TM15-PZM007
TM09-PZM007
SW-081-MWS
TM07-PZM005

Finishing Mills Groundwater Investigation
Shallow - PCB Exceedances (ug/L)

October 6, 2016

Figure
GW-7

EnviroAnalytics Group	Tradepoint Atlantic
ARM Project 150300M-21	Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

N

0 290 580 1,160
Feet

Piezometer
Well
Groundwater Investigation Boundary

Note:
Sample* indicates nonvalidated

SW-078-MWS*
Cobalt (T): 828
Iron (T): 164,000
Manganese (T): 13,000
Nickel (T): 835

SW-075-MWS

TM10-PZM007
Chromium (T): 210
Iron (T): 26,000
Lead (T): 150
Manganese (T): 6,070
Thallium (T): 14.5
Vanadium (T): 1,100

TM09-PZM007*
Vanadium (T): 217

SW-081-MWS
Cyanide: 1,350 J+
Thallium (D): 4.2 J
Vanadium (T): 246

TM07-PZM005
Thallium (T): 4.0 J
Vanadium (T): 176

SW-079-MWS*
Thallium (D): 4.8 J
Vanadium (T): 217

FM01-PZM003
Vanadium (T): 224

TM12-PZM006*
Thallium (D): 3.6 J
Vanadium (T): 216

TM13-PZM007
Vanadium (T): 135

TM11-PZM007*

FM-005-PZS*
Vanadium (D): 731

FM-004-PZS
Manganese (D): 2,460

FM-017-PZS

FM-003-PZS*
Cobalt (D): 60.9
Iron (D): 34,600
Manganese (D): 2,200

FM-016-PZS*
Manganese (D): 742

TM14-PZM005*
Vanadium (T): 156

TM15-PZM007*
Thallium (T): 9.3 J
Vanadium (T): 806

FM-006-PZS
Manganese (D): 1,900
Thallium (D): 4.7 J

FM-002-PZS

FM-001-PZS

FM-010-PZS
Thallium (D): 5.1 J
Vanadium (D): 392

TM15-PZM011*
Arsenic (T): 12.8

FM-007-PZS*
Iron (D): 31,200
Manganese (D): 503

FM-013-PZS
Cobalt (D): 32.2
Iron (D): 243,000
Manganese (D): 11,400

FM-014-PZS
Thallium (D): 3.8 J

FM05-PZM004

FM-015-PZS*
Chromium VI (D): 62.0

SW-053-MWS
Cobalt (T): 77.7
Manganese (T): 1,620
Thallium (T): 4.3 B

TM16-PZM007
Thallium (D): 4.9 J
Vanadium (T): 407

TM17-PZM005
Arsenic (T): 15.1
Iron (T): 27,800
Manganese (T): 4,080

FM-008-PZS
Chromium VI (T): 7.0 J
Thallium (D): 4.7 J*
Vanadium (D): 236*

FM-009-PZS
Thallium (D): 3.9 J
Vanadium (D): 193

SW-048-MWS
Cobalt (T): 161
Iron (T): 23,800
Manganese (T): 8,620

SW-077-MWS*
Thallium (D): 4.1 J

TM18-PZM005
Lead (T): 19.6
Manganese (T): 2,090

FM-011-PZS*
Cobalt (D): 9.2
Manganese (D): 764

SW-076-MWS
Cobalt (T): 25.1
Manganese (T): 596

FM-012-PZS

SW-080-MWS*
Cobalt (T): 24.5

SW06-PZM001
Thallium (T): 7.3 B

Finishing Mills Groundwater Investigation
Shallow - Inorganic Exceedances (ug/L)
October 28, 2016

Figure
GW-8

EnviroAnalytics Group
ARM Project 150300M-21

Tradepoint Atlantic
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

- Piezometer
- Well
- Groundwater Investigation Boundary

(T) = Total Metals
(D) = Dissolved Metals

Note:
Sample* indicates nonvalidated

SW-078-MWI*
Iron (T): 29,900
Manganese (T): 1,380
Thallium (T): 4.4 J

SW-077-MWI
Cobalt (T): 27.4
Manganese (T): 2,910

SW-075-MWI
Iron (T): 23,500
Manganese (T): 3,000

TM13-PZM046
Iron (T): 19,900
Manganese (T): 1,940

TM15-PZM031

FM-011-PZI
Chromium VI (T): 5,000 J
Cobalt (D): 7.2 J
Iron (D): 27,100
Manganese (D): 4,280

TM11-PZM034
Arsenic (T): 15.6
Cobalt (T): 20.0
Iron (T): 100,000
Manganese (T): 8,350

FM-006-PZI
Iron (D): 109,000
Manganese (D): 4,420

SW-076-MWI
Cobalt (T): 16.7
Iron (T): 84,500
Manganese (T): 5,070

FM-005-PZI
Arsenic (D): 63.3
Iron (D): 34,100
Manganese (D): 541

FM-007-PZI
Iron (D): 92,700
Manganese (D): 4,450

FM-012-PZI
Iron (D): 17,200
Manganese (D): 508

TM09-PZM047*
Iron (T): 84,800
Manganese (T): 4,790
Thallium (D): 22.8 J

FM-013-PZI*
Iron (D): 38,200
Manganese (D): 1,740

FM-004-PZI
Iron (D): 28,400
Manganese (D): 1,570

FM-008-PZI
Arsenic (D): 37.2
Iron (D): 135,000
Manganese (D): 1,560

SW-081-MWI
Iron (T): 57,200
Manganese (T): 4,200

SW-080-MWI*
Iron (T): 56,200
Manganese (T): 2,370

TM07-PZM045
Arsenic (T): 19.8
Cobalt (T): 6.1
Iron (T): 121,000
Manganese (T): 4,600

FM-003-PZI
Iron (D): 69,500
Manganese (D): 1,560

FM-014-PZI
Iron (D): 84,900
Manganese (D): 2,470

FM-009-PZI
Cobalt (D): 8.0
Iron (D): 83,200
Manganese (D): 3,440

SW-079-MWI*
Iron (T): 67,000
Manganese (T): 3,520

FM-002-PZI*
Iron (D): 83,700
Manganese (D): 2,240
Thallium (D): 3.7 J

SW06-PZM053
Manganese (T): 671

FM-016-PZI*
Iron (D): 56,800
Manganese (D): 2,630

FM05-PZM024
Iron (T): 50,800
Manganese (T): 2,560

FM-001-PZI*
Iron (D): 26,400
Manganese (D): 1,420

FM01-PZM041
Arsenic (T): 40.6
Iron (T): 46,600

FM-015-PZI
Iron (D): 23,600
Manganese (D): 1,180

Finishing Mills Groundwater Investigation
Intermediate - Inorganic Exceedances (ug/L)

October 28, 2016

Figure
GW-9

EnviroAnalytics Group

ARM Project 150300M-21

Tradepoint Atlantic

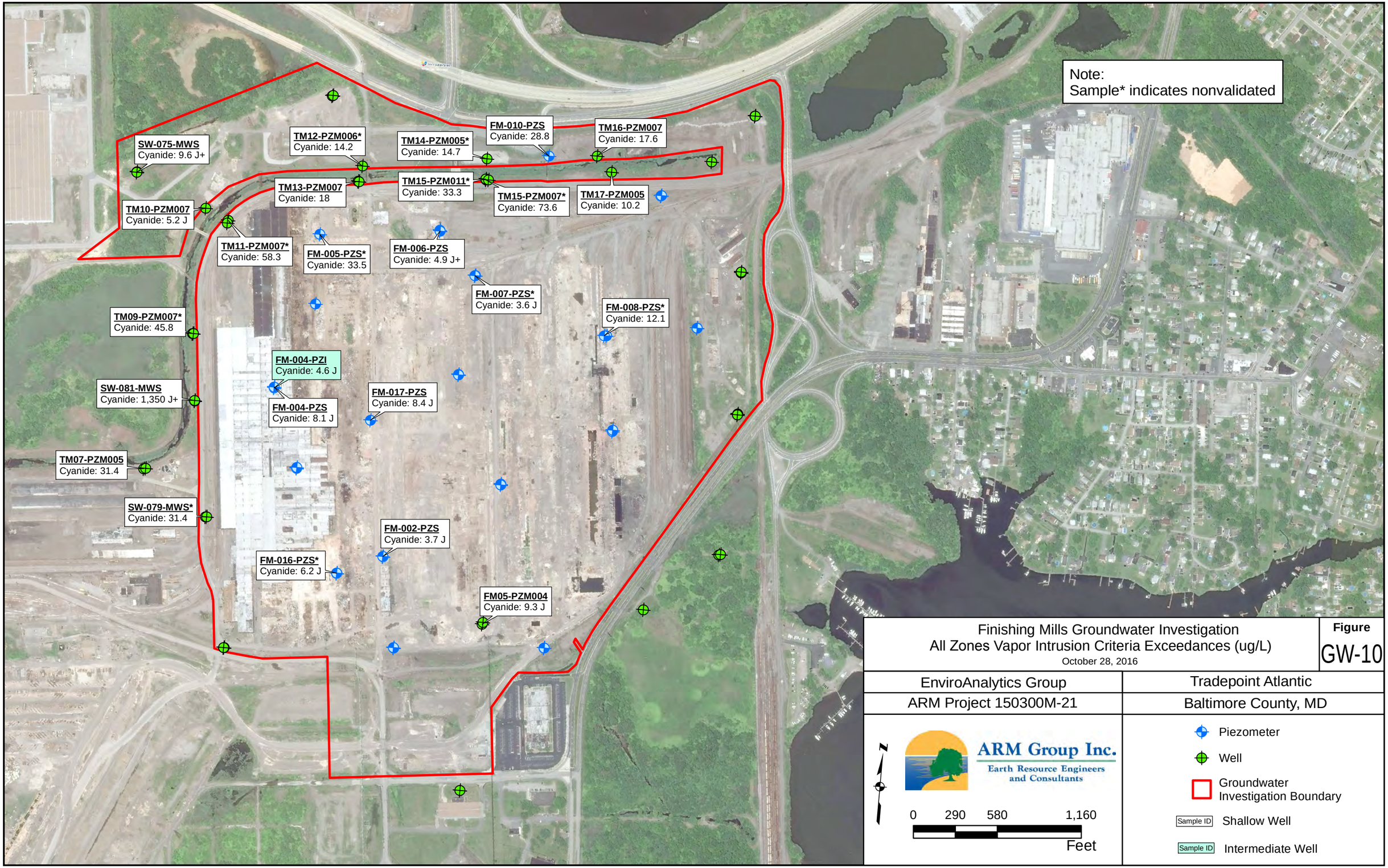
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

- Piezometer
- Well
- Groundwater Investigation Boundary

(T) = Total Metals
(D) = Dissolved Metals


Note:
Sample* indicates nonvalidated
SW-075-MWS
Cyanide: 9.6 J+
TM12-PZM006*
Cyanide: 14.2
TM14-PZM005*
Cyanide: 14.7
FM-010-PZS
Cyanide: 28.8
TM16-PZM007
Cyanide: 17.6
TM13-PZM007
Cyanide: 18
TM15-PZM011*
Cyanide: 33.3
TM15-PZM007*
Cyanide: 73.6
TM17-PZM005
Cyanide: 10.2
TM10-PZM007
Cyanide: 5.2 J
TM11-PZM007*
Cyanide: 58.3
FM-005-PZS*
Cyanide: 33.5
FM-006-PZS
Cyanide: 4.9 J+
FM-007-PZS*
Cyanide: 3.6 J
FM-008-PZS*
Cyanide: 12.1
TM09-PZM007*
Cyanide: 45.8
FM-004-PZI
Cyanide: 4.6 J
SW-081-MWS
Cyanide: 1,350 J+
FM-004-PZS
Cyanide: 8.1 J
FM-017-PZS
Cyanide: 8.4 J
TM07-PZM005
Cyanide: 31.4
SW-079-MWS*
Cyanide: 31.4
FM-002-PZS
Cyanide: 3.7 J
FM-016-PZS*
Cyanide: 6.2 J
FM05-PZM004
Cyanide: 9.3 J
Finishing Mills Groundwater Investigation
All Zones Vapor Intrusion Criteria Exceedances (ug/L)
October 28, 2016
Figure
GW-10
EnviroAnalytics Group
ARM Project 150300M-21
Tradepoint Atlantic
Baltimore County, MD
ARM Group Inc.
Earth Resource Engineers and Consultants
0 290 580 1,160
Feet
Piezometer
Well
Groundwater Investigation Boundary
Sample ID Shallow Well
Sample ID Intermediate Well

Note:
Sample* indicates nonvalidated

TM10-PZM007
Organism Consumption
Thallium (T): 14.5
Salt Water Chronic
Aluminum (T): 5,930
Benzo(a)anthracene: 0.049 J
Benzo(a)pyrene: 0.023 J
Chromium: 210
Cobalt (T): 1.8
Copper (T): 35.4
Cyanide: 5.2 J
Iron (T): 26,000
Lead (T): 150
Manganese (T): 6,070
Nickel (T): 17.4 J
Vanadium (T): 1,100
Zinc (T): 412 J

TM12-PZM006*
Organism Consumption
Thallium (D): 3.6 J
Salt Water Chronic
Aluminum (T): 274
Benzo(a)anthracene: 0.11
Benzo(a)pyrene: 0.016 J
Cyanide: 14.2
Naphthalene: 12.9
Vanadium (T): 216

TM14-PZM005*
Salt Water Chronic
Aluminum (T): 474
Benzo(a)anthracene: 0.081 J
Benzo(a)pyrene: 0.019 J
Carbon Disulfide: 0.98 J
Cyanide: 14.7
Naphthalene: 3.7
Vanadium (T): 156

FM-010-PZS
Organic Cunsumption
Arsenic (D): 3,9 J
Thallium (D): 5.1 J
Salt Water Chronic
Aluminum (D): 612
Benzo(a)anthracene: 0.046 J
Cyanide: 28.8
Naphthalene: 7.9 J
Vanadium (D): 392

TM16-PZM007
Organism Consumption
Arsenic (T): 4.9 J
Thallium (D): 4.6 J
Salt Water Chronic
Aluminum (T): 1,010
Cyanide: 17.6
Naphthalene: 2.9
Vanadium (T): 407

TM18-PZM005
Organism Consumption
Arsenic (T): 4 J
Benzo(b)fluoranthene: 0.23
Benzo(k)fluoranthene: 0.2
Salt Water Chronic
Aluminum (T): 152
Benzo(a)anthracene: 0.16
Benzo(a)pyrene: 0.12
Cobalt (T): 2.9 J
Copper (T): 7.6
Iron (T): 11,800
Lead (T): 19.6
Manganese (T): 2,090

TM13-PZM007
Salt Water Chronic
Aluminum (T): 150
Benzo(a)anthracene: 0.073 J
Cyanide: 18
Naphthalene: 23.3
PCBs (T): 0.75
Vanadium (T): 135

TM11-PZM007*
Salt Water Chronic
Aluminum (T): 101
Carbon Disulfide: 0.99 JB
Cyanide: 58.3
Manganese (T): 151
Naphthalene: 4.6

TM17-PZM005
Organism Consumption
Arsenic (T): 15.1
Salt Water Chronic
Barium (T): 375
Cyanide: 10.2
Iron (T): 27,800
Manganese (T): 4,080

TM15-PZM007*
Organism Consumption
Arsenic (T): 6.7
Thallium (T): 9.3 J
Salt Water Chronic
2-Methylnaphthalene: 18.1
Aluminum (T): 538
Anthracene: 1.3
Benzo(a)anthracene: 0.078 J
Carbon Disulfide: 1.2
Cyanide: 73.6
Fluorene: 11.9
Naphthalene: 113
Phenanthrene: 12.5
Vanadium (T): 806

TM15-PZM011*
Organism Consumption
Arsenic (T): 12.8
Salt Water Chronic
Aluminum (T): 549
Benzo(a)anthracene: 0.04 J
Carbon Disulfide: 1.5
Cyanide: 33.3
Naphthalene: 29.5
Vanadium (T): 67.1

TM09-PZM007*
Organism Consumption
Arsenic (T): 5.1
Salt Water Chronic
Aluminum (T): 551
Carbon Disulfide: 1.5
Cyanide: 45.8
Naphthalene: 6.2
Vanadium (T): 212

SW-081-MWS
Organism Consumption
Arsenic (T): 4.8 J
Thallium (D): 4.2 J
Cyanide: 1,350 J+
Salt Water Chronic
Aluminum (T): 805
Benzo(a)anthracene: 0.047 J
Cyanide: 1,350 J+
Naphthalene: 3.7 B
Vanadium (T): 246

TM07-PZM005
Organism Consumption
Thallium (T): 4 J
Salt Water Chronic
Aluminum (T): 146
Cyanide: 31.4
Vanadium (T): 176

Finishing Mills Groundwater Investigation
Shallow Zone Ambient Water Quality Criteria Exceedances (ug/L)
October 28, 2016

Figure
GW-11

EnviroAnalytics Group
ARM Project 150300M-21

Tradepoint Atlantic
Baltimore County, MD

ARM Group Inc.
Earth Resource Engineers and Consultants

0 290 580 1,160
Feet

Piezometer
Well
Groundwater Investigation Boundary
Sample ID Shallow Well

(T) = Total Metals
(D) = Dissolved Metals

TABLES

Table 1 Historical Drawings Summary				
Set Name	Typical Features Shown	Drawing Number	Original Date Drawn	Latest Revision Date
Plant Arrangement	Roads, water bodies, building/structure footprints, electric lines, above-ground pipelines (e.g.: steam, nitrogen, etc.)	5034	6/23/1958	3/19/1982
		5035	9/1/1958	3/19/1982
		5040	6/15/1958	3/19/1982
		5041	6/15/1958	3/19/1982
		5045	9/21/1959	3/19/1982
		5046	9/21/1959	3/19/1982
		5047	1/17/1966	3/11/1958
		5050	*Unknown*	3/18/1982
		5051	6/1/1960	3/19/1982
		5052	6/30/1959	3/11/1982
Plant Index	Roads, water bodies, demolished buildings/structures, electric lines, above-ground pipelines	5134	*Unknown*	1/8/2008
		5135	*Unknown*	7/11/2008
		5140	*Unknown*	8/15/2008
		5141	*Unknown*	9/27/2010
		5145	*Unknown*	8/18/2008
		5146	*Unknown*	8/18/2008
		5147	*Unknown*	11/10/2008
		5150	*Unknown*	8/18/2008
		5151	*Unknown*	2/21/2008
		5152	*Unknown*	2/25/2008
Plant Sewer Lines	Same as above plus trenches, sumps, underground piping (includes pipe materials)	5534	8/28/1959	3/19/1976
		5535	*Unknown*	5/28/1976
		5540	6/15/1958	7/14/1991
		5541	9/6/1959	10/6/1993
		5545	9/21/1959	6/6/1985
		5546	10/15/1959	6/9/1993
		5547	9/16/1959	3/15/1976
		5550	9/16/1959	3/5/1976
		5551	9/16/1959	3/5/1976
		5552	9/16/1959	3/9/1976
Drip Legs	Coke Oven Gas Drip Legs Locations	5888	*Unknown*	Sept. 1988
		5885B	*Unknown*	Sept. 1988
		5886B	*Unknown*	Sept. 1988

TABLE 2
ADJUSTED GROUNDWATER LOCATIONS

Location Name	Hydrogeologic Zone	Proposed Location		Final Location		Relocation Distance and Direction	
		Northing	Easting	Northing	Easting		
FM01-PZM003 *	Shallow	568252.05	1460279.37	568251.65	1460279.28	0	-
FM01-PZM041 *	Intermediate	568251.83	1460275.60	568251.76	1460275.61	0	-
FM05-PZM004	Shallow	568569.76	1462039.33	568565.69	1462040.51	4	SE
FM05-PZM024	Intermediate	568564.62	1462039.29	568578.67	1462043.77	15	NE
FM-001-PZS	Shallow	568352.86	1461441.84	568352.50	1461443.85	2	E
FM-001-PZI	Intermediate	568352.86	1461441.84	568350.09	1461447.35	6	SE
FM-002-PZS	Shallow	569002.99	1461322.77	568971.52	1461315.77	32	S
FM-002-PZI	Intermediate	569002.99	1461322.77	568970.89	1461318.92	32	S
FM-003-PZS	Shallow	569540.28	1460667.88	569534.00	1460671.22	7	SE
FM-003-PZI	Intermediate	569540.28	1460667.88	569527.42	1460670.51	13	S
FM-004-PZS	Shallow	570075.21	1460464.30	570071.39	1460466.11	4	SE
FM-004-PZI	Intermediate	570075.21	1460464.30	570066.19	1460466.45	10	SE
FM-005-PZS	Shallow	571153.02	1460687.93	571149.95	1460689.17	3	SE
FM-005-PZI	Intermediate	571153.02	1460687.93	570670.96	1460700.24	483	S
FM-006-PZS	Shallow	571245.56	1461513.06	571246.35	1461514.90	2	E
FM-006-PZI	Intermediate	571245.56	1461513.06	571251.68	1461510.81	7	NW
FM-007-PZS	Shallow	570969.56	1461770.25	570960.51	1461781.24	14	SE
FM-007-PZI	Intermediate	570969.56	1461770.25	570961.80	1461784.57	16	SE
FM-008-PZS	Shallow	570624.00	1462702.34	570624.50	1462707.78	0.5	W
FM-008-PZI	Intermediate	570624.00	1462702.34	570624.99	1462721.88	13	E
FM-009-PZS	Shallow	569987.40	1462805.25	569980.51	1462820.63	16	SE
FM-009-PZI	Intermediate	569987.40	1462805.25	569968.89	1462819.29	23	SE
FM-010-PZS	Shallow	571952.21	1461947.64	571826.42	1462218.46	299	SE
FM-010-PZI **	Intermediate	571952.21	1461947.64	**	**	-	-
FM-011-PZS	Shallow	571626.74	1463013.08	571622.76	1463015.69	5	SE
FM-011-PZI	Intermediate	571626.74	1463013.08	571620.40	1463013.18	6	S
FM-012-PZS	Shallow	570738.51	1463338.26	570734.98	1463340.86	4	SE
FM-012-PZI	Intermediate	570738.51	1463338.26	570732.06	1463341.74	7	SE
FM-013-PZS	Shallow	570271.34	1461723.53	570268.11	1461727.93	5	SE
FM-013-PZI	Intermediate	570271.34	1461723.53	570271.36	1461726.85	3	E
FM-014-PZS	Shallow	569542.10	1462083.14	569536.31	1462083.86	6	S
FM-014-PZI	Intermediate	569542.10	1462083.14	569541.35	1462083.52	1	S
FM-015-PZS	Shallow	568438.09	1462501.72	568438.52	1462482.27	19	W
FM-015-PZI	Intermediate	568438.09	1462501.72	568440.69	1462479.04	23	NW
FM-016-PZS	Shallow	568832.38	1461005.67	568829.88	1461007.58	3	SE
FM-016-PZI	Intermediate	568832.38	1461005.67	568827.21	1461007.05	5	SE
FM-017-PZS	Shallow	569903.76	1461163.83	569903.20	1461148.43	15	W
SW06-PZM001	Shallow	569204.40	1463626.61	569184.69	1463625.88	20	S
SW06-PZM053	Intermediate	569204.26	1463631.61	569188.45	1463637.32	17	S
SW-048-MWS	Shallow	568743.56	1463037.88	568760.44	1463140.98	105	E
SW-053-MWS	Shallow	567416.26	1461986.33	567410.98	1461986.20	5	S
SW-075-MWS	Shallow	571474.95	1459390.36	571466.89	1459390.63	8	S
SW-075-MWI	Intermediate	571474.95	1459390.36	571472.28	1459393.74	4	SE
SW-076-MWS	Shallow	571159.90	1463631.18	571145.33	1463609.59	26	SW
SW-076-MWI	Intermediate	571159.90	1463631.18	571138.83	1463610.23	30	SW
SW-077-MWS	Shallow	572233.20	1463605.47	572228.44	1463614.02	10	SE

TABLE 2
ADJUSTED GROUNDWATER LOCATIONS

Location Name	Hydrogeologic Zone	Proposed Location		Final Location		Relocation Distance and Direction	
		Northing	Easting	Northing	Easting		
SW-077-MWI	Intermediate	572233.20	1463605.47	572224.85	1463610.87	10	SE
SW-078-MWS	Shallow	572114.80	1460693.37	572115.04	1460695.61	2	E
SW-078-MWI	Intermediate	572114.80	1460693.37	572112.30	1460690.77	4	SW
SW-079-MWS	Shallow	569065.21	1460046.13	569137.88	1460079.67	80	NE
SW-079-MWI	Intermediate	569065.21	1460046.13	569137.43	1460072.19	76	NE
SW-080-MWS	Shallow	570152.44	1463670.50	570161.03	1463670.60	9	N
SW-080-MWI	Intermediate	570152.44	1463670.50	570166.41	1463672.56	14	NE
SW-081-MWS	Shallow	569865.13	1459964.09	569933.18	1459925.44	78	NW
SW-081-MWI	Intermediate	569865.13	1459964.09	569928.64	1459928.00	73	NW
TM07-PZM005 *	Shallow	569431.35	1459617.84	569431.15	1459618.10	0	-
TM07-PZM045 *	Intermediate	569436.03	1459629.92	569436.02	1459630.08	0	-
TM09-PZM007 *	Shallow	570392.44	1459871.35	570392.29	1459871.53	0	-
TM09-PZM047 *	Intermediate	570392.51	1459878.23	570392.35	1459878.19	0	-
TM10-PZM007 *	Shallow	571262.60	1459888.21	571262.48	1459888.20	0	-
TM11-PZM007 *	Shallow	571191.74	1460049.39	-	-	0	-
TM11-PZM034	Intermediate	571186.94	1460045.12	571172.04	1460045.01	15	S
TM12-PZM006 *	Shallow	571646.68	1460941.69	571646.49	1460941.70	0	-
TM13-PZM007 *	Shallow	571539.20	1460915.49	571540.52	1460920.92	0	-
TM13-PZM046	Intermediate	571540.61	1460920.86	571536.04	1460925.99	0	-
TM14-PZM005 *	Shallow	571771.56	1461793.23	571771.23	1461793.30	0	-
TM15-PZM007 *	Shallow	571624.09	1461800.38	571623.86	1461800.43	0	-
TM15-PZM011 *	Shallow	571632.37	1461796.64	571632.21	1461796.67	0	-
TM15-PZM031 *	Intermediate	571627.92	1461814.87	571627.81	1461814.80	0	-
TM16-PZM007	Shallow	571849.08	1462554.49	571856.99	1462548.95	10	NW
TM17-PZM005 *	Shallow	571753.00	1462657.96	571752.86	1462658.08	0	-
TM18-PZM005	Shallow	571887.92	1463340.31	571885.60	1463340.92	2	NW

* Indicates an original historical well. Location was not shifted.

** Indicates sample collection point was not installed due to lithological limitations.

TABLE 3
GROUNDWATER ELEVATION DATA

Location Name	Hydrogeologic Zone	TOC Elevation (feet AMSL)	Ground Elevation (feet AMSL)	Measured DTW (ft)	Groundwater Elevation (feet AMSL)
FM01-PZM003	Shallow	10.08	10.37	3.82	6.26
FM01-PZM041	Intermediate	9.91	10.24	9.13	0.78
FM05-PZM004	Shallow	14.48	11.73	8.88	5.60
FM05-PZM024	Intermediate	14.47	12.04	10.00	4.47
FM-001-PZS	Shallow	13.40	12.05	7.40	6.00
FM-001-PZI	Intermediate	14.55	11.75	13.86	0.69
FM-002-PZS	Shallow	14.08	11.89	6.54	7.54
FM-002-PZI	Intermediate	15.17	12.01	14.49	0.68
FM-003-PZS	Shallow	14.90	11.48	6.08	8.82
FM-003-PZI	Intermediate	14.50	11.48	13.80	0.70
FM-004-PZS	Shallow	13.97	11.24	11.38	2.59
FM-004-PZI	Intermediate	14.24	11.38	13.47	0.77
FM-005-PZS	Shallow	12.04	10.92	10.58	1.46
FM-005-PZI	Intermediate	15.30	11.66	14.51	0.79
FM-006-PZS	Shallow	15.79	13.08	13.80	1.99
FM-006-PZI	Intermediate	16.03	13.12	13.23	2.80
FM-007-PZS	Shallow	13.40	11.37	4.02	9.38
FM-007-PZI	Intermediate	14.77	11.38	9.35	5.42
FM-008-PZS	Shallow	14.20	11.35	8.07	6.13
FM-008-PZI	Intermediate	14.72	11.51	9.73	4.99
FM-009-PZS	Shallow	17.66	14.97	11.78	5.88
FM-009-PZI	Intermediate	17.98	14.91	12.62	5.36
FM-010-PZS	Shallow	9.87	6.81	7.15	2.72
FM-011-PZS	Shallow	12.00	9.28	6.35	5.65
FM-011-PZI	Intermediate	12.39	9.30	6.65	5.74
FM-012-PZS	Shallow	13.97	11.42	7.78	6.19
FM-012-PZI	Intermediate	14.64	11.56	13.40	1.24
FM-013-PZS	Shallow	14.26	11.76	7.21	7.05
FM-013-PZI	Intermediate	14.90	11.71	14.26	0.64
FM-014-PZS	Shallow	15.00	11.63	7.67	7.33
FM-014-PZI	Intermediate	13.97	11.61	13.20	0.77
FM-015-PZS	Shallow	15.80	13.64	5.60	10.20
FM-015-PZI	Intermediate	16.89	13.22	16.26	0.63
FM-016-PZS	Shallow	14.69	11.95	8.79	5.90
FM-016-PZI	Intermediate	15.26	11.95	14.54	0.72
FM-017-PZS	Shallow	13.44	11.66	5.47	7.97
SW06-PZM001	Shallow	17.29	14.92	9.09	8.20
SW06-PZM053	Intermediate	16.75	14.59	15.82	0.93
SW-048-MWS	Shallow	16.73	14.27	5.66	11.07
SW-053-MWS	Shallow	13.84	14.06	3.96	9.88
SW-075-MWS	Shallow	12.53	10.27	6.44	6.09
SW-075-MWI	Intermediate	13.09	10.00	12.00	1.09
SW-076-MWS	Shallow	16.36	13.79	4.93	11.43
SW-076-MWI	Intermediate	16.45	13.93	10.41	6.04
SW-077-MWS	Shallow	12.14	9.80	9.11	3.03
SW-077-MWI	Intermediate	12.34	9.97	10.15	2.19

TABLE 3
GROUNDWATER ELEVATION DATA

Location Name	Hydrogeologic Zone	TOC Elevation (feet AMSL)	Ground Elevation (feet AMSL)	Measured DTW (ft)	Groundwater Elevation (feet AMSL)
SW-078-MWS	Shallow	13.44	11.13	7.93	5.51
SW-078-MWI	Intermediate	13.47	11.00	12.26	1.21
SW-079-MWS	Shallow	14.21	11.85	12.20	2.01
SW-079-MWI	Intermediate	14.19	11.91	13.51	0.68
SW-080-MWS	Shallow	14.07	11.96	4.16	9.91
SW-080-MWI	Intermediate	13.85	12.01	7.98	5.87
SW-081-MWS	Shallow	12.53	10.03	11.05	1.48
SW-081-MWI	Intermediate	12.49	10.02	11.75	0.74
TM07-PZM005	Shallow	13.67	10.86	13.18	0.49
TM07-PZM045	Intermediate	13.77	10.90	13.12	0.65
TM09-PZM007	Shallow	11.28	8.44	10.40	0.88
TM09-PZM047	Intermediate	11.19	8.81	10.50	0.69
TM10-PZM007	Shallow	11.21	8.25	10.14	1.07
TM11-PZM034	Intermediate	12.81	10.61	9.79	3.02
TM12-PZM006	Shallow	12.26	9.64	10.79	1.47
TM13-PZM007	Shallow	12.24	9.28	11.10	1.14
TM13-PZM046	Intermediate	11.70	9.29	10.55	1.15
TM14-PZM005	Shallow	10.18	10.75	7.58	2.60
TM15-PZM007	Shallow	10.53	7.52	8.25	2.28
TM15-PZM011	Shallow	10.02	7.31	7.70	2.32
TM15-PZM031	Intermediate	11.04	7.54	10.53	0.51
TM16-PZM007	Shallow	12.29	9.78	9.47	2.82
TM17-PZM005	Shallow	11.19	8.39	7.16	4.03
TM18-PZM005	Shallow	10.64	8.54	6.97	3.67

DTW = Depth to water
TOC = Top of casing
AMSL = Above mean sea level

Space Reserved for Table 4 - TCLP Detections for Solid IDW

(Pending Receipt of Waste Characterization Data)

TABLE 5
TCLP RESULTS FOR LIQUID IDW

Location ID	Parameter	Result (mg/L)	TCLP Limit (mg/L)	TCLP Exceedance	Laboratory Flag	Laboratory LOQ (mg/L)
FM WT Waste Characterization	1,1-Dichloroethene	0.001	0.7	no	U	0.001
FM WT Waste Characterization	1,2-Dichloroethane	0.001	0.5	no	U	0.001
FM WT Waste Characterization	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
FM WT Waste Characterization	2-Butanone (MEK)	0.01	200	no	U	0.01
FM WT Waste Characterization	Arsenic	0.005	5	no	U	0.005
FM WT Waste Characterization	Barium	0.0132	100	no		0.01
FM WT Waste Characterization	Benzene	0.001	0.5	no	U	0.001
FM WT Waste Characterization	Cadmium	0.003	1	no	U	0.003
FM WT Waste Characterization	Carbon tetrachloride	0.001	0.5	no	U	0.001
FM WT Waste Characterization	Chlorobenzene	0.001	100	no	U	0.001
FM WT Waste Characterization	Chloroform	0.001	6	no	U	0.001
FM WT Waste Characterization	Chromium		5	no	JB	0.005
FM WT Waste Characterization	Lead	0.005	5	no	U	0.005
FM WT Waste Characterization	Mercury	0.0002	0.2	no	U	0.0002
FM WT Waste Characterization	Selenium	0.008	1	no	U	0.008
FM WT Waste Characterization	Silver	0.006	5	no	U	0.006
FM WT Waste Characterization	Tetrachloroethene	0.001	0.7	no	U	0.001
FM WT Waste Characterization	Trichloroethene	0.001	0.5	no	U	0.001
FM WT Waste Characterization	Vinyl chloride	0.001	0.2	no	U	0.001
Water Disposal	1,1-Dichloroethene	0.001	0.7	no	U	0.001
Water Disposal	1,2-Dichloroethane	0.001	0.5	no	U	0.001
Water Disposal	1,4-Dichlorobenzene	0.001	7.5	no	U	0.001
Water Disposal	2-Butanone (MEK)	0.01	200	no	U	0.01
Water Disposal	Arsenic	0.005	5	no	U	0.005
Water Disposal	Barium	0.0466	100	no		0.01
Water Disposal	Benzene	0.001	0.5	no	U	0.001
Water Disposal	Cadmium	0.003	1	no	U	0.003
Water Disposal	Carbon tetrachloride	0.001	0.5	no	U	0.001
Water Disposal	Chlorobenzene	0.001	100	no	U	0.001
Water Disposal	Chloroform	0.001	6	no	U	0.001
Water Disposal	Chromium	0.0011	5	no	J	0.005
Water Disposal	Lead	0.005	5	no	U	0.005
Water Disposal	Mercury	0.0002	0.2	no	U	0.0002
Water Disposal	Selenium	0.008	1	no	U	0.008
Water Disposal	Silver	0.006	5	no	U	0.006
Water Disposal	Tetrachloroethene	0.0035	0.7	no		0.001
Water Disposal	Trichloroethene	0.003	0.5	no		0.001
Water Disposal	Vinyl chloride	0.001	0.2	no	U	0.001

TCLP = Toxicity Characterization Leaching Procedure
LOQ = Limit of Quantitation
J = The positive result reported for this analyte is a quantitative estimate below the laboratory PQL.
U = The analyte was not detected in the sample. The numeric value represents the sample LOQ.
B = The analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 6
Summary of Organics - Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM-001-PZS	FM-002-PZS	FM-003-PZS*	FM-004-PZS	FM-005-PZS*	FM-006-PZS	FM-007-PZS*	FM-008-PZS*	FM-009-PZS	FM-010-PZS	FM-011-PZS*	FM-012-PZS	FM-013-PZS	FM-014-PZS	FM-015-PZS*
Volatile Organic Compounds																	
1,1,1-Trichloroethane	µg/L	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	2.7	1 U	**1.9**	**20.1**	1 U	**0.45 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.75 J**	1 U	1 U
1,1-Dichloroethene	µg/L	7	1 U	**0.35 J**	**131**	**0.72 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	µg/L	5	1 U	1 U	**22.8**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	2 U	**1.7 J**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone (MEK)	µg/L	5,600	10 UJ	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**10.1**	10 U	10 UJ	10 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	µg/L	14,000	10 U	10 U	**54.5**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**139**	10 U	10 U	**47.1**
Benzene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	µg/L	0.13	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	µg/L	810	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**2.7**	1 U	1 U	1 U	1 U
Chloroform	µg/L	0.22	1 U	1 U	1 U	1 U	1 U	1 U	**0.67 J**	1 U	1 U	1 U	1 U	1 U	**0.87 J**	1 U	1 U
Chloromethane	µg/L	190	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	1 U	**1.7**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	µg/L	13,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	µg/L	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.99 J**	1 U	1 U	1 U	1 U	**0.75 J**	1 U	1 U
Isopropylbenzene	µg/L	450	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether (MTBE)	µg/L	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**2.6**	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 U	1 U	1 U
Tetrachloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	µg/L	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.45 J**	1 U	1 U	**1.5**	1 U	1 U
Trichloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	µg/L	2	1 U	1 U	**0.92 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	3 U	3 U	3 U	3 U	3 U	3 U	3 U	**2.3 J**	3 U	3 U	3 U	3 U	**4.6**	3 U	3 U
Semi-Volatile Organic Compounds																	
1,1-Biphenyl	µg/L	0.83	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U
1,4-Dioxane	µg/L	0.46	0.1 U	**0.29**	**89.6**	**10.3**	**0.94**	**0.091 J**	0.1 U	**0.098 J**	0.1 U	**0.091 J**	**0.34**	0.1 U	**0.85**	**0.47**	0.1 U
2,3,4,6-Tetrachlorophenol	µg/L	240	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	**1.3**	1 U	1 U	1 U	1.1 U	1 U
2,4-Dimethylphenol	µg/L	360	1 U	1 UJ	1.4 U	1 U	**0.53 J**	1 U	1 U	**0.58 J**	1 U	**12**	1 U	1 U	1 U	1.1 U	1 U
2-Chlorophenol	µg/L	91	1 U	1 UJ	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U
2-Methylnaphthalene	µg/L	36	0.1 U	0.1 UJ	**0.18**	**0.064 J**	**0.36**	0.1 U	**0.026 J**	**0.091 J**	0.1 UJ	**0.72 J**	0.1 U	**0.044 J**	**0.21**	0.1 U	**0.074 J**
2-Methylphenol	µg/L	930	1 U	1 UJ	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.37 J**	1 U	1 U	1 U	1.1 U	1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	2.1 U	2.1 UJ	2.7 U	2.1 U	2.1 U	2 U	2.1 U	**1.3 J**	2.1 U	**1.3 J**	2 U	2 U	2.1 U	2.1 U	2 U
Acenaphthene	µg/L	530	**0.062 J**	0.1 U	**0.028 J**	**0.1 J**	**0.15**	**0.21**	**0.026 J**	**0.074 J**	0.1 U	**1.1 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthylene	µg/L	530	0.1 U	0.1 U	0.14 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.026 J**	0.1 U	**0.059 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acetophenone	µg/L	1,900	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1**	**0.43 J**	1.1 U	**0.31 J**
Anthracene	µg/L	1,800	**0.033 J**	**0.022 J**	0.14 U	**0.56**	**0.055 J**	**0.013 J**	0.1 U	**0.23**	**0.078 J**	**0.19 J**	0.1 U	**0.11**	**0.023 J**	**0.068 J**	**0.088 J**
Benzo[a]anthracene	µg/L	0.012	0.1 U	0.1 U	**0.026 J**	**0.11**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.046 J**	0.1 U	0.1 U	0.1 U	**0.039 J**	**0.024 J**
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.1 U	**0.011 J**	**0.07 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	**0.0073 J**	0.1 U	0.1 U	0.1 U	**0.018 J**	0.1 U
Benzo[b]fluoranthene	µg/L	0.034	0.1 U	0.1 U	**0.027 J**	**0.12 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	**0.032 J**	0.1 U
Benzo[g,h,i]perylene	µg/L		0.1 U	0.1 U	0.14 U	**0.032 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	0.34	0.1 U	0.1 U	**0.024 J**	**0.057 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	**0.013 J**	0.1 U	0.1 U	0.1 U	**0.014 J**	0.1 U
bis(2-chloroethoxy)methane	µg/L	59	1 U	1 UJ	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	1 U	**0.39 J**	**0.33 J**	1 U	1 U	**0.24 J**	**0.4 J**	**0.36 J**	1 U	**0.27 J**	1 U	1 U	1.1 U	**0.21 J**
Caprolactam	µg/L	9,900	2.6 U	2.6 U	**0.67 J**	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Carbazole	µg/L		1 U	1 U	1.4 U	1 U	**0.22 J**	1 U	1 U	1 U	1 U	**1.1**	1 U	1 U	1 U	1.1 U	**0.32 J**
Chrysene	µg/L	3.4	0.1 U	0.1 U	**0.013 J**	**0.086 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.028 J**	0.1 U	0.1 U	0.1 U	**0.022 J**	**0.011 J**
Diethylphthalate	µg/L	15,000	1 U	1 U	**1.1 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U
Di-n-butylphthalate	µg/L	900	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.12 J**	1.1 U	1 U
Fluoranthene	µg/L	800	**0.065 J**	**0.016 J**	**0.033 J**	**0.2**	0.1 U	**0.064 J**	**0.039 J**	**0.044 J**	0.1 U	**0.59 J**	0.1 U	0.1 U	0.1 U	**0.056 J**	**0.49**
Fluorene	µg/L	290	**0.029 J**	0.1 U	**0.031 J**	**0.11**	**0.26**	**0.035 J**	**0.033 J**	**0.042 J**	0.1 U	**0.59 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Indeno[1,2,3-c,d]pyrene	µg/L	0.034	0.1 U	0.1 U	0.14 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	µg/L	0.17	**0.065 B**	0.1 UJ	**0.1 J**	**0.2**	**3**	**0.03 B**	**0.059 J**	**0.63**	**0.035 B**	**7.9 J**	**0.054 JB**	**0.12**	**0.23**	**0.027 B**	**0.3 B**
Pentachlorophenol	µg/L	1	2.6 U	2.6 U	3.4 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	**0.75 J**	**7.6**	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Phenanthrene	µg/L		**0.078 J**	0.1 U	**0.068 J**	**0.32**	**0.4**	**0.062 J**	**0.082 J**	**0.082 J**	0.1 U	**1.6 J**	0.1 U	**0.28**	**0.021 J**	**0.033 J**	**0.89**
Phenol	µg/L	5,800	1 U	1 UJ	1.4 U	1 U	**0.28 J**	1 U	**0.23 J**	1 U	1 U	**0.22 J**	1 U	**1.6**	**0.22 J**	1.1 U	1 U
Pyrene	µg/L	120	**0.043 J**	0.1 U	**0.033 J**	**0.15**	0.1 U	**0.048 J**	**0.028 J**	**0.027 J**	0.1 U	**0.46 J**	0.1 U	0.1 U	0.1 U	**0.047 J**	**0.33**
PCBs																	
Dichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	µg/L	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachlorobiphenyl	µg/L	0.0004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TPH/Oil and Grease																	
Diesel Range Organics	µg/L	47	**48.4 J**	**184 J**	**197**	**3,380 J**	**4,480**	**410 J**	**131**	**939**	**595 J**	**924**	**103 U**	**2,460 J**	**1,020 J**	**156 J**	**57.8 J**
Gasoline Range Organics	µg/L	47	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 6
Summary of Organics - Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM-016-PZI*	FM-016-PZS*	FM-017-PZS	FM01-PZM003	FM05-PZM004	SW-048-MWS	SW-053-MWS	SW06-PZM001	SW-075-MWS	SW-076-MWS	SW-077-MWS*	SW-078-MWS*	SW-079-MWS*	SW-080-MWS*
Volatile Organic Compounds																
1,1,1-Trichloroethane	µg/L	200	1 U	**6.6**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	2.7	**0.78 J**	7.9	**0.45 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.5
1,1-Dichloroethene	µg/L	7	1 U	**0.82 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.89 J**
1,2-Dichloroethane	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone (MEK)	µg/L	5,600	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**8.5 J**	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	µg/L	14,000	10 U	10 U	10 U	10 R	10 R	10 U	10 U	10 R	10 U	**82.3**	**19.3**	10 U	**3 J**	10 U
Benzene	µg/L	5	1 U	1 U	**0.43 J**	1 U	**2.6**	1 U	1 U	1 U	**0.64 J**	1 U	**0.24 JB**	1 U	**0.25 J**	1 U
Bromodichloromethane	µg/L	0.13	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	µg/L	810	1 U	1 U	1 U	1 U	**1.1**	1 U	1 U	1 U	**1.3**	1 U	1 U	1 U	1 U	1 U
Chloroform	µg/L	0.22	1 U	1.8	1 U	27.9	1 U	1 U	1 U	1 U	0.98 J	1 U	1 U	1 U	1 U	1 U
Chloromethane	µg/L	190	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	µg/L	13,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**0.16 J**	10 U	10 U	10 U
Ethylbenzene	µg/L	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	µg/L	450	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether (MTBE)	µg/L	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
Tetrachloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	µg/L	1,000	1 U	1 U	1 U	1 U	**0.39 J**	1 U	1 U	1 U	**15.6**	1 U	**0.23 J**	1 U	**0.21 J**	1 U
Trichloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	µg/L	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Semi-Volatile Organic Compounds																
1,1-Biphenyl	µg/L	0.83	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane	µg/L	0.46	0.62	15.8	**0.085 J**	0.1 U	**0.036 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.072 J**	**0.094 J**	**0.26**
2,3,4,6-Tetrachlorophenol	µg/L	240	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-Dimethylphenol	µg/L	360	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	1 U	**1.1**	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	µg/L	91	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	µg/L	36	0.1 U	0.1 U	**0.054 J**	0.1 U	**0.6**	0.1 U	0.1 U	0.1 U	**0.28**	0.1 UJ	**0.18**	0.1 U	**0.26**	0.1 U
2-Methylphenol	µg/L	930	1 U	1 U	1 U	1 U	**0.39 J**	1.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	2 U	2.1 U	2.1 U	2.1 U	**0.79 J**	2.4 U	2 U	2 U	**1.3 J**	2 U	2 U	2.1 U	2 U	2 U
Acenaphthene	µg/L	530	0.1 U	0.1 U	**0.11**	0.1 U	**0.77**	0.1 U	0.1 U	0.1 U	**0.17**	0.1 U	**0.17**	0.1 U	**0.7**	0.1 U
Acenaphthylene	µg/L	530	0.1 U	0.1 U	**0.016 J**	0.1 U	**0.12**	0.1 U	0.1 U	0.1 U	**0.068 J**	0.1 U	**0.022 J**	0.1 U	**0.11**	0.1 U
Acetophenone	µg/L	1,900	1 U	1 U	1 U	1 U	**0.37 J**	1.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Anthracene	µg/L	1,800	0.1 U	0.1 U	**0.18**	**0.014 J**	**0.33**	0.1 U	0.1 U	0.1 U	**0.02 J**	**0.023 J**	**0.099 J**	0.1 U	**0.22**	0.1 U
Benzo[a]anthracene	µg/L	0.012	0.1 U	0.1 U	0.042 J	0.022 J	0.044 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.03 J	0.1 U	0.037 J	0.1 U
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.1 U	0.1 U	**0.014 J**	**0.013 J**	0.1 U	0.1 U	0.1 U	**0.014 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.034	0.1 U	0.1 U	0.1 U	0.1 U	**0.027 J**	0.1 U	0.1 U	**0.019 B**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[g,h,i]perylene	µg/L		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 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	0.34	0.1 U	0.1 U	0.1 U	0.1 U	**0.027 J**	0.1 U	0.1 U	0.1 U	**0.014 J**	0.1 U	0.1 U	0.1 U	**0.013 J**	0.1 U
bis(2-chloroethoxy)methane	µg/L	59	1 U	1 U	1 U	1 U	1 U	1.2 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	1 U	**0.21 J**	1 U	**0.29 J**	**0.69 J**	1 U	1 U	**0.21 B**	**0.2 J**	1 U	**0.83 J**	1 U	1 U
Caprolactam	µg/L	9,900	2.6 U	2.6 U	**0.56 J**	2.6 UJ	2.5 U	3 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.5 U
Carbazole	µg/L		1 U	1 U	**0.23 J**	1 U	**1.9**	1.2 UJ	1 U	1 U	1 U	1 U	**0.31 J**	1 U	**0.98 J**	1 U
Chrysene	µg/L	3.4	0.1 U	**0.011 J**	**0.016 J**	**0.012 J**	**0.024 J**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.014 J**	0.1 U	**0.027 J**	0.1 U
Diethylphthalate	µg/L	15,000	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	µg/L	900	**0.15 J**	1 U	1 U	1 U	**0.22 J**	1.2 U	1 U	1 U	**0.4 J**	1 U	1 U	1 U	1 U	1 U
Fluoranthene	µg/L	800	0.1 U	**0.02 J**	**0.43**	**0.059 J**	**0.38**	0.1 U	0.1 U	0.1 U	**0.036 J**	0.1 U	**0.19**	0.1 U	**0.38**	0.1 U
Fluorene	µg/L	290	0.1 U	0.1 U	**0.092 J**	0.1 U	**0.75**	0.1 U	0.1 U	0.1 U	**0.082 J**	0.1 U	**0.13**	0.1 U	**0.53**	0.1 U
Indeno[1,2,3-c,d]pyrene	µg/L	0.034	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 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	µg/L	0.17	**0.029 J**	**0.032 JB**	0.33	**0.052 B**	108	**0.038 B**	0.1 U	**0.053 B**	0.42	**0.018 B**	1.7	0.1 U	12	0.1 U
Pentachlorophenol	µg/L	1	**0.82 J**	**0.83 J**	**0.85 J**	2.6 U	2.5 U	3 U	2.5 U	2.5 U	2.6 U	2.6 U	2.8	2.6 U	2.6 U	2.5 U
Phenanthrene	µg/L		0.1 U	**0.02 J**	**0.84**	**0.056 J**	**0.93**	0.1 U	0.1 U	0.1 U	**0.19**	0.1 U	**0.52**	0.1 U	**0.96**	0.1 U
Phenol	µg/L	5,800	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	1 U	**0.35 J**	1 U	**0.4 J**	1 U	1 U	1 U
Pyrene	µg/L	120	0.1 U	**0.013 J**	**0.3**	**0.05 J**	**0.25**	0.1 U	0.1 U	0.1 U	**0.027 J**	0.1 U	**0.13**	0.1 U	**0.24**	0.1 U
PCBs																
Dichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	µg/L	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachlorobiphenyl	µg/L	0.0004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TPH/Oil and Grease																
Diesel Range Organics	µg/L	47	70.5 J	59.1 J	625 J	47.9 B	1,610	40.3 J	56.8 J	102 UJ	711 J	332	288	97.8 J	408	69.3 J
Gasoline Range Organics	µg/L	47	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	94.5 J	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 6
Summary of Organics - Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	SW-081-MWS	TM07-PZM005	TM09-PZM007*	TM10-PZM007	TM11-PZM007*	TM12-PZM006*	TM13-PZM007	TM14-PZM005*	TM15-PZM007*	TM15-PZM011*	TM16-PZM007	TM17-PZM005	TM18-PZM005
Volatile Organic Compounds															
1,1,1-Trichloroethane	µg/L	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	2.7	1 U	**0.65 J**	**2.5**	**0.7 J**	**1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	2 U	2 U	2 U	**2.1**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone (MEK)	µg/L	5,600	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**3 J**	10 U	**9.1 J**	10 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1.3 J**	10 U	10 U	10 U
Acetone	µg/L	14,000	10 U	10 U	**3.8 J**	10 U	10 U	10 U	10 U	10 U	**2.5 J**	**13.3**	**5.8 J**	**97.7**	**4 J**
Benzene	µg/L	5	**0.88 J**	1 U	**0.71 JB**	1 U	**0.41 J**	**1.2**	**2.6**	**0.42 J**	**2**	**1.2**	**1.1**	1 U	1 U
Bromodichloromethane	µg/L	0.13	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	µg/L	810	1 U	1 U	**1.5**	1 U	**0.99 JB**	1 U	**0.48 J**	**0.98 J**	**1.2**	**1.5**	1 U	1 U	1 U
Chloroform	µg/L	0.22	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	µg/L	190	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
cis-1,2-Dichloroethene	µg/L	70	1 U	1 U	1 U	**2.1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	µg/L	13,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**0.27 J**	**0.19 J**	10 U	10 U	10 U
Ethylbenzene	µg/L	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.58 J**	1 U	1 U	1 U	1 U
Isopropylbenzene	µg/L	450	**0.15 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.18 J**	1 U	1 U	1 U	1 U
Methyl tert-butyl ether (MTBE)	µg/L	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**3.7**
Methylene Chloride	µg/L	5	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U
Tetrachloroethene	µg/L	5	1 U	1 U	**1.2**	**0.65 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	µg/L	1,000	**3.7**	1 U	**0.48 J**	1 U	**0.18 J**	**0.55 J**	**1**	**0.31 J**	**0.95 J**	**0.69 J**	**0.72 B**	1 U	1 U
Trichloroethene	µg/L	5	1 U	1 U	**2.1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	µg/L	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	**1.3 J**	3 U	**0.77 J**	3 U	3 U	3 U	3 U	3 U	**3.9**	**2.1 J**	**1 J**	3 U	3 U
Semi-Volatile Organic Compounds															
1,1-Biphenyl	µg/L	0.83	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	**3.6**	**0.35 J**	1 U	1 U	1 U
1,4-Dioxane	µg/L	0.46	**0.078 J**	**0.085 J**	**1.9**	**0.25**	**2.1**	0.1 U	0.1 U	0.1 U	0.1 U	**0.17**	**0.095 J**	**0.06 J**	**0.18**
2,3,4,6-Tetrachlorophenol	µg/L	240	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-Dimethylphenol	µg/L	360	**0.75 J**	1 U	**261**	1.1 U	**0.55 J**	1 U	**1**	**5.1**	**2.4**	**5.1**	**5**	1 U	1 U
2-Chlorophenol	µg/L	91	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1 U	**0.41 J**	1 U	1 U	1 U
2-Methylnaphthalene	µg/L	36	**1.5**	**0.022 J**	**0.71 J**	0.11 UJ	**0.18**	**0.55**	**1.5**	**0.7**	**18.1**	**1.9**	**0.95**	**0.023 B**	**0.19**
2-Methylphenol	µg/L	930	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	**0.31 J**	**1.7**	**5.1**	1 U	1 U	1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	2.1 U	2.1 U	**145**	2.1 U	2.1 U	2.1 U	**1.6 J**	**1.1 J**	**4.9**	**21.5**	**1.2 J**	2.1 U	2.1 U
Acenaphthene	µg/L	530	**0.93**	**0.028 J**	**0.68**	**0.11**	**0.52**	**0.17**	**0.38**	**0.94**	**17.1**	**2.4**	**1.3**	**0.059 J**	**1.3**
Acenaphthylene	µg/L	530	**0.074 J**	**0.022 J**	**0.099 J**	**0.03 J**	**0.16**	**0.41**	**0.72**	**0.11**	**5.1**	**0.17**	**0.11**	0.1 U	**0.04 J**
Acetophenone	µg/L	1,900	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1 U	**0.43 J**	1 U	1 U	1 U
Anthracene	µg/L	1,800	**0.35**	**0.021 J**	**0.27**	**0.056 J**	**0.12**	**0.42**	**0.47**	**0.44**	**1.3**	**0.38**	**0.16**	**0.064 J**	**0.29**
Benzo[a]anthracene	µg/L	0.012	**0.047 J**	0.1 U	**0.024 J**	**0.049 J**	0.1 U	**0.11**	**0.073 J**	**0.081 J**	**0.078 J**	**0.04 J**	0.1 U	**0.024 J**	**0.16**
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.1 U	0.1 U	**0.023 J**	0.1 U	**0.016 J**	0.1 U	**0.019 J**	**0.0081 J**	0.1 U	0.1 U	0.1 U	**0.12**
Benzo[b]fluoranthene	µg/L	0.034	0.1 U	0.1 U	0.1 U	**0.045 J**	0.1 U	**0.03 J**	**0.019 J**	**0.031 J**	**0.017 J**	0.1 U	0.1 U	0.1 U	**0.23**
Benzo[g,h,i]perylene	µg/L		0.1 U	0.1 U	0.1 U	0.11 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	**0.062 J**
Benzo[k]fluoranthene	µg/L	0.34	0.1 U	0.1 U	0.1 U	**0.048 J**	0.1 U	**0.012 J**	**0.016 J**	**0.018 J**	0.1 U	0.1 U	0.1 U	0.1 U	**0.2**
bis(2-chloroethoxy)methane	µg/L	59	1 U	1 U	10.2 U	1.1 U	1 U	1 U	1 U	1 U	**0.55 J**	1 U	1 U	1 U	1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	1 U	1 U	1.1 UJ	**0.29 J**	1 U	1 U	1 U	**0.23 J**	**0.34 J**	1 U	**0.29 J**	**0.24 J**
Caprolactam	µg/L	9,900	2.6 U	2.6 U	25.5 U	2.6 U	2.6 U	2.6 U	**1.4 J**	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Carbazole	µg/L		**3**	1 U	**0.73 J**	1.1 U	1 U	**1.1**	**1.6**	**3.8**	**24.5**	**3.1**	**1.2**	1 U	**1**
Chrysene	µg/L	3.4	**0.021 J**	0.1 U	0.1 U	**0.029 J**	0.1 U	**0.067 J**	**0.037 J**	**0.051 J**	**0.045 J**	**0.03 J**	**0.018 J**	**0.012 J**	**0.16**
Diethylphthalate	µg/L	15,000	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	µg/L	900	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Fluoranthene	µg/L	800	**0.34**	**0.046 J**	**0.23**	**0.16**	**0.071 J**	**1.4**	**1.1**	**0.86**	**1.6**	**0.36**	**0.29**	**0.072 J**	**0.91**
Fluorene	µg/L	290	**0.86**	**0.036 J**	**0.92**	**0.098 J**	**0.064 J**	**0.73**	**1.2**	**1.7**	**11.9**	**1.4**	**1.2**	**0.039 J**	**1**
Indeno[1,2,3-c,d]pyrene	µg/L	0.034	0.1 U	0.1 U	0.1 U	0.11 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	**0.055 J**
Naphthalene	µg/L	0.17	**3.7 B**	**0.14**	**6.2**	**0.059 B**	**4.6**	**12.9**	**23.3**	**3.7**	**113**	**29.5**	**2.9**	**0.043 B**	**0.83**
Pentachlorophenol	µg/L	1	2.6 U	**0.9 J**	2.6 U	2.6 U	2.6 U	**1.1 J**	**1.1 J**	**2.6**	**1 J**	**0.97 J**	2.6 U	2.6 U	2.6 U
Phenanthrene	µg/L		**1.9**	**0.07 J**	**1.6**	**0.21**	**0.16**	**2.6**	**3.3**	**3.4**	**12.5**	**1.9**	**1.4**	**0.081 J**	**1.2**
Phenol	µg/L	5,800	1 U	1 U	**4.7**	1.1 U	1 U	1 U	1 U	1 U	**0.9 J**	**38**	1 U	1 U	1 U
Pyrene	µg/L	120	**0.2**	**0.03 J**	**0.14**	**0.13**	**0.053 J**	**0.9**	**0.67**	**0.53**	**1**	**0.22**	**0.2**	**0.067 J**	**0.58**
PCBs															
Dichlorobiphenyl	µg/L	0.044	0.005 UJ	0.005 U	0.005 U	0.005 U	0.00521 U	0.005 U	**0.144538236**	0.01 U	0.005 U	0.005 U	0.005 UJ	0.005 U	0.005 U
PCBs (total)	µg/L	0.5	.025 U	**0.008167**	.025 U	.025 U	.026 U	.025 U	**0.748152**	.05 U	.025 U	.025 U	.025 U	.025 U	.025 U
Tetrachlorobiphenyl	µg/L	0.0004	0.01 UJ	0.01 U	0.01 U	0.01 U	0.0104 U	0.01 U	**6.18E-02**	0.02 U	0.01 U	0.01 U	0.01 UJ	0.01 U	0.01 U
Trichlorobiphenyl	µg/L	0.044	0.005 UJ	**8.17E-03**	0.005 U	0.005 U	0.00521 U	0.005 U	**0.541832096**	0.01 U	0.005 U	0.005 U	0.005 UJ	0.005 U	0.005 U
TPH/Oil and Grease															
Diesel Range Organics	µg/L	47	**1,120 J**	**237 J**	**2,580**	**700**	**658**	**387**	**264 J**	**553**	**1,870**	**4,180**	**1,280 J**	**852 J**	**462 J**
Gasoline Range Organics	µg/L	47	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**200 U**	**86.6 J**	**200 U**	**200 U**	**200 U**	**200 U**

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 7
Summary of Organics - Detected
Finishing Mills Groundwater - Intermediate
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM-001-PZI*	FM-002-PZI*	FM-003-PZI	FM-004-PZI	FM-005-PZI	FM-006-PZI	FM-007-PZI	FM-008-PZI	FM-009-PZI	FM-011-PZI	FM-012-PZI	FM-013-PZI*	FM-014-PZI	FM-015-PZI	FM-016-PZI*	FM01-PZM041
Volatile Organic Compound																		
1,1,1-Trichloroethane	µg/L	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	2.7	1 U	1 U	**0.94 J**	**1.4**	1 U	1 U	1 U	1 U	1 U	**1.2**	1 U	1 U	**1.9**	1 U	**0.78 J**	1 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**3.7**	1 U	1 U	1 U
1,2-Dichloroethane	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone (MEK)	µg/L	5,600	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	µg/L	14,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**8 J**	10 U	10 U	10 U	10 R
Benzene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	µg/L	0.13	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	µg/L	810	**0.68 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.58 J**	1 U	1 U	1 U	1 U
Chloroform	µg/L	0.22	**1.1**	**0.26 J**	**1.8**	1 U	1 U	1 U	1 U	**1.3**	**5.8**	1 U	**1.3**	**3.8**	1 U	**0.96 J**	1 U	1 U
Chloromethane	µg/L	190	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	µg/L	13,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	µg/L	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	µg/L	450	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether (MTBE)	µg/L	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**24.9**	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	1 UJ	1 U	1 U
Tetrachloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	µg/L	1,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.91 J**	1 U	1 U	**0.23 J**	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	µg/L	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Semi-Volatile Organic Compounds																		
1,1-Biphenyl	µg/L	0.83	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane	µg/L	0.46	0.1 U	0.1 U	**17.7**	**7.2**	**1.4**	0.1 U	0.1 U	0.1 UJ	**0.23**	**0.6**	0.1 U	**0.17**	**2.5**	**0.36**	**0.62**	0.1 U
2,3,4,6-Tetrachlorophenol	µg/L	240	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4-Dimethylphenol	µg/L	360	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	µg/L	91	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	µg/L	36	0.1 U	0.1 U	**0.021 J**	0.1 UJ	**0.049 J**	**0.024 J**	0.1 UJ	**1.1 J**	0.11 U	0.1 U	0.1 U	**0.048 J**	0.1 UJ	0.1 U	0.1 U	0.1 U
2-Methylphenol	µg/L	930	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
3&4-Methylphenol(m&p Cresol)	µg/L	930	2.1 U	2 U	2 U	2 U	2 U	2.1 U	2.1 U	2 UJ	**1.9 J**	2 U	2.1 U	2 U	2 U	2.1 U	2 U	2 U
Acenaphthene	µg/L	530	0.1 U	0.1 U	0.1 U	0.1 U	**0.038 J**	**0.11**	0.1 U	**4.2 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthylene	µg/L	530	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.049 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Acetophenone	µg/L	1,900	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Anthracene	µg/L	1,800	0.1 U	0.1 U	**0.016 J**	**0.027 J**	**0.084 J**	**0.022 J**	0.1 U	**1.5 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[a]anthracene	µg/L	0.012	0.1 U	**0.024 J**	0.1 U	**0.027 J**	**0.11**	0.1 U	0.1 U	**0.074 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[a]pyrene	µg/L	0.2	0.1 U	**0.014 J**	0.1 UJ	**0.013 J**	**0.077 J**	0.1 U	0.1 UJ	**0.026 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.034	0.1 U	**0.019 J**	0.1 UJ	**0.028 J**	**0.12 J**	0.1 U	0.1 UJ	**0.058 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[g,h,i]perylene	µg/L		0.1 U	0.1 U	0.1 UJ	0.1 UJ	**0.038 J**	0.1 U	0.1 UJ	0.1 UJ	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	0.34	0.1 U	0.1 U	0.1 UJ	**0.028 J**	**0.073 J**	0.1 U	0.1 UJ	**0.025 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
bis(2-chloroethoxy)methane	µg/L	59	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Ethylhexyl)phthalate	µg/L	6	1 U	1 U	**0.7 J**	**0.34 J**	**0.8 J**	**0.35 J**	**0.21 J**	1 UJ	**0.23 J**	1 U	**0.24 J**	**0.28 J**	**0.24 J**	1 U	1 U	1 UJ
Caprolactam	µg/L	9,900	2.6 U	2.6 U	2.6 U	2.5 U	2.5 U	2.6 U	**0.17 J**	2.6 UJ	2.8 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.5 U
Carbazole	µg/L		1 U	1 U	1 U	1 U	1 U	1 U	1 U	**2.6 J**	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chrysene	µg/L	3.4	0.1 U	**0.02 J**	0.1 U	**0.014 J**	**0.11**	0.1 U	0.1 U	**0.067 J**	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Diethylphthalate	µg/L	15,000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	**0.37 J**	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	µg/L	900	1 U	1 U	**0.13 J**	1 U	1 U	1 U	1 U	**0.12 J**	1.1 U	1 U	1 U	1 U	1 U	1 U	**0.15 J**	1 U
Fluoranthene	µg/L	800	0.1 U	**0.041 J**	**0.018 J**	**0.026 J**	**0.27**	**0.047 J**	0.1 U	**1 J**	0.11 U	**0.018 J**	0.1 U	0.1 U	**0.032 J**	0.1 U	0.1 U	0.1 U
Fluorene	µg/L	290	0.1 U	0.1 U	0.1 U	0.1 U	**0.062 J**	**0.054 J**	0.1 U	**3.5 J**	0.11 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Indeno[1,2,3-c,d]pyrene	µg/L	0.034	0.1 U	0.1 U	0.1 UJ	0.1 UJ	**0.036 J**	0.1 U	0.1 UJ	0.1 UJ	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Naphthalene	µg/L	0.17	**0.035 J**	**0.024 J**	**0.055 B**	**0.032 B**	**0.11**	**0.058 B**	**0.033 B**	**1.8 J**	**0.032 B**	**0.043 B**	**0.068 B**	**0.14 B**	**0.14**	**0.044 B**	**0.029 J**	**0.023 B**
Pentachlorophenol	µg/L	1	2.6 U	2.6 U	2.6 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 UJ	2.8 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	**0.82 J**	2.5 U
Phenanthrene	µg/L		0.1 U	**0.028 J**	**0.025 J**	**0.034 J**	**0.32**	**0.13**	0.1 U	**6.1 J**	0.11 U	**0.045 J**	0.1 U	**0.018 J**	**0.05 J**	**0.029 J**	0.1 U	0.1 U
Phenol	µg/L	5,800	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Pyrene	µg/L	120	0.1 U	**0.029 J**	0.1 U	**0.022 J**	**0.19**	**0.032 J**	0.1 U	**0.57 J**	0.11 U	0.1 U	0.1 U	0.1 U	**0.02 J**	0.1 U	0.1 U	0.1 U
PCBs																		
Dichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCBs (total)	µg/L	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetrachlorobiphenyl	µg/L	0.0004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TPH/Oil and Grease																		
Diesel Range Organics	µg/L	47	103 U	104 U	**278 J**	**214 J**	**190 J**	**96 J**	**61.7 J**	**101 J**	**126 J**	**114 J**	**77.3 J**	**74.5 J**	**55.9 J**	**161 J**	**70.5 J**	**49.6 J**
Gasoline Range Organics	µg/L	47	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 7
Summary of Organics - Detected
Finishing Mills Groundwater - Intermediate
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM05-PZM024	SW06-PZM053	SW-075-MWI	SW-076-MWI	SW-077-MWI	SW-078-MWI*	SW-079-MWI*	SW-080-MWI*	SW-081-MWI	TM07-PZM045	TM09-PZM047*	TM11-PZM034	TM13-PZM046	TM15-PZM031*
Volatile Organic Compound																
1,1,1-Trichloroethane	µg/L	200	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	µg/L	2.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	15.8	1.8	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	21.8	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethene (Total)	µg/L	70	2 U	2 U	2 U	0.99 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone (MEK)	µg/L	5,600	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	µg/L	1,200	10 U	1.9 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	µg/L	14,000	15.1 J	10 R	10 U	10 U	10 U	16.5	3.8 J	10 U	10 U	10 U	10 U	3.3 J	9.4 J	14.1
Benzene	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	µg/L	0.13	1 U	1 U	1 U	1 U	1.2	3.6	1 U	1 U	1 U	1 U	1 U	0.54 J	1 U	1 U
Carbon disulfide	µg/L	810	1 U	1 U	0.77 B	1 U	1 U	1.2 B	0.94 J	1 U	1 U	1 U	0.43 J	1.4	1 U	1 U
Chloroform	µg/L	0.22	1 U	5.9	4.5	1 U	13.5	23.2	2.4	2.8	1 U	1 U	1 U	7.5	5.3	1 U
Chloromethane	µg/L	190	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	0.5 J	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	1 U	1 U	1 U	0.99 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	µg/L	13,000	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	µg/L	700	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	µg/L	450	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether (MTBE)	µg/L	14	1 U	1 U	1 U	3.4	1 U	1 U	1 U	4.8	1 U	1 U	1 U	1 U	1 U	1 U
Methylene Chloride	µg/L	5	1 U	1.4	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	µg/L	5	1 U	1 U	1 U	2.4	1 U	0.43 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	µg/L	1,000	1 U	1 U	0.2 B	1 U	1 U	1.2	0.23 J	1 U	0.26 B	1 U	0.14 J	0.3 B	0.37 J	1 U
Trichloroethene	µg/L	5	1 U	1 U	1 U	12	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	µg/L	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes	µg/L	10,000	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Semi-Volatile Organic Compounds																
1,1-Biphenyl	µg/L	0.83	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	N/A
1,4-Dioxane	µg/L	0.46	0.1 U	0.1 U	0.1 U	0.13	0.1 U	0.1 U	0.1 U	4.8	18.5	0.27	0.1 U	0.1 J	0.1 U	N/A
2,3,4,6-Tetrachlorophenol	µg/L	240	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	N/A
2,4-Dimethylphenol	µg/L	360	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	87.5	1 U	1 U	N/A
2-Chlorophenol	µg/L	91	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	N/A
2-Methylnaphthalene	µg/L	36	0.07 J	0.1 U	0.025 J	0.11 UJ	0.1 UJ	0.1 U	0.046 J	0.1 U	0.051 J	0.1 U	1 U	0.049 J	0.77	N/A
2-Methylphenol	µg/L	930	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	N/A
3&4-Methylphenol(m&p Cresol)	µg/L	930	2 U	2 U	2.1 U	2.2 U	2 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	46.7	2.1 U	2 U	N/A
Acenaphthene	µg/L	530	0.1 U	0.1 U	0.023 J	0.11 U	0.1 U	0.1 U	0.14	0.1 U	0.045 J	0.1 U	0.017 J	0.11	0.14	N/A
Acenaphthylene	µg/L	530	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.049 J	0.1 U	0.017 J	0.1 U	0.1 J	0.1 U	0.086 J	N/A
Acetophenone	µg/L	1,900	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	N/A
Anthracene	µg/L	1,800	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.048 J	0.1 U	0.04 J	0.1 U	0.1 U	0.058 J	0.078 J	N/A
Benzo[a]anthracene	µg/L	0.012	0.1 U	0.033 J	0.1 U	0.11 U	0.1 U	0.1 U	0.02 J	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	N/A
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.035 J	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	N/A
Benzo[b]fluoranthene	µg/L	0.034	0.1 U	0.15	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	N/A
Benzo[g,h,i]perylene	µg/L		0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	N/A
Benzo[k]fluoranthene	µg/L	0.34	0.1 U	0.1	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	N/A
bis(2-chloroethoxy)methane	µg/L	59	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	10.2 U	1 U	1 U	N/A
bis(2-Ethylhexyl)phthalate	µg/L	6	0.23 J	1 U	1 U	1.1 UJ	1 UJ	0.21 J	1 U	0.22 J	1.1 U	1 U	1 U	1 U	1 U	N/A
Caprolactam	µg/L	9,900	2.5 U	2.5 U	2.6 U	2.7 U	2.5 U	2.6 U	2.6 U	0.27 J	2.6 U	2.6 U	25.5 U	2.6 U	2.6 U	N/A
Carbazole	µg/L		1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	0.16 J	N/A
Chrysene	µg/L	3.4	0.1 U	0.031 B	0.1 U	0.11 U	0.1 U	0.1 U	0.0088 J	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	N/A
Diethylphthalate	µg/L	15,000	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	N/A
Di-n-butylphthalate	µg/L	900	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	0.37 J	1 U	1 U	0.25 J	1 U	N/A
Fluoranthene	µg/L	800	0.1 U	0.015 J	0.013 J	0.11 U	0.1 U	0.1 U	0.12	0.1 U	0.04 J	0.1 U	0.027 J	0.04 J	0.11	N/A
Fluorene	µg/L	290	0.1 U	0.1 U	0.03 J	0.11 U	0.1 U	0.1 U	0.099 J	0.1 U	0.073 J	0.1 U	0.021 J	0.07 J	0.18	N/A
Indeno[1,2,3-c,d]pyrene	µg/L	0.034	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	N/A
Naphthalene	µg/L	0.17	4.8	0.024 B	0.038 B	0.11 U	0.042 B	0.1 U	0.18 B	0.022 JB	0.14	0.031 B	1 U	0.12	75.1	N/A
Pentachlorophenol	µg/L	1	2.5 U	2.5 U	2.6 U	2.7 U	2.5 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	0.83 J	N/A
Phenanthrene	µg/L		0.026 J	0.1 U	0.074 J	0.11 U	0.1 U	0.1 U	0.25	0.1 U	0.16	0.1 U	0.028 J	0.17	0.44	N/A
Phenol	µg/L	5,800	1 U	1 U	1 U	1.1 U	1 U	1 U	1 U	1 U	1.1 U	1 U	27.6	1 U	1 U	N/A
Pyrene	µg/L	120	0.1 U	0.013 J	0.1 U	0.11 U	0.1 U	0.1 U	0.078 J	0.1 U	0.033 J	0.1 U	0.021 J	0.025 J	0.073 J	N/A
PCBs																
Dichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	N/A
PCBs (total)	µg/L	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	.025 U	.025 U	.025 U	.025 U	.025 U	N/A
Tetrachlorobiphenyl	µg/L	0.0004	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.01 U	0.01 U	0.01 U	0.01 U	0.02 U	N/A
Trichlorobiphenyl	µg/L	0.044	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	N/A
TPH/Oil and Grease																
Diesel Range Organics	µg/L	47	105 UJ	48.8 J	48 J	68.7 J	104 UJ	76.1 J	74 J	72.8 J	554 J	69.8 J	1,770	351 J	204 J	N/A
Gasoline Range Organics	µg/L	47	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 8
Summary of Inorganics Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM-001-PZS	FM-002-PZS	FM-003-PZS*	FM-004-PZS	FM-005-PZS*	FM-006-PZS	FM-007-PZS*	FM-008-PZS*	FM-009-PZS	FM-010-PZS
Metal (Total)												
Aluminum	µg/L	20,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Antimony	µg/L	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	µg/L	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium	µg/L	2,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beryllium	µg/L	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium	µg/L	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium	µg/L	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium VI	µg/L	0.035	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	**8,000[+] J**	10 U	10 U
Cobalt	µg/L	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper	µg/L	1,300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron	µg/L	14,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead	µg/L	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese	µg/L	430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury	µg/L	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel	µg/L	390	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium	µg/L	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	µg/L	94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thallium	µg/L	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	µg/L	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc	µg/L	6,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metal (Dissolved)												
Aluminum, Dissolved	µg/L	20,000	**320**	**27.5 J**	**21.6 J**	50 U	**38.7 J**	50 U	**59.4**	**193**	**34 J**	**612**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Arsenic, Dissolved	µg/L	10	**3.6 J**	**3.8 J**	5 U	5 U	5 U	5 U	**3.7 J**	**4.6 J**	**3.4 J**	**3.9 J**
Barium, Dissolved	µg/L	2,000	**58.9**	**59.3**	**127**	**72**	**45.8**	**264**	**25.8**	**71**	**81.7**	**49.1**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium, Dissolved	µg/L	5	**0.55 J**	3 U	**0.54 J**	3 U	3 U	**0.86 B**	3 U	3 U	3 U	3 U
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10 U	N/A	N/A
Chromium, Dissolved	µg/L	100	**3.9 J**	**8.8**	**2 J**	5 U	**5.9**	**1.5 J**	**2.2 J**	**3.6 J**	**4 J**	**1.6 J**
Cobalt, Dissolved	µg/L	6	5 U	**1.6 J**	**60.9**	5 U	5 U	**0.77 J**	**0.67 J**	5 U	5 U	5 U
Copper, Dissolved	µg/L	1,300	5 U	**6.7**	**2.6 J**	5 U	5 U	**1.6 J**	**2.5 J**	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	70 U	**48 J**	**34,600**	**3,030**	**20 J**	**12,600**	**31,200**	70 U	**39.5 J**	**56.2 J**
Lead, Dissolved	µg/L	15	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese, Dissolved	µg/L	430	5 U	**212**	**2,200**	**2,460**	**37.7**	**1,900**	**503**	**1.3 J**	**25.2**	**7.3**
Nickel, Dissolved	µg/L	390	10 U	**3.1 J**	**92.4**	**7 B**	**2 J**	**2.7 J**	**1.3 J**	**3 J**	**2.5 J**	**2.4 B**
Selenium, Dissolved	µg/L	50	**4.7 J**	**7.1 J**	**6 J**	8 U	**3.3 J**	8 U	**10.9 B**	**10.1**	**10.4**	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Thallium, Dissolved	µg/L	2	10 U	10 U	10 U	10 U	10 U	**4.7 J**	10 U	**4.7 J**	**3.9 J**	**5.1 J**
Vanadium, Dissolved	µg/L	86	**44.6**	**5.1**	**1.6 J**	**3 J**	**731**	**29.3**	**7.4**	**236**	**193**	**392**
Zinc, Dissolved	µg/L	6,000	**1.4 J**	**9.3 J**	**112**	**58.3**	10 U	**3.6 B**	**1.3 J**	**0.92 JB**	**0.78 B**	**1.5 J**
Other												
Cyanide	µg/L	200	**2.5 J**	**3.7 J**	10 U	**8.1 J**	**33.5**	**4.9 J+**	**3.6 J**	**12.1**	**3 J**	**28.8**

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

[+] Resampled on 7/5/16 for Hexavalent Chromium (Total) using the 7196 method and produced a detection of 7 ug/L
Resampled again on 7/15/16 for Hexavalent Chromium (Dissolved) using the 7196 method and produced a nondetect with a reporting limit of 10 ug/L

Table 8
Summary of Inorganics Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM-011-PZS*	FM-012-PZS	FM-013-PZS	FM-014-PZS	FM-015-PZS*	FM-016-PZS*	FM-017-PZS	FM01-PZM003	FM05-PZM004
Metal (Total)											
Aluminum	µg/L	20,000	N/A	N/A	N/A	N/A	N/A	N/A	**1,860**	**118**	**658 J**
Antimony	µg/L	6	N/A	N/A	N/A	N/A	N/A	N/A	6 U	6 U	6 U
Arsenic	µg/L	10	N/A	N/A	N/A	N/A	N/A	N/A	**5.2**	5 U	**7.4**
Barium	µg/L	2,000	N/A	N/A	N/A	N/A	N/A	N/A	**56.9**	**25.8**	**28.4**
Beryllium	µg/L	4	N/A	N/A	N/A	N/A	N/A	N/A	1 U	1 U	1 U
Cadmium	µg/L	5	N/A	N/A	N/A	N/A	N/A	N/A	3 U	3 U	3 U
Chromium	µg/L	100	N/A	N/A	N/A	N/A	N/A	N/A	**5 J**	**1.6 B**	**4.6 B**
Chromium VI	µg/L	0.035	10 U	10 U	10 UJ	10 U	**25**[+]	10 U	10 U	10 U	10 U
Cobalt	µg/L	6	N/A	N/A	N/A	N/A	N/A	N/A	**1.3 J**	5 U	5 U
Copper	µg/L	1,300	N/A	N/A	N/A	N/A	N/A	N/A	**5.6**	**1.7 B**	**1.9 B**
Iron	µg/L	14,000	N/A	N/A	N/A	N/A	N/A	N/A	**2,470**	**50 B**	**843**
Lead	µg/L	15	N/A	N/A	N/A	N/A	N/A	N/A	**5.4**	5 U	5 U
Manganese	µg/L	430	N/A	N/A	N/A	N/A	N/A	N/A	**149**	**7.6**	**38.5**
Mercury	µg/L	2	N/A	N/A	N/A	N/A	N/A	N/A	0.2 U	**0.06 B**	0.2 U
Nickel	µg/L	390	N/A	N/A	N/A	N/A	N/A	N/A	**3 J**	**0.71 J**	**3.1 B**
Selenium	µg/L	50	N/A	N/A	N/A	N/A	N/A	N/A	8 U	8 U	8 U
Silver	µg/L	94	N/A	N/A	N/A	N/A	N/A	N/A	6 U	6 U	6 U
Thallium	µg/L	2	N/A	N/A	N/A	N/A	N/A	N/A	10 U	10 U	10 U
Vanadium	µg/L	86	N/A	N/A	N/A	N/A	N/A	N/A	**33**	**224**	**25.2**
Zinc	µg/L	6,000	N/A	N/A	N/A	N/A	N/A	N/A	**11.6**	10 U	**3.7 B**
Metal (Dissolved)											
Aluminum, Dissolved	µg/L	20,000	50 U	**756**	50 U	50 U	**80.8**	**64.4**	**40.5 J**	**102**	**103**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	6 U	**2.6 B**	6 U
Arsenic, Dissolved	µg/L	10	5 U	5 U	5 U	**6.4**	5 U	5 U	5 U	5 U	**8.6**
Barium, Dissolved	µg/L	2,000	**25.7**	**328**	**30.2**	**40.3**	**132**	**22.8 B**	**48.9**	**25.7**	**26.9**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium, Dissolved	µg/L	5	3 U	3 U	**1 B**	3 U	3 U	3 U	3 U	3 U	3 U
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	N/A	**62**	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	5 U	**3 J**	**1.7 J**	**1.1 J**	**35.1**	**2.3 J**	5 U	**1.3 B**	**0.91 J**
Cobalt, Dissolved	µg/L	6	**9.2**	5 U	**32.2**	**2.8 J**	5 U	5 U	5 U	5 U	5 U
Copper, Dissolved	µg/L	1,300	5 U	**11.1**	5 U	**2 J**	**2.1 J**	5 U	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	**12,100**	70 U	**243,000**	**1,260**	70 U	**1,800**	**354**	**23.9 J**	**45.3 B**
Lead, Dissolved	µg/L	15	**4.1 J**	**5.4**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese, Dissolved	µg/L	430	**764**	5 U	**11,400**	**403**	5 U	**742**	**105**	**5.8 J**	**34.1**
Nickel, Dissolved	µg/L	390	**8 J**	**4.8 B**	**65.2**	10 U	10 U	**3.3 J**	**1.2 J**	10 U	**1.8 J**
Selenium, Dissolved	µg/L	50	8 U	8 U	8 U	**5.8 J**	**4.1 J**	8 U	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	**2.6 J**	6 U	6 U	6 U	6 U	6 U	6 U
Thallium, Dissolved	µg/L	2	10 U	10 U	10 U	**3.8 J**	10 U	10 U	10 U	10 U	10 U
Vanadium, Dissolved	µg/L	86	**1.4 J**	**0.69 J**	5 U	**16**	**0.61 J**	**1.1 J**	**26.9**	**233**	**23**
Zinc, Dissolved	µg/L	6,000	**5.2 JB**	**3.5 B**	**8.5 B**	**34.7**	**0.69 JB**	**9.4 JB**	**2.2 B**	**0.94 B**	**0.84 B**
Other											
Cyanide	µg/L	200	10 U	10 U	10 U	**2.6 J**	10 U	**6.2 J**	**8.4 J**	10 U	**9.3 J**

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

[+] Resampled on 7/15/16 for Hexavalent Chromium (Dissolved) using the 7196 method and produced a detection of 62 ug/L

Table 8
Summary of Inorganics Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	SW-048-MWS	SW-053-MWS	SW06-PZM001	SW-075-MWS	SW-076-MWS	SW-077-MWS*	SW-078-MWS*	SW-079-MWS*	SW-080-MWS*
Metal (Total)											
Aluminum	µg/L	20,000	**2,090**	**248**	**128**	**346**	**2,090**	**762**	**2,560**	**109**	**150**
Antimony	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	**2.8 J**	**3.3 J**	6 U
Arsenic	µg/L	10	5 U	5 U	5 U	**7.1**	5 U	5 U	5 U	5 U	5 U
Barium	µg/L	2,000	**27.2**	**17.3**	**28.3**	**49.5**	**36.7**	**444**	**21.5**	**64.2**	**28.7**
Beryllium	µg/L	4	**1.9**	**2**	1 U	1 U	**1.4**	1 U	**2.1**	1 U	**0.42 J**
Cadmium	µg/L	5	**1.1 B**	**0.66 J**	3 U	3 U	**1 J**	3 U	**2.4 J**	3 U	**0.83 J**
Chromium	µg/L	100	5 U	5 U	**0.91 B**	**8.9**	**1.7 J**	**2.7 J**	**2.3 J**	**1.5 J**	5 U
Chromium VI	µg/L	0.035	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	µg/L	6	**161**	**77.7**	**1.6 B**	5 U	**25.1**	5 U	**828**	5 U	**24.5**
Copper	µg/L	1,300	**4 J**	5 U	5 U	**1.6 J**	**2.1 J**	**2.1 J**	**2.2 J**	5 U	**1.6 J**
Iron	µg/L	14,000	**23,800**	**5,040**	**447**	**931**	**8,750**	**107**	**164,000**	**110**	**591**
Lead	µg/L	15	5 U	5 U	5 U	5 U	**4 J**	5 U	5 U	5 U	5 U
Manganese	µg/L	430	**8,620**	**1,620**	**228**	**66.5**	**596**	**23.7**	**13,000**	**56.2**	**177**
Mercury	µg/L	2	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	µg/L	390	**94.1**	**120**	**7 B**	**2.8 J**	**42.2 J**	**2.2 J**	**835**	**0.73 J**	**35**
Selenium	µg/L	50	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Silver	µg/L	94	6 U	6 U	6 U	6 U	6 U	6 U	**2.2 J**	6 U	6 U
Thallium	µg/L	2	10 U	**4.3 B**	**7.3 B**	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium	µg/L	86	**2.6 J**	5 U	**1.1 B**	**47.5**	**2.3 J**	**65.6**	**10.2**	**217**	**0.55 J**
Zinc	µg/L	6,000	**214**	**127**	**4.6 B**	**21.1**	**124 J**	**2.4 JB**	**668**	**3.4 JB**	**31**
Metal (Dissolved)											
Aluminum, Dissolved	µg/L	20,000	**2,040**	**172**	50 U	**51.8**	**956**	**702**	**658**	**88.8**	**115**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	**2.4 J**	**4.2 J**	6 U
Arsenic, Dissolved	µg/L	10	5 U	5 U	5 U	**7.2**	5 U	5 U	5 U	**2.9 J**	5 U
Barium, Dissolved	µg/L	2,000	**26.1**	**16.7**	**27.8**	**43.8**	**34.8**	**426**	**21.1**	**64.6**	**29**
Beryllium, Dissolved	µg/L	4	**2.4**	**1.8**	1 U	1 U	**1.4**	1 U	**1.8**	1 U	**0.38 J**
Cadmium, Dissolved	µg/L	5	**1.4 B**	**0.62 B**	3 U	**0.58 J**	**1.3 J**	3 U	**2.5 J**	3 U	**0.72 J**
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	5 U	**1.4 B**	**0.96 J**	**1.5 J**	5 U	**1.6 J**	5 U	**1.1 J**	5 U
Cobalt, Dissolved	µg/L	6	**166**	**85.6**	**1.4 B**	5 U	**25.8**	5 U	**880**	5 U	**25**
Copper, Dissolved	µg/L	1,300	**3.3 J**	**1.5 B**	5 U	5 U	**3.7 J**	5 U	**3.5 J**	5 U	**2.5 J**
Iron, Dissolved	µg/L	14,000	**22,200**	**4,900**	70 U	**93.8**	**8,700**	**50.1 J**	**156,000**	**49.5 J**	**597**
Lead, Dissolved	µg/L	15	**3.4 B**	5 U	5 U	5 U	5 U	5 U	**3.4 J**	5 U	5 U
Manganese, Dissolved	µg/L	430	**8,510**	**1,870**	**203**	**12.2**	**595**	**7.4**	**13,000**	**51.9**	**183**
Nickel, Dissolved	µg/L	390	**93.6**	**128**	**7.1 B**	**3.9 B**	**40.9**	**2.5 J**	**887**	10 U	**36.9**
Selenium, Dissolved	µg/L	50	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	6 U	**0.81 B**	6 UJ	6 U	6 U	6 U	**1.9 J**	6 U	6 U
Thallium, Dissolved	µg/L	2	10 U	10 U	**5.3 B**	10 U	10 U	**4.1 J**	10 U	**4.8 J**	10 U
Vanadium, Dissolved	µg/L	86	**2.6 J**	5 U	5 U	**40.6**	**0.9 J**	**64.6**	**8.4**	**228**	5 U
Zinc, Dissolved	µg/L	6,000	**206**	**135**	**4.4 J**	**0.84 J**	**127**	**1.4 JB**	**687**	**1.6 JB**	**31.1 B**
Other											
Cyanide	µg/L	200	10 U	10 U	10 U	**9.6 J+**	10 U	10 U	10 U	**31.4**	10 U

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 8
Summary of Inorganics Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	SW-081-MWS	TM07-PZM005	TM09-PZM007*	TM10-PZM007	TM11-PZM007*	TM12-PZM006*	TM13-PZM007	TM14-PZM005*
Metal (Total)										
Aluminum	µg/L	20,000	**805**	**146**	**551**	**5,930**	**101**	**274**	**150**	**474**
Antimony	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Arsenic	µg/L	10	**4.8 J**	5 U	**5.1**	5 U	5 U	5 U	5 U	5 U
Barium	µg/L	2,000	**58.4**	**46.8**	**71.8**	**98.9**	**22**	**56.4**	**43.8**	**63.6**
Beryllium	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	µg/L	5	3 U	3 U	3 U	**2.4 J**	3 U	3 U	3 U	3 U
Chromium	µg/L	100	**1.5 J**	**4.2 J**	**2.2 J**	**210**	**2.3 J**	**1.5 J**	**1.1 J**	**1.7 J**
Chromium VI	µg/L	0.035	10 U	10 U	10 U	**5,000[+] J**	10 U	10 U	10 U	10 U
Cobalt	µg/L	6	5 U	5 U	5 U	**1.8 J**	5 U	5 U	5 U	5 U
Copper	µg/L	1,300	5 U	5 U	5 U	**35.4**	5 U	5 U	5 U	5 U
Iron	µg/L	14,000	**638**	**21.5 J**	**217**	**26,000**	**93.8**	**122**	**21.1 J**	**243**
Lead	µg/L	15	5 U	5 U	5 U	**150**	5 U	5 U	5 U	5 U
Manganese	µg/L	430	**3.3 J**	5 U	**10.1**	**6,070**	**151**	**21.5**	**0.98 J**	**9.6**
Mercury	µg/L	2	0.2 U	0.2 U	0.2 U	**0.05 J**	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	µg/L	390	10 U	10 U	**1.8 J**	**17.4 J**	**0.79 J**	10 U	10 U	10 U
Selenium	µg/L	50	8 U	**4.2 J**	8 U	**3.2 J**	8 U	8 U	8 U	8 U
Silver	µg/L	94	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Thallium	µg/L	2	10 U	**4 J**	10 U	**14.5**	10 U	10 U	10 U	10 U
Vanadium	µg/L	86	**246**	**176**	**217**	**1,100**	**1 J**	**216**	**135**	**156**
Zinc	µg/L	6,000	**2.6 B**	**1.2 B**	**7.1 JB**	**412 J**	10 U	**2.6 JB**	**1 B**	**14**
Metal (Dissolved)										
Aluminum, Dissolved	µg/L	20,000	**817**	**159**	**516**	**222**	**104**	**247**	**154**	**378**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Arsenic, Dissolved	µg/L	10	**6.5**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Barium, Dissolved	µg/L	2,000	**56**	**46.8**	**70.6**	**32.1**	**25.3**	**55.8**	**45**	**58**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium, Dissolved	µg/L	5	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	10* U	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	**1.3 J**	**4.4 J**	**1.4 J**	**2.5 J**	**1.6 J**	5 U	**0.99 J**	**1 J**
Cobalt, Dissolved	µg/L	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Copper, Dissolved	µg/L	1,300	5 U	**1.5 J**	5 U	**1.6 J**	5 U	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	**586**	**19.5 J**	**45.7 J**	**53 J**	**82.4**	**12.6 J**	70 U	**15.4 J**
Lead, Dissolved	µg/L	15	5 U	5 U	5 U	**2.7 J**	**4.1 J**	5 U	5 U	5 U
Manganese, Dissolved	µg/L	430	**1.4 J**	5 U	**1.4 J**	**12.7**	**170**	5 U	5 U	5 U
Nickel, Dissolved	µg/L	390	**1.4 B**	10 U	**1.7 J**	10 U	**1.8 JB**	10 U	10 U	**0.7 J**
Selenium, Dissolved	µg/L	50	**3.6 J**	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Thallium, Dissolved	µg/L	2	**4.2 J**	**5.5 J**	10 U	**6.4 J**	10 U	**3.6 J**	10 U	10 U
Vanadium, Dissolved	µg/L	86	**254**	**182**	**212**	**645**	**1.3 J**	**212**	**131**	**151**
Zinc, Dissolved	µg/L	6,000	10 U	**1.4 B**	**0.88 JB**	10 U	**1.3 J**	**1.6 JB**	**1.7 B**	**2.5 JB**
Other										
Cyanide	µg/L	200	**1,350 J+**	**31.4**	**45.8**	**5.2 J**	**58.3**	**14.2**	**18**	**14.7**

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

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

N/A: This parameter was not analyzed for this sample

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

[+] Resampled on 7/15/16 for Hexavalent Chromium (Total/Dissolved) using the 7196 methods Both produced nondetects with a reporting limit of 10 ug/L

Table 8
Summary of Inorganics Detected
Finishing Mills Groundwater - Shallow
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	TM15-PZM007*	TM15-PZM011*	TM16-PZM007	TM17-PZM005	TM18-PZM005
Metal (Total)							
Aluminum	µg/L	20,000	**538**	**549**	**1,010**	**63.8**	**152**
Antimony	µg/L	6	6 U	6 U	6 U	6 U	6 U
Arsenic	µg/L	10	**6.7**	**12.8**	**4.9 J**	**15.1**	**4 J**
Barium	µg/L	2,000	**46**	**44.2**	**35.4**	**375**	**110**
Beryllium	µg/L	4	1 U	1 U	1 U	1 U	1 U
Cadmium	µg/L	5	3 U	3 U	3 U	**0.69 J**	**0.71 J**
Chromium	µg/L	100	**1.1 J**	**1.5 J**	**1.4 B**	**1.2 J**	**1.5 B**
Chromium VI	µg/L	0.035	10 U	10 U	10 U	10 U	10 U
Cobalt	µg/L	6	5 U	5 U	5 U	5 U	**2.9 J**
Copper	µg/L	1,300	5 U	5 U	5 U	5 U	**7.6**
Iron	µg/L	14,000	**68.9 J**	**60 J**	**129**	**27,800**	**11,800**
Lead	µg/L	15	5 U	5 U	5 U	5 U	**19.6**
Manganese	µg/L	430	5 U	**1.4 J**	**16.2**	**4,080**	**2,090**
Mercury	µg/L	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	µg/L	390	**1.2 J**	**4.8 J**	**0.95 J**	**6.1 J**	**2.7 J**
Selenium	µg/L	50	**6.4 J**	**3.5 J**	8 U	8 U	8 U
Silver	µg/L	94	6 U	6 U	6 U	6 U	6 U
Thallium	µg/L	2	**9.3 J**	10 U	10 U	10 U	10 U
Vanadium	µg/L	86	**806**	**76.3**	**407**	**4.5 J**	**8.8**
Zinc	µg/L	6,000	**1.8 JB**	**1.9 JB**	**4.5 B**	**1.1 J**	**38.7**
Metal (Dissolved)							
Aluminum, Dissolved	µg/L	20,000	**514**	**505**	**1,060**	**57.2**	**30.8 J**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	**2.3 J**
Arsenic, Dissolved	µg/L	10	**5.1**	**6.5**	**4.6 J**	**19.2**	5 U
Barium, Dissolved	µg/L	2,000	**42.7**	**41.7**	**36.7**	**408**	**107**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U
Cadmium, Dissolved	µg/L	5	3 U	3 U	3 U	**0.96 J**	3 U
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	**1.1 J**	**1.1 J**	**2.5 J**	**1.8 J**	**1.3 J**
Cobalt, Dissolved	µg/L	6	5 U	5 U	5 U	10 U	**2.6 J**
Copper, Dissolved	µg/L	1,300	5 U	5 U	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	**40.4 J**	**20.1 J**	**76.8**	**27,500**	**11,100**
Lead, Dissolved	µg/L	15	5 U	5 U	5 U	10 U	5 U
Manganese, Dissolved	µg/L	430	5 U	5 U	**4.8 J**	**3,810**	**2,110**
Nickel, Dissolved	µg/L	390	**1.8 J**	**4.3 J**	**2.1 B**	**0.7 B**	**2.3 B**
Selenium, Dissolved	µg/L	50	8 U	**3.7 J**	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	6 U	6 U	6 U
Thallium, Dissolved	µg/L	2	**10.6**	10 U	**4.9 J**	20 U	10 U
Vanadium, Dissolved	µg/L	86	**853**	**67.1**	**427**	**6.5**	**6.5**
Zinc, Dissolved	µg/L	6,000	10 U	**0.92 JB**	**3.9 B**	10 U	**11.4**
Other							
Cyanide	µg/L	200	**73.6**	**33.3**	**17.6**	**10.2**	10 U

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N/A: This parameter was not analyzed for this sample
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Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 9
Summary of Inorganics Detected
Finishing Mills Groundwater - Intermediate
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM-001-PZI*	FM-002-PZI*	FM-003-PZI	FM-004-PZI	FM-005-PZI	FM-006-PZI	FM-007-PZI	FM-008-PZI	FM-009-PZI	FM-011-PZI
Metal (Total)												
Aluminum	µg/L	20,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Antimony	µg/L	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic	µg/L	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Barium	µg/L	2,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beryllium	µg/L	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium	µg/L	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium	µg/L	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium VI	µg/L	0.035	10 U	10,000 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**5,000 J**
Cobalt	µg/L	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper	µg/L	1,300	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron	µg/L	14,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead	µg/L	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese	µg/L	430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury	µg/L	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel	µg/L	390	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium	µg/L	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver	µg/L	94	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thallium	µg/L	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	µg/L	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc	µg/L	6,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Metal (Dissolved)												
Aluminum, Dissolved	µg/L	20,000	**351**	50 U	50 U	50 U	50 U	50 U	50 U	**2,310**	**10,800**	**30.1 J**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Arsenic, Dissolved	µg/L	10	5 U	5 U	**4.7 J**	**5.4**	**63.3**	5 U	5 U	**37.2**	**6.1**	5 U
Barium, Dissolved	µg/L	2,000	**75.8**	**226**	**204**	**95.1**	**228**	**603**	**565**	**528**	**249**	**63.9**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.84 J**	1 U
Cadmium, Dissolved	µg/L	5	**0.5 J**	**0.49 J**	3 U	3 U	3 U	**0.89 B**	**0.88 B**	**0.75 J**	**0.7 J**	3 U
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	**2.6 J**	**1.2 J**	5 U	5 U	5 U	**1.7 J**	**1.2 J**	**7**	**19.4**	**1.3 J**
Cobalt, Dissolved	µg/L	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**0.83 J**	**8**	**7.2 J**
Copper, Dissolved	µg/L	1,300	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**1.9 J**	**11.6**	5 U
Iron, Dissolved	µg/L	14,000	**26,400**	**83,700**	**69,500**	**28,400**	**34,100**	**109,000**	**92,700**	**135,000**	**83,200**	**27,100**
Lead, Dissolved	µg/L	15	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	**7.2**	5 U
Manganese, Dissolved	µg/L	430	**1,420**	**2,240**	**1,560**	**1,570**	**541**	**4,420**	**4,450**	**1,560**	**3,440**	**4,280**
Nickel, Dissolved	µg/L	390	**1.2 J**	**1.8 J**	**1.6 B**	**0.69 B**	10 U	**2.5 J**	**2 J**	**7.9 B**	**21.4 J**	**8.2 B**
Selenium, Dissolved	µg/L	50	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	**0.62 J**	6 U	6 U	**1 J**	**0.91 J**	**1.9 J**	**0.91 B**	6 U
Thallium, Dissolved	µg/L	2	10 U	**3.7 J**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium, Dissolved	µg/L	86	**1.6 J**	5 U	**1.4 J**	**1.3 J**	**1.6 J**	**1.4 J**	**0.69 J**	**13.2**	**24.2**	**3.8 J**
Zinc, Dissolved	µg/L	6,000	**3.1 J**	10 U	**5.1 B**	**4 B**	**7.3 B**	**3.5 B**	**0.63 B**	**13.7 J**	**56.2 J**	**1.4 J**
Other												
Cyanide	µg/L	200	10 U	10 U	**2.4 J**	**4.6 J**	**2 J**	10 U	10 U	10 U	10 U	10 U

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Table 9
Summary of Inorganics Detected
Finishing Mills Groundwater - Intermediate
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	FM-012-PZI	FM-013-PZI*	FM-014-PZI	FM-015-PZI	FM-016-PZI*	FM01-PZM041	FM05-PZM024	SW06-PZM053	SW-075-MWI
Metal (Total)											
Aluminum	µg/L	20,000	N/A	N/A	N/A	N/A	N/A	**101**	50 U	**123**	**99.7**
Antimony	µg/L	6	N/A	N/A	N/A	N/A	N/A	6 U	6 U	6 U	**2.2 J**
Arsenic	µg/L	10	N/A	N/A	N/A	N/A	N/A	**40.6**	5 U	5 U	**3.5 J**
Barium	µg/L	2,000	N/A	N/A	N/A	N/A	N/A	**656**	**120**	**65.3**	**90**
Beryllium	µg/L	4	N/A	N/A	N/A	N/A	N/A	1 U	1 U	1 U	1 U
Cadmium	µg/L	5	N/A	N/A	N/A	N/A	N/A	**0.65 J**	3 U	3 U	**0.7 J**
Chromium	µg/L	100	N/A	N/A	N/A	N/A	N/A	5 U	5 U	5 U	**0.94 J**
Chromium VI	µg/L	0.035	10 U	**4,000[+] J**	10 U	10 U	10 U	10 U	10 U	10 U	10,000[^] U
Cobalt	µg/L	6	N/A	N/A	N/A	N/A	N/A	5 U	5 U	5 U	**4.7 J**
Copper	µg/L	1,300	N/A	N/A	N/A	N/A	N/A	**2.2 J**	5 U	5 U	5 U
Iron	µg/L	14,000	N/A	N/A	N/A	N/A	N/A	**46,600**	**50,800**	**5,390**	**23,500**
Lead	µg/L	15	N/A	N/A	N/A	N/A	N/A	5 U	5 U	5 U	5 U
Manganese	µg/L	430	N/A	N/A	N/A	N/A	N/A	**137**	**2,560**	**671**	**3,000**
Mercury	µg/L	2	N/A	N/A	N/A	N/A	N/A	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	µg/L	390	N/A	N/A	N/A	N/A	N/A	10 U	**0.93 B**	**1 B**	10 U
Selenium	µg/L	50	N/A	N/A	N/A	N/A	N/A	8 U	8 U	8 U	8 U
Silver	µg/L	94	N/A	N/A	N/A	N/A	N/A	6 U	6 U	6 U	**0.87 J**
Thallium	µg/L	2	N/A	N/A	N/A	N/A	N/A	10 U	10 U	10 U	10 U
Vanadium	µg/L	86	N/A	N/A	N/A	N/A	N/A	**2.1 B**	5 U	5 U	**2.1 J**
Zinc	µg/L	6,000	N/A	N/A	N/A	N/A	N/A	10 U	**1.9 B**	**2.6 B**	**3.6 B**
Metal (Dissolved)											
Aluminum, Dissolved	µg/L	20,000	**137**	50 U	50 U	**35.8 J**	**35.7 J**	50 U	50 U	50 U	**27.8 J**
Antimony, Dissolved	µg/L	6	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Arsenic, Dissolved	µg/L	10	**4.5 J**	5 U	5 U	**3.4 J**	5 U	**35.8**	5 U	5 U	**3.1 J**
Barium, Dissolved	µg/L	2,000	**14.6**	**128**	**144**	**35.3**	**253**	**624**	**114**	**65.6**	**91.2**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium, Dissolved	µg/L	5	3 U	3 U	3 U	3 U	**0.58 J**	**0.53 J**	3 U	3 U	**0.91 J**
Chromium VI, Dissolved	µg/L	0.035	N/A	10,000 U	N/A	N/A	N/A	N/A	N/A	N/A	10* U
Chromium, Dissolved	µg/L	100	**1.1 J**	5 U	**0.99 J**	**1.6 J**	5 U	5 U	5 U	5 U	5 U
Cobalt, Dissolved	µg/L	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**4.7 J**
Copper, Dissolved	µg/L	1,300	5 U	5 U	5 U	5 U	5 U	**2.4 J**	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	**17,200**	**38,200**	**84,900**	**23,600**	**56,800**	**45,800**	**47,300**	**5,440**	**24,000**
Lead, Dissolved	µg/L	15	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Manganese, Dissolved	µg/L	430	**508**	**1,740**	**2,470**	**1,180**	**2,630**	**128**	**2,520**	**689**	**3,130**
Nickel, Dissolved	µg/L	390	**2.7 B**	10 U	**1.6 J**	**0.63 B**	10 U	10 U	10 U	10 U	**3.5 B**
Selenium, Dissolved	µg/L	50	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	6 U	6 U	6 U	6 U	**1 J**	6 U	6 U	6 UJ	6 U
Thallium, Dissolved	µg/L	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium, Dissolved	µg/L	86	**3.1 J**	**1.9 J**	5 U	**1.8 J**	**2.3 J**	**1.3 B**	5 U	5 U	**1.9 J**
Zinc, Dissolved	µg/L	6,000	**2 B**	10 U	**6.4 B**	10 U	**138**	10 U	**1.1 B**	**0.65 J**	**2.2 J**
Other											
Cyanide	µg/L	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

[+] Resampled on 7/15/16 for Hexavalent Chromium (Dissolved) using the 7196 method and produced a nondetect with a reporting limit of 10,000 ug/L
[^] Resampled on 7/15/16 for Hexavalent Chromium (Total/Dissolved) using the 7196 methods Both produced nondetects with a reporting limit of 10 ug/L

Table 9
Summary of Inorganics Detected
Finishing Mills Groundwater - Intermediate
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	SW-076-MWI	SW-077-MWI	SW-078-MWI*	SW-079-MWI*	SW-080-MWI*	SW-081-MWI	TM07-PZM045	TM09-PZM047*	TM11-PZM034
Metal (Total)											
Aluminum	µg/L	20,000	**73.7**	**59.3**	**37 J**	**132**	**79.1**	**552**	**153**	**62.5**	**46.1 J**
Antimony	µg/L	6	6 U	6 U	6 U	6 U	**2.7 J**	6 U	6 U	6 U	**2.4 J**
Arsenic	µg/L	10	**5.2**	5 U	5 U	**5.8**	**7**	**8.1**	**19.8**	5 U	**15.6**
Barium	µg/L	2,000	**89.8**	**129**	**67.6**	**304**	**149**	**208**	**233**	**758**	**485**
Beryllium	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	µg/L	5	**0.86 J**	3 U	3 U	**0.49 J**	**0.6 J**	3 U	**0.58 J**	**0.58 J**	**1 J**
Chromium	µg/L	100	5 U	**0.91 J**	**0.83 J**	**1.4 J**	5 U	**3 J**	**0.81 J**	**1.4 J**	5 U
Chromium VI	µg/L	0.035	10 U	10 U	10 U	10 U	10,000 U	10 U	10 U	10 U	10,000 U
Cobalt	µg/L	6	**16.7**	**27.4**	**3.9 J**	5 U	**1.5 J**	**2.3 J**	**6.1**	25 U	**20**
Copper	µg/L	1,300	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	µg/L	14,000	**84,500**	**718**	**29,900**	**67,000**	**56,200**	**57,200**	**121,000**	**84,800**	**100,000**
Lead	µg/L	15	5 U	5 U	5 U	5 U	5 U	5 U	5 U	25 U	5 U
Manganese	µg/L	430	**5,070**	**2,910**	**1,380**	**3,520**	**2,370**	**4,200**	**4,600**	**4,790**	**8,350**
Mercury	µg/L	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	µg/L	390	**10.9 J**	**5.5 J**	**1.9 J**	10 U	**1.7 J**	**2.9 J**	**6.2 J**	**1.2 J**	**4.1 J**
Selenium	µg/L	50	8 U	8 U	**3.3 J**	8 U	**5.4 J**	8 U	8 U	8 U	8 U
Silver	µg/L	94	**1.4 J**	6 U	6 U	**0.79 J**	6 U	**0.9 J**	**2 J**	**1.7 J**	6 U
Thallium	µg/L	2	10 U	10 U	**4.4 J**	10 U	10 U	10 U	10 U	50 U	10 U
Vanadium	µg/L	86	**3.7 J**	**3.1 J**	**1 J**	**3 J**	**2.4 J**	**5.7**	**4.2 J**	**4.8 J**	**4.6 J**
Zinc	µg/L	6,000	**11 J**	**6.4 J**	**19.7**	**0.74 JB**	**3.7 JB**	**4 B**	**11**	10 U	**15.3**
Metal (Dissolved)											
Aluminum, Dissolved	µg/L	20,000	50 U	50 U	50 U	**27.1 J**	50 U	**55.6**	**23.6 J**	**28.3 J**	**33.5 J**
Antimony, Dissolved	µg/L	6	**4.6 B**	6 U	**2.2 JB**	**3.5 J**	6 U	**2.3 B**	6 U	6 U	6 U
Arsenic, Dissolved	µg/L	10	**3 J**	5 U	**3.7 J**	**4.9 J**	**6.5**	**5.9**	**17.2**	5 U	**16.1**
Barium, Dissolved	µg/L	2,000	**86.8**	**133**	**94.1**	**331**	**153**	**210**	**225**	**754**	**495**
Beryllium, Dissolved	µg/L	4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium, Dissolved	µg/L	5	**0.84 J**	**0.61 J**	**0.56 J**	3 U	3 U	**0.58 J**	**0.75 J**	**0.88 J**	**0.64 J**
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium, Dissolved	µg/L	100	5 U	5 U	5 U	5 U	**1.1 J**	**1.4 J**	5 U	**4.2 J**	5 U
Cobalt, Dissolved	µg/L	6	**16.8**	**29.4**	**4.2 J**	5 U	5 U	**2.9 J**	**5.4**	25 U	**19.4**
Copper, Dissolved	µg/L	1,300	5 U	5 U	**1.8 J**	5 U	5 U	5 U	5 U	5 U	5 U
Iron, Dissolved	µg/L	14,000	**85,700**	**653**	**43,300**	**69,500**	**57,200**	**55,500**	**123,000**	**89,800**	**94,800**
Lead, Dissolved	µg/L	15	5 U	5 U	5 U	5 U	5 U	5 U	5 U	25 U	10 U
Manganese, Dissolved	µg/L	430	**5,190**	**3,090**	**1,750**	**3,700**	**2,490**	**4,230**	**4,780**	**4,960**	**7,870**
Nickel, Dissolved	µg/L	390	**10 B**	**4.9 B**	**2.4 JB**	10 U	**3 JB**	**3.7 B**	**6.7 B**	**0.63 J**	**4.6 B**
Selenium, Dissolved	µg/L	50	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U	8 U
Silver, Dissolved	µg/L	94	**0.74 J**	6 U	6 U	**1.1 J**	**1.1 J**	**0.56 J**	**1.4 J**	**0.87 J**	**1.9 J**
Thallium, Dissolved	µg/L	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**22.8 J**	10 U
Vanadium, Dissolved	µg/L	86	**3.7 J**	**3.5 J**	**1.5 J**	**2.7 J**	**1.6 J**	**3.3 J**	**3.4 J**	**4.4 J**	5 U
Zinc, Dissolved	µg/L	6,000	**8.1 J**	**6 J**	**10.6**	10 U	**5.3 JB**	**1.1 J**	10 U	10 U	**15.4**
Other											
Cyanide	µg/L	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

Table 9
Summary of Inorganics Detected
Finishing Mills Groundwater - Intermediate
Tradepoint Atlantic
Sparrows Point, Maryland

Parameter	Units	PAL	TM13-PZM046	TM15-PZM031*
Metal (Total)				
Aluminum	µg/L	20,000	**132**	N/A
Antimony	µg/L	6	6 U	N/A
Arsenic	µg/L	10	**8.5**	N/A
Barium	µg/L	2,000	**85.4**	N/A
Beryllium	µg/L	4	1 U	N/A
Cadmium	µg/L	5	3 U	N/A
Chromium	µg/L	100	**1.1 J**	N/A
Chromium VI	µg/L	0.035	10 U	N/A
Cobalt	µg/L	6	**1.7 J**	N/A
Copper	µg/L	1,300	5 U	N/A
Iron	µg/L	14,000	**19,900**	N/A
Lead	µg/L	15	5 U	N/A
Manganese	µg/L	430	**1,940**	N/A
Mercury	µg/L	2	0.2 U	N/A
Nickel	µg/L	390	**0.65 J**	N/A
Selenium	µg/L	50	8 U	N/A
Silver	µg/L	94	6 U	N/A
Thallium	µg/L	2	10 U	N/A
Vanadium	µg/L	86	**3.3 J**	N/A
Zinc	µg/L	6,000	**2.1 B**	N/A
Metal (Dissolved)				
Aluminum, Dissolved	µg/L	20,000	**20.9 J**	N/A
Antimony, Dissolved	µg/L	6	6 U	N/A
Arsenic, Dissolved	µg/L	10	**5.4**	N/A
Barium, Dissolved	µg/L	2,000	**84.5**	N/A
Beryllium, Dissolved	µg/L	4	1 U	N/A
Cadmium, Dissolved	µg/L	5	**0.52 J**	N/A
Chromium VI, Dissolved	µg/L	0.035	N/A	N/A
Chromium, Dissolved	µg/L	100	5 U	N/A
Cobalt, Dissolved	µg/L	6	**1.4 J**	N/A
Copper, Dissolved	µg/L	1,300	5 U	N/A
Iron, Dissolved	µg/L	14,000	**19,800**	N/A
Lead, Dissolved	µg/L	15	5 U	N/A
Manganese, Dissolved	µg/L	430	**1,930**	N/A
Nickel, Dissolved	µg/L	390	**0.87 J**	N/A
Selenium, Dissolved	µg/L	50	8 U	N/A
Silver, Dissolved	µg/L	94	6 U	N/A
Thallium, Dissolved	µg/L	2	10 U	N/A
Vanadium, Dissolved	µg/L	86	**2.4 J**	N/A
Zinc, Dissolved	µg/L	6,000	**0.97 B**	N/A
Other				
Cyanide	µg/L	200	10 U	10 U

Bold indicates deteciton
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
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank
N/A: This parameter was not analyzed for this sample
*Indicates nonvalidated
Values in red indicate a detection exceedance of the Project Action Limit (PAL)

TABLE 10
SUMMARY OF GROUNDWATER PAL EXCEEDANCES

Parameter	CAS#	Frequency of Detections (%)	Sample ID of Max Result	Unit	PAL Aqueous	Max Result
1,1-Biphenyl	92-52-4	3	TM15-PZM007	µg/L	0.83	3.6
1,1-Dichloroethane	75-34-3	25	FM-003-PZS	µg/L	2.7	20.1
1,1-Dichloroethene	75-35-4	10	FM-003-PZS	µg/L	7	131
1,2-Dichloroethane	107-06-2	1	FM-003-PZS	µg/L	5	22.8
1,4-Dioxane	123-91-1	55	FM-003-PZS	µg/L	0.46	89.6
3,3'-Dichlorobenzidine	91-94-1	3	FM01-PZM003/FM-002-PZS	µg/L	0.12	1
Arsenic (D)	7440-38-2	45	FM-005-PZI	µg/L	10	63.3
Arsenic (T)	7440-38-2	27	FM01-PZM041	µg/L	10	40.6
Benzo[a]anthracene	56-55-3	37	TM18-PZM005	µg/L	0.012	0.16
Benzo[b]fluoranthene	205-99-2	23	TM18-PZM005	µg/L	0.034	0.23
Bromodichloromethane	75-27-4	4	SW-078-MWI	µg/L	0.13	3.6
Chloroform	67-66-3	30	FM01-PZM003	µg/L	0.22	27.9
Chromium (T)	7440-47-3	42	TM10-PZM007	µg/L	100	210
Chromium VI (D)	18540-29-9	1	FM-015-PZS	µg/L	0.035	62
Chromium VI (T)	18540-29-9	10	FM-008-PZS	µg/L	0.035	8,000
Cobalt (D)	7440-48-4	35	SW-078-MWS	µg/L	6	880
Cobalt (T)	7440-48-4	25	SW-078-MWS	µg/L	6	828
Cyanide	57-12-5	42	SW-081-MWS	µg/L	200	1,350
Dichlorobiphenyl	25512-42-9	1	TM13-PZM007	µg/L	0.044	0.145
Diesel Range Organics	DRO	90	FM-005-PZS	µg/L	47	4,480
Gasoline Range Organics	GRO	3	SW-075-MWS	µg/L	47	94.5
Indeno[1,2,3-c,d]pyrene	193-39-5	3	TM18-PZM005	µg/L	0.034	0.055
Iron (D)	7439-89-6	90	FM-013-PZS	µg/L	14,000	243,000
Iron (T)	7439-89-6	55	SW-078-MWS	µg/L	14,000	164,000
Lead (T)	7439-92-1	6	TM10-PZM007	µg/L	15	150
Manganese (D)	7439-96-5	86	SW-078-MWS	µg/L	430	13,000
Manganese (T)	7439-96-5	52	SW-078-MWS	µg/L	430	13,000
Methyl tert-butyl ether (MTBE)	1634-04-4	7	FM-011-PZI	µg/L	14	24.9
Naphthalene	91-20-3	89	TM15-PZM007	µg/L	0.17	113
Nickel (D)	7440-02-0	76	SW-078-MWS	µg/L	390	887
Nickel (T)	7440-02-0	44	SW-078-MWS	µg/L	390	835
PCBs (total)	1336-36-3	28	TM13-PZM007	µg/L	0.5	0.748
Pentachlorophenol	87-86-5	18	FM-010-PZS	µg/L	1	7.6
Tetrachlorobiphenyl	26914-33-0	1	TM13-PZM007	µg/L	0.0004	0.062
Thallium (D)	7440-28-0	23	TM09-PZM047	µg/L	2	22.8
Thallium (T)	7440-28-0	8	TM10-PZM007	µg/L	2	14.5
Trichlorobiphenyl	25323-68-6	3	TM13-PZM007	µg/L	0.044	0.542
Trichloroethene	79-01-6	3	SW-076-MWI	µg/L	5	12
Vanadium (D)	7440-62-2	86	TM15-PZM007	µg/L	86	853
Vanadium (T)	7440-62-2	51	TM10-PZM007	µg/L	86	1,100

D = Dissolved Metals
T = Total Metals

Table 11
Vapor Intrusion Criteria Comparison

Sample Location	Parameter	Result (ug/L)	Final Flag	Target Groundwater Concentration (ug/L) TCR=1E-05 or THQ=1	Comparison = Result / Target	Exceeds Criteria	Toxicity Type
FM-002-PZS	Cyanide	3.7	J	3.5	1.06	YES	NC
FM-004-PZI	Cyanide	4.6	J	3.5	1.31	YES	NC
FM-004-PZS	Cyanide	8.1	J	3.5	2.31	YES	NC
FM-005-PZS	Cyanide	33.5		3.5	9.57	YES	NC
FM-006-PZS	Cyanide	4.9	J+	3.5	1.40	YES	NC
FM-007-PZS	Cyanide	3.6	J	3.5	1.03	YES	NC
FM-008-PZS	Cyanide	12.1		3.5	3.46	YES	NC
FM-010-PZS	Cyanide	28.8		3.5	8.23	YES	NC
FM-016-PZS	Cyanide	6.2	J	3.5	1.77	YES	NC
FM-017-PZS	Cyanide	8.4	J	3.5	2.40	YES	NC
FM05-PZM004	Cyanide	9.3	J	3.5	2.66	YES	NC
SW-075-MWS	Cyanide	9.6	J+	3.5	2.74	YES	NC
SW-079-MWS	Cyanide	31.4		3.5	8.97	YES	NC
SW-081-MWS	Cyanide	1350	J+	3.5	385.71	YES	NC
TM07-PZM005	Cyanide	31.4		3.5	8.97	YES	NC
TM09-PZM007	Cyanide	45.8		3.5	13.09	YES	NC
TM10-PZM007	Cyanide	5.2	J	3.5	1.49	YES	NC
TM11-PZM007	Cyanide	58.3		3.5	16.66	YES	NC
TM12-PZM006	Cyanide	14.2		3.5	4.06	YES	NC
TM13-PZM007	Cyanide	18		3.5	5.14	YES	NC
TM14-PZM005	Cyanide	14.7		3.5	4.20	YES	NC
TM15-PZM007	Cyanide	73.6		3.5	21.03	YES	NC
TM15-PZM011	Cyanide	33.3		3.5	9.51	YES	NC
TM16-PZM007	Cyanide	17.6		3.5	5.03	YES	NC
TM17-PZM005	Cyanide	10.2		3.5	2.91	YES	NC

NC indicates non-carcinogenic hazard

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

J+: The positive result reported for this analyte is a quantitative estimate, but may be biased high.

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	FM-001-PZI	FM-001-PZS	FM-002-PZI	FM-002-PZS	FM-003-PZI	FM-003-PZS	FM-004-PZI
Cancer Risk									
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	0	0	2.2E-11	1.4E-09	6.9E-09	5.5E-10
Naphthalene	SVOC	Nervous; Respiratory	1.8E-09	3.3E-09	1.2E-09	0	2.8E-09	5E-09	1.6E-09
1,1-Dichloroethane	VOC	None Specified	0	0	0	5.8E-08	2.8E-08	6.09E-07	4.2E-08
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	2.3E-06	0
Benzene	VOC	Immune	0	0	0	0	0	0	0
Bromodichloromethane	VOC	Urinary	0	0	0	0	0	0	0
Chloroform	VOC	Hepatic	3.06E-07	0	7.2E-08	0	5E-07	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	3.7E-07	0
Cumulative Vapor Intrusion - Target Cancer Risk =			3E-07	3E-09	7E-08	6E-08	5E-07	3E-06	4E-08
Non-Cancer Hazard									
Cyanide	Other	None Specified	0	0.71	0	1.1	0.69	0	1.3
Cumulative Vapor Intrusion - Hazard Index =			0	0.7	0	1	0.7	0	1
1,1-Dichloroethene	VOC	Hepatic	0	0	0	4.3E-04	0	0.16	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	4E-04	0	0.2	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0

Values highlighted in red indicate exceedances of the
cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	FM-004-PZS	FM-005-PZI	FM-005-PZS	FM-006-PZI	FM-006-PZS	FM-007-PZI	FM-007-PZS
Cancer Risk									
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	7.9E-10	1.08E-10	7.2E-11	0	7E-12	0	0
Naphthalene	SVOC	Nervous; Respiratory	1E-08	5.5E-09	1.5E-07	2.9E-09	1.5E-09	1.7E-09	3.0E-09
1,1-Dichloroethane	VOC	None Specified	0	0	1.4E-08	0	0	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0	0
Benzene	VOC	Immune	0	0	0	0	0	0	0
Bromodichloromethane	VOC	Urinary	0	0	0	0	0	0	0
Chloroform	VOC	Hepatic	0	0	0	0	0	0	1.9E-07
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			1E-08	6E-09	2E-07	3E-09	2E-09	2E-09	2E-07
Non-Cancer Hazard									
Cyanide	Other	None Specified	2.3	0.57	9.6	0	1.4	0	1.0
Cumulative Vapor Intrusion - Hazard Index =			2	0.6	10	0	1	0	1
1,1-Dichloroethene	VOC	Hepatic	8.8E-04	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			9E-04	0	0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	FM-008-PZI	FM-008-PZS	FM-009-PZI	FM-009-PZS	FM-010-PZS	FM-011-PZI	FM-011-PZS	FM-012-PZI
Cancer Risk										
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	7.5E-12	1.8E-11	0	7E-12	4.6E-11	2.6E-11	0
Naphthalene	SVOC	Nervous; Respiratory	9E-08	3.2E-08	1.6E-09	1.8E-09	4.0E-07	2.2E-09	2.7E-09	3.4E-09
1,1-Dichloroethane	VOC	None Specified	0	0	0	0	0	3.6E-08	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0	0	0
Benzene	VOC	Immune	0	0	0	0	0	0	0	0
Bromodichloromethane	VOC	Urinary	0	0	0	0	0	0	0	0
Chloroform	VOC	Hepatic	3.6E-07	0	1.6E-06	0	0	0	0	3.6E-07
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	6.6E-08	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	1.2E-08	1.3E-09	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			5E-07	1E-07	2E-06	2E-09	4E-07	5E-08	4E-09	4E-07
Non-Cancer Hazard										
Cyanide	Other	None Specified	0	3.5	0	0.86	8.2	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	3	0	0.9	8	0	0	0
1,1-Dichloroethene	VOC	Hepatic	0	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	FM-012-PZS	FM-013-PZI	FM-013-PZS	FM-014-PZI	FM-014-PZS	FM-015-PZI	FM-015-PZS	FM-016-PZI
Cancer Risk										
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	1.3E-11	6.5E-11	1.9E-10	3.6E-11	2.8E-11	0	4.8E-11
Naphthalene	SVOC	Nervous; Respiratory	6E-09	0.000000007	1.2E-08	0.000000007	1.4E-09	2.2E-09	1.5E-08	1.5E-09
1,1-Dichloroethane	VOC	None Specified	0	0	2.3E-08	5.8E-08	0	0	0	2.4E-08
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0	0	0
Benzene	VOC	Immune	0	0	0	0	0	0	0	0
Bromodichloromethane	VOC	Urinary	0	0	0	0	0	0	0	0
Chloroform	VOC	Hepatic	0	1.06E-06	2.4E-07	0	0	2.7E-07	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	5E-08	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			6E-09	1E-06	3E-07	6E-08	1E-09	3E-07	2E-08	3E-08
Non-Cancer Hazard										
Cyanide	Other	None Specified	0	0	0	0	0.74	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0.7	0	0	0
1,1-Dichloroethene	VOC	Hepatic	0	0	0	4.5E-03	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	5E-03	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	FM-016-PZS	FM-017-PZS	FM01-PZM003	FM01-PZM041	FM05-PZM004	FM05-PZM024	SW-048-MWS
Cancer Risk									
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	1.2E-09	6.5E-12	0	0	2.8E-12	0	0
Naphthalene	SVOC	Nervous; Respiratory	1.6E-09	1.7E-08	2.6E-09	1.2E-09	5.4E-06	2.4E-07	1.9E-09
1,1-Dichloroethane	VOC	None Specified	2.4E-07	1.4E-08	0	0	0	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0	0
Benzene	VOC	Immune	0	6.2E-08	0	0	3.8E-07	0	0
Bromodichloromethane	VOC	Urinary	0	0	0	0	0	0	0
Chloroform	VOC	Hepatic	5E-07	0	7.8E-06	0	0	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			7E-07	9E-08	8E-06	1E-09	6E-06	2E-07	2E-09
Non-Cancer Hazard									
Cyanide	Other	None Specified	1.8	2.4	0	0	2.7	0	0
Cumulative Vapor Intrusion - Hazard Index =			2	2	0	0	3	0	0
1,1-Dichloroethene	VOC	Hepatic	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	SW-053-MWS	SW06-PZM001	SW06-PZM053	SW-075-MWI	SW-075-MWS	SW-076-MWI
Cancer Risk								
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	0	0	0	0	1E-11
Naphthalene	SVOC	Nervous; Respiratory	0	2.7E-09	1.2E-09	1.9E-09	2.1E-08	0
1,1-Dichloroethane	VOC	None Specified	0	0	0	0	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0
Benzene	VOC	Immune	0	0	0	0	9.3E-08	0
Bromodichloromethane	VOC	Urinary	0	0	0	0	0	0
Chloroform	VOC	Hepatic	0	0	1.6E-06	1.3E-06	2.7E-07	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	1.7E-09
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			0	3E-09	2E-06	1E-06	4E-07	2E-09
Non-Cancer Hazard								
Cyanide	Other	None Specified	0	0	0	0	2.7	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	3	0
1,1-Dichloroethene	VOC	Hepatic	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0.55
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0.5

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	SW-076-MWS	SW-077-MWI	SW-077-MWS	SW-078-MWI	SW-078-MWS	SW-079-MWI	SW-079-MWS
Cancer Risk									
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	0	0	0	5.5E-12	0	7.2E-12
Naphthalene	SVOC	Nervous; Respiratory	9E-10	2.1E-09	8.5E-08	0	0	9E-09	6E-07
1,1-Dichloroethane	VOC	None Specified	0	0	0	0	0	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0	0
Benzene	VOC	Immune	0	0	3.5E-08	0	0	0	3.6E-08
Bromodichloromethane	VOC	Urinary	0	3.2E-07	0	9.5E-07	0	0	0
Chloroform	VOC	Hepatic	0	3.8E-06	0	6.4E-06	0	6.7E-07	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			9E-10	4E-06	1E-07	7E-06	6E-12	7E-07	6E-07
Non-Cancer Hazard									
Cyanide	Other	None Specified	0	0	0	0	0	0	9
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	9
1,1-Dichloroethene	VOC	Hepatic	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	SW-080-MWI	SW-080-MWS	SW-081-MWI	SW-081-MWS	TM07-PZM005	TM07-PZM045	TM09-PZM007
Cancer Risk									
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	3.7E-10	2E-11	1.4E-09	6E-12	6.5E-12	2.08E-11	1.5E-10
Naphthalene	SVOC	Nervous; Respiratory	1.1E-09	0	0.000000007	1.9E-07	7E-09	1.6E-09	3.1E-07
1,1-Dichloroethane	VOC	None Specified	4.8E-07	1.7E-07	5.5E-08	0	2.0E-08	0	7.6E-08
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0	0
Benzene	VOC	Immune	0	0	0	1.3E-07	0	0	1.03E-07
Bromodichloromethane	VOC	Urinary	0	0	0	0	0	0	0
Chloroform	VOC	Hepatic	7.8E-07	0	0	0	0	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	2.4E-09	0	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			1E-06	2E-07	6E-08	3E-07	3E-08	2E-09	5E-07
Non-Cancer Hazard									
Cyanide	Other	None Specified	0	0	0	385.7	9.0	0	13.1
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	386	9	0	13
1,1-Dichloroethene	VOC	Hepatic	2.7E-02	1.09E-03	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			3E-02	1E-03	0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0	0.1
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0	0.1

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	TM09-PZM047	TM10-PZM007	TM11-PZM007	TM11-PZM034	TM12-PZM006	TM13-PZM007
Cancer Risk								
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	1.9E-11	1.6E-10	7.7E-12	0	0
Naphthalene	SVOC	Nervous; Respiratory	0	3.0E-09	2.3E-07	6E-09	6.5E-07	1.2E-06
1,1-Dichloroethane	VOC	None Specified	0	2.1E-08	3.03E-08	0	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0	0
Benzene	VOC	Immune	0	0	5.9E-08	0	1.7E-07	3.8E-07
Bromodichloromethane	VOC	Urinary	0	0	0	1.4E-07	0	0
Chloroform	VOC	Hepatic	0	0	0	2.08E-06	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			0	2E-08	3E-07	2E-06	8E-07	2E-06
Non-Cancer Hazard								
Cyanide	Other	None Specified	0	1.5	16.7	0	4.1	5.1
Cumulative Vapor Intrusion - Hazard Index =			0	1	17	0	4	5
1,1-Dichloroethene	VOC	Hepatic	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	TM13-PZM046	TM14-PZM005	TM15-PZM007	TM15-PZM011	TM15-PZM031
Cancer Risk							
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	0	0	0	1.3E-11	0
Naphthalene	SVOC	Nervous; Respiratory	3.8E-06	1.9E-07	5.7E-06	1.5E-06	0
1,1-Dichloroethane	VOC	None Specified	0	0	0	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0	0	0
Benzene	VOC	Immune	0	6.09E-08	2.9E-07	1.7E-07	0
Bromodichloromethane	VOC	Urinary	0	0	0	0	0
Chloroform	VOC	Hepatic	1.5E-06	0	0	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	3.9E-08	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	0	0	0
Vinyl chloride	VOC	Hepatic	0	0	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			5E-06	2E-07	6E-06	2E-06	0
Non-Cancer Hazard							
Cyanide	Other	None Specified	0	4.2	21.0	9.5	0
Cumulative Vapor Intrusion - Hazard Index =			0	4	21	10	0
1,1-Dichloroethene	VOC	Hepatic	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 12
Cumulative Vapor Intrusion Comparison

Parameter	Type	Organ Systems	TM16-PZM007	TM17-PZM005	TM18-PZM005
Cancer Risk					
1,4-Dioxane	SVOC	Hepatic; Nervous; Respiratory; Urinary	7.3E-12	4.6E-12	1.4E-11
Naphthalene	SVOC	Nervous; Respiratory	1.5E-07	2.2E-09	4.2E-08
1,1-Dichloroethane	VOC	None Specified	0	0	0
1,2-Dichloroethane	VOC	None Specified	0	0	0
Benzene	VOC	Immune	1.6E-07	0	0
Bromodichloromethane	VOC	Urinary	0	0	0
Chloroform	VOC	Hepatic	0	0	0
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	0	0	0
Methyl tert-butyl ether (MTBE)	VOC	Hepatic; Ocular; Urinary	0	0	1.9E-09
Vinyl chloride	VOC	Hepatic	0	0	0
Cumulative Vapor Intrusion - Target Cancer Risk =			3E-07	2E-09	4E-08
Non-Cancer Hazard					
Cyanide	Other	None Specified	5.0	2.9	0
Cumulative Vapor Intrusion - Hazard Index =			5	3	0
1,1-Dichloroethene	VOC	Hepatic	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	0	0	0
Cumulative Vapor Intrusion - Hazard Index =			0	0	0

Values highlighted in red indicate exceedances of the cumulative vapor intrusion criteria
TCR > 1E-05
THI > 1

Table 13
Ambient Water Quality Criteria Comparison

Parameter (Shallow Zone)	Mean Concentration (ug/L)	Consumption of Organism Only Criteria (ug/L)	Consumption of Organism Only Average Comparison	Salt Water Chronic Criteria (ug/L)	Salt Water Chronic Average Comparison
Shallow Hydrogeologic Zone					
2-Methylnaphthalene	1.93	N/A		2.1	0.92
Aluminum	826.4	N/A		87	9.50
Aluminum, Dissolved	384.0	N/A		87	4.41
Anthracene	0.32	40,000	0.00	0.73	0.44
Arsenic	4.11	1.4	2.93	36	0.11
Arsenic, Dissolved	3.27	1.4	2.34	36	0.09
Barium	82.5	N/A		200	0.41
Barium, Dissolved	76.8	N/A		200	0.38
Benzo[a]anthracene	0.05	0.18	0.29	0.027	1.94
Benzo[a]pyrene	0.01	0.18	0.08	0.014	0.99
Benzo[b]fluoranthene	0.03	0.18	0.15	9.07	0.00
Benzo[k]fluoranthene	0.02	0.18	0.12	N/A	
Carbon disulfide	0.48	N/A		0.92	0.52
Chromium	17.8	N/A		50	0.36
Cobalt	0.36	N/A		1	0.36
Cobalt, Dissolved	0.19	N/A		1	0.19
Copper	3.31	N/A		3.1	1.07
Cyanide	121.5	140	0.87	1	121.5
Fluorene	1.55	5,300	0.00	3.9	0.40
Iron	5,170	N/A		1,000	5.17
Iron, Dissolved	2,829	N/A		1,000	2.83
Lead	13.0	N/A		8.1	1.61
Manganese	958.0	N/A		100	9.58
Manganese, Dissolved	437.0	N/A		100	4.37
Naphthalene	14.9	N/A		1.4	10.7
Nickel	2.75	4,600	0.00	8.2	0.34
PCBs (total)	0.06	N/A		0.03	1.94
Phenanthrene	2.28	N/A		4.6	0.50
Thallium	2.14	0.47	4.55	17	0.13
Thallium, Dissolved	2.88	0.47	6.12	17	0.17
Vanadium	273.0	N/A		50	5.46
Vanadium, Dissolved	252.9	N/A		50	5.06
Zinc	37.6	26,000	0.00	81	0.46

N/A indicates no criteria
Orange highlight indicates exceedance of criteria by a factor of 2 or more
Yellow highlight indicates exceedance of criteria by a factor of 10 or more
A glossary of laboratory flags can be viewed in the attached laboratory reports

EnviroAnalytics Group

FMGW Groundwater Investigation
Table 14
Rejected Results for Groundwater

Parameter	Result	Units	PAL	Exceeds PAL?	Flag
Sample: *FM-002-PZS*					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Sample: *FM01-PZM003*					
3,3'-Dichlorobenzidine	1	µg/L	0.12	YES	R
Acetone	10	µg/L	14,000	no	R
Methyl Acetate	5	µg/L	20,000	no	R
Sample: *FM01-PZM041*					
Acetone	10	µg/L	14,000	no	R
Sample: *FM05-PZM004*					
Acetone	10	µg/L	14,000	no	R
Sample: *SW06-PZM001*					
Acetone	10	µg/L	14,000	no	R
Sample: *SW06-PZM053*					
Acetone	10	µg/L	14,000	no	R

APPENDIX A

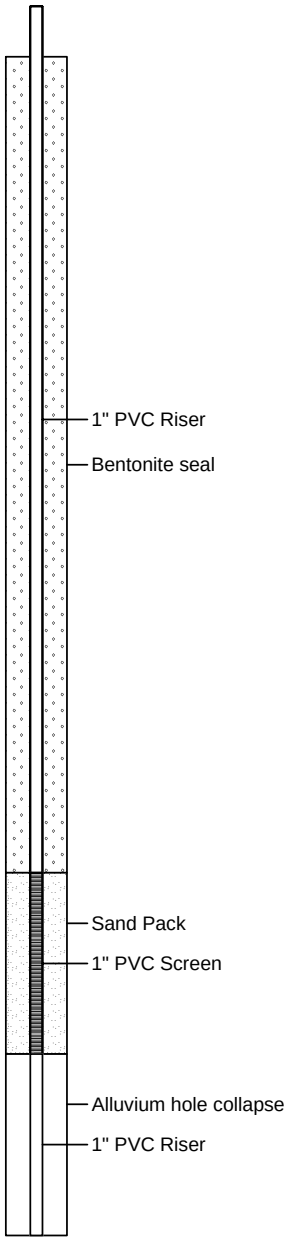
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-001-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-06-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.55'
Borehole Diameter	: 2.25"	0-Hr DTW	: 15.03' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 14.37' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.8' Riser Amount: 45 LF
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010" 2-5' PrePacked PVC Well Screens (45-55')
30	-30	Sand Pack: Top: 45' bgs Bottom: 55' bgs Grain Size: WG #1
45	-45	Bentonite Seal: Top: 0 (surface) Bottom: 45' bgs Grain Size: 3/8" chips/ granular (0- 40') 3/8" chips (40-45') 1 Bentonite Sleeve
55	-55	End of Boring
60	-60	Sampler Note: Pull up 15' from TD.
65		



REMARKS

Northing (US ft): 568350.09
Easting (US ft): 1461447.35

No NAPL's encountered

Total Depth: 65'

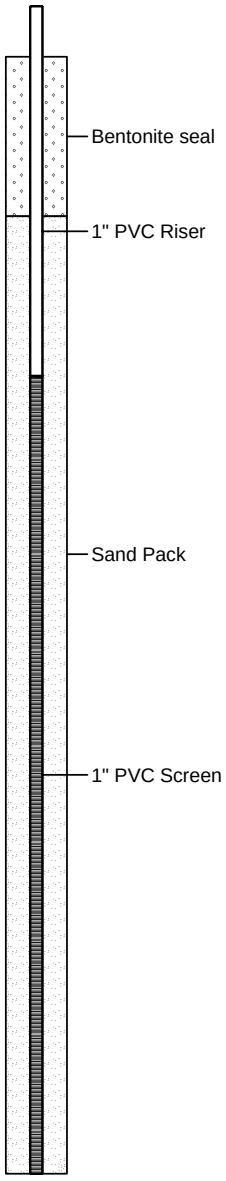
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-001-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 05-17-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 13.4'
Borehole Diameter	: 2.25"	0-Hr DTW	: 7.58' TOC
Drilling Method	: 7822DT Geoprobe	24-Hr DTW	: 7.60' TOC
Driller	: Kevin Pumphrey	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 1.4' Riser Amount: 5 LF	Northing (US ft): 568352.5 Easting (US ft): 1461443.85
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"	
		Sand Pack: Top: 2' bgs Bottom: 14' bgs Grain Size: WG #1	
10	-10	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 0.5') granular (0.5-1.5') chips (1.5-2') granular	No NAPL's encountered
		End of Boring	
15			



Total Depth: 14'

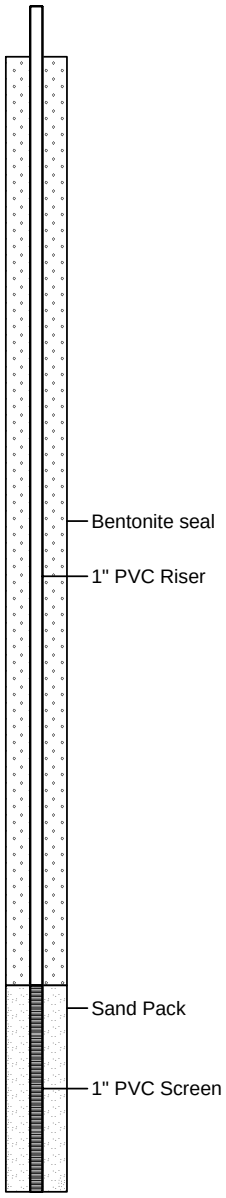
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-002-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-06-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 15.17'
Borehole Diameter	: 2.25"	0-Hr DTW	: 15.65' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 14.83' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.2' Riser Amount: 45 LF
5	-5	
10	-10	
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010" 2-5' PrePacked PVC Well Screen (45-55')
20	-20	
25	-25	
30	-30	Filter Pack: Top: 45' bgs Bottom: 55' bgs Grain Size: WG #1
35	-35	
40	-40	
45	-45	Bentonite Seal: Top: 0 (surface) Bottom: 45' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 40') granular (40-45') 1 bentonite sleeve
50	-50	
55		End of Boring



REMARKS

Northing (US ft): 568970.89
Easting (US ft): 1461318.92

Total Depth: 55'

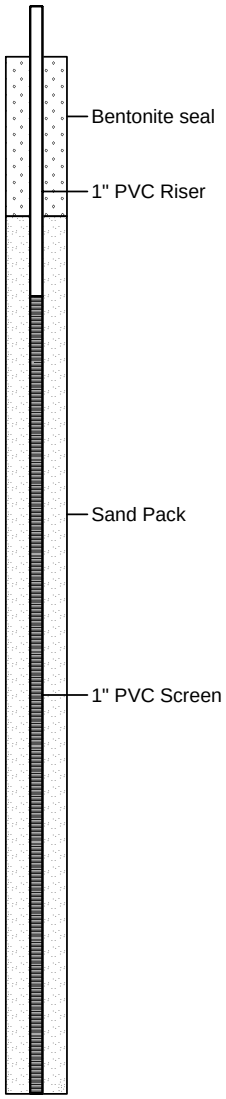
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-002-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 05-17-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.08'
Borehole Diameter	: 2.25"	0-Hr DTW	: 7.03' TOC
Drilling Method	: 7822DT Geoprobe	24-Hr DTW	: 7.08' TOC
Driller	: Kevin Pumphrey	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.2' Riser Amount: 5 LF	Northing (US ft): 568971.52 Easting (US ft): 1461315.77
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"	
		Sand Pack: Top: 2' bgs Bottom: 13' bgs Grain Size: WG #1	
10	-10	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 0.5') granular (0.5-1.5') chips (1.5-2') granular	No NAPL's encountered
		End of Boring	
15			



Total Depth: 13'

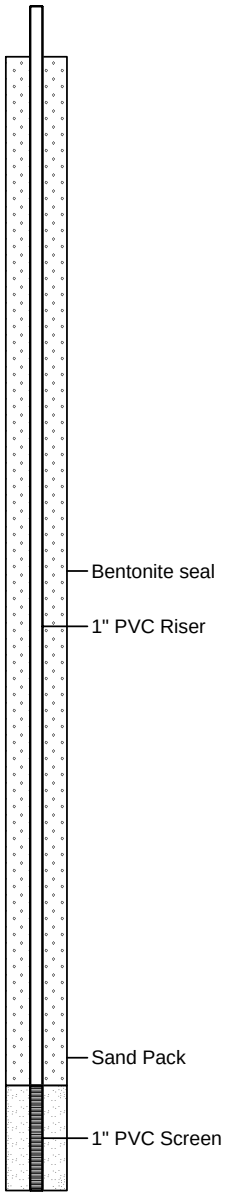
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-003-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-14-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.5'
Borehole Diameter	: 2.25"	0-Hr DTW	: 14.85' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 14.23' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.0' Riser Amount: 50 LF	Northing (US ft): 569527.42 Easting (US ft): 1460670.51
5	-5		
10	-10		
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010"	
20	-20		
25	-25		
30	-30	Sand Pack: Top: 49' bgs Bottom: 54' bgs Grain Size: WG #1	
35	-35		
40	-40		
45	-45	Bentonite Seal: Top: 0 (surface) Bottom: 49' bgs Grain Size: 3/8" chips/ granular Bentonite Sleeve- 44-49' bgs Bentonite 3/8' chips- 40-44' bgs	
50	-50		No NAPL's encountered
55		End of Boring	



Total Depth: 54.0'

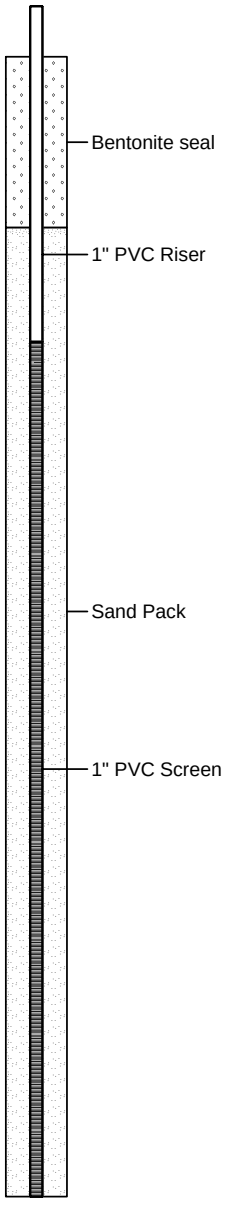
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-003-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-9-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.9'
Borehole Diameter	: 2.25"	0-Hr DTW	: DRY
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 6.81' TOC
Driller	: Kevin Pumphrey	ARM Representative	: B. Gehman

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.4' Riser Amount: 9 LF	Northing (US ft): 569534 Easting (US ft): 1460671.22
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"	
10	-10	Sand Pack: Top: 3' bgs Bottom: 20' bgs Grain Size: WG #1	
15	-15	Bentonite Seal: Top: 0 (surface) Bottom: 3' bgs Grain Size: 3/8" chips/granular	No NAPL's encountered
20		End of Boring	



Total Depth: 20.0'

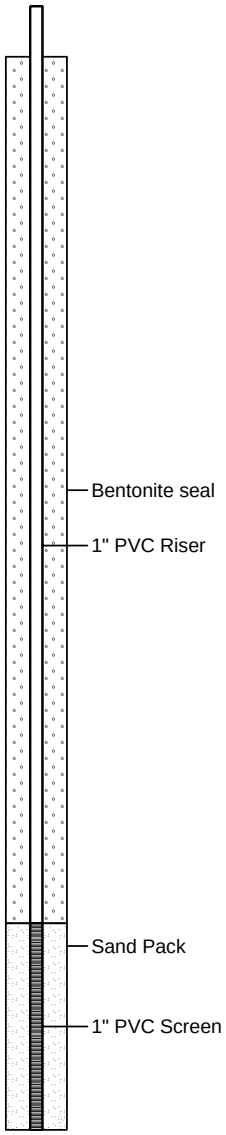
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-004-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-13-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.24'
Borehole Diameter	: 2.25"	0-Hr DTW	: 15.50' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 18.91' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.9' Riser Amount: 45 LF	Northing (US ft): 570066.19 Easting (US ft): 1460466.45
5	-5		
10	-10		
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"	
20	-20	2-5' PrePacked PVC Well Screen (42-52')	
25	-25		
30	-30	Sand Pack: Top: 42' bgs Bottom: 52' bgs Grain Size: WG #1	
35	-35		
40	-40		
45	-45	Bentonite Seal: Top: 0 (surface) Bottom: 42' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 37') granular/chips (37-42') 1 bentonite sleeve	
50	-50		No NAPL's encountered
55		End of Boring	



Total Depth: 52'

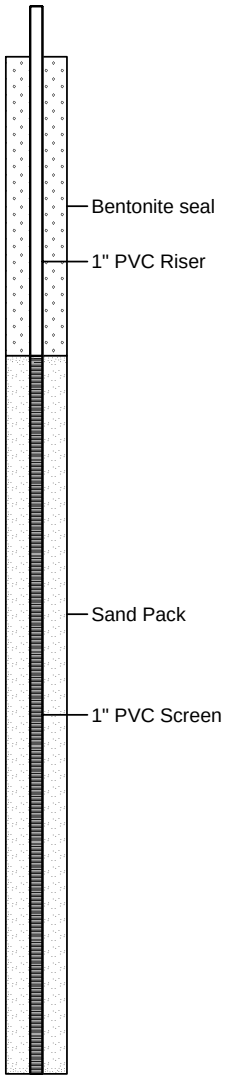
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-004-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-9-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 13.97'
Borehole Diameter	: 2.25"	0-Hr DTW	: 12.05' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 12.18' TOC
Driller	: Kevin Pumphrey	ARM Representative	: B. Gehman

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.7' Riser Amount: 9.74 LF
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"
10	-10	Sand Pack: Top: 5' bgs Bottom: 17' bgs Grain Size: WG #1
15	-15	Bentonite Seal: Top: 0 (surface) Bottom: 5' bgs Grain Size: 3/8" chips/granular
20		End of Boring



REMARKS

Northing (US ft): 570071.39
Easting (US ft): 1460466.11

No NAPL's encountered

Total Depth: 17.0'

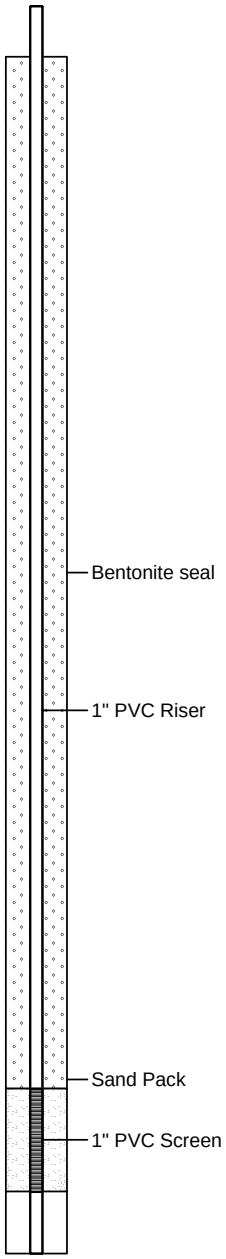
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-005-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-14-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 15.3'
Borehole Diameter	: 2.25"	0-Hr DTW	: 15.88' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 15.02' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.6' Riser Amount: 56.6 LF
5	-5	
10	-10	
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010" 1-5' PrePacked PVC Well Screen (50-55')
20	-20	
25	-25	
30	-30	Sand Pack: Top: 50' bgs Bottom: 55' bgs Grain Size: WG #1 1- 5' Pre-pack
35	-35	
40	-40	
45	-45	Bentonite Seal: Top: 0 (surface) Bottom: 50' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 45') 3/8' chips (45-50') 1 bentonite sleeve
50	-50	
55		End of Boring



REMARKS

Northing (US ft): 570670.96
Easting (US ft): 1460700.24

No NAPL's encountered

Total Depth: 58.5'

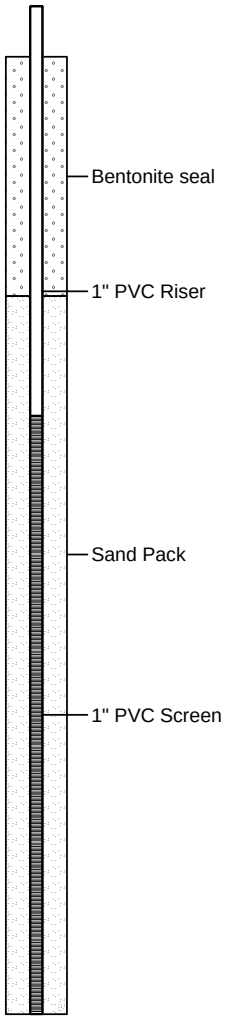
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-005-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 05-18-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 12.04'
Borehole Diameter	: 2.25"	0-Hr DTW	: 11.00' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 11.00' TOC
Driller	: Kevin Pumphrey	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 1.1' Riser Amount: 7.1 LF	Northing (US ft): 571149.95 Easting (US ft): 1460689.17
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"	
10	-10	Filter Pack: Top: 4' bgs Bottom: 16' bgs Grain Size: WG #1	
15	-15	Bentonite Seal: Top: 0 (surface) Bottom: 4' bgs Grain Size: 3/8" chips/granular (0- 0.5') granular (0.5-3.5') chips (3.5-4.0') granular	No NAPL's encountered
		End of Boring	
20			



Total Depth: 16.0'

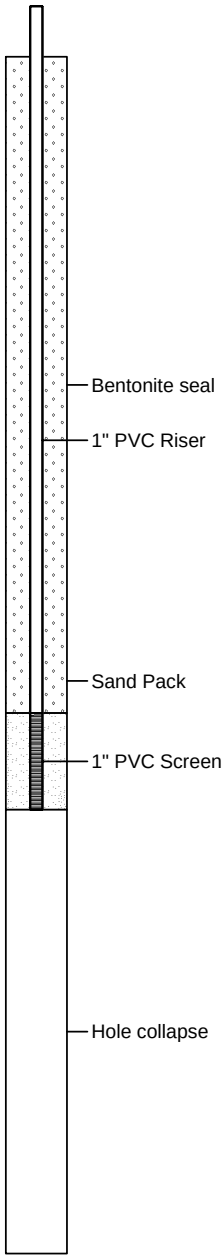
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-006-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-09-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 16.03'
Borehole Diameter	: 2.25"	0-Hr DTW	: 35.65' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 13.65' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.9' Riser Amount: 37.1 LF
10	-10	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010" 1-5' PrePacked PVC Well Screen (34-39')
20	-20	Filter Pack: Top: 34' bgs Bottom: 39' bgs Grain Size: WG #1
30	-30	Bentonite Seal: Top: 0 (surface) Bottom: 34' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 29') granular (29-34') 1 bentonite sleeve
60	-60	



REMARKS

Northing (US ft): 571251.68
Easting (US ft): 1461510.81

No NAPL's encountered

Total Depth: 62'
Boring drilled to total depth of 62', but collapsed hole up to 39' to screen more shallow.

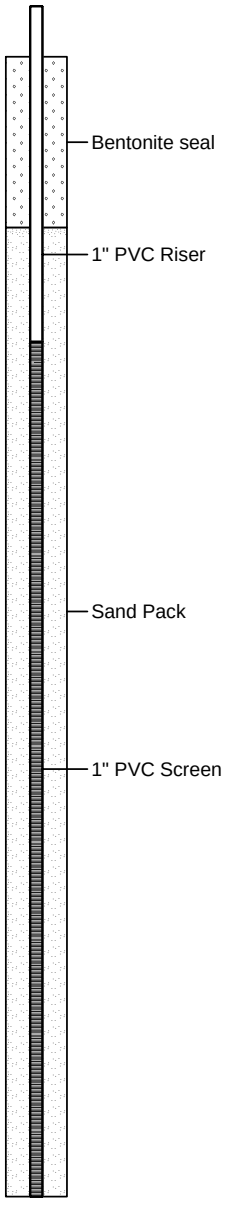
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-006-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 05-18-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 15.79'
Borehole Diameter	: 2.25"	0-Hr DTW	: 14.03' TOC
Drilling Method	: 7822DT Geoprobe	24-Hr DTW	: 13.98' TOC
Driller	: Kevin Pumphrey	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.7' Riser Amount: 7.8 LF
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"
10	-10	Sand Pack: Top: 3' bgs Bottom: 20' bgs Grain Size: WG #1
15	-15	Bentonite Seal: Top: 0 (surface) Bottom: 3' bgs Grain Size: 3/8" chips/granular (0.0-3.0') chips/granular
20		End of Boring



REMARKS

Northing (US ft): 571246.35
Easting (US ft): 1461514.9

No NAPL's encountered

Total Depth: 20.0'

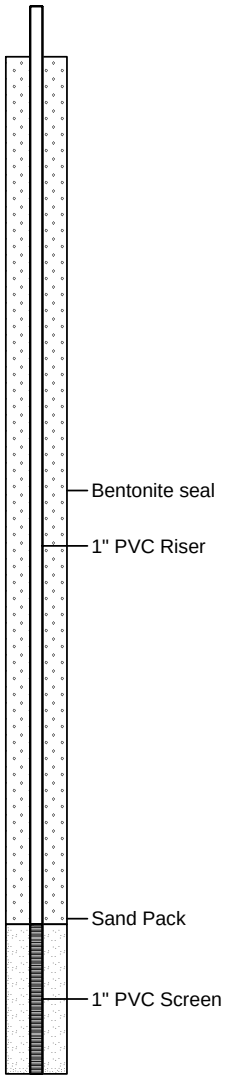
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-007-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-09-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.77'
Borehole Diameter	: 2.25"	0-Hr DTW	: 35.26' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 9.80' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.4' Riser Amount: 32.3'	Northing (US ft): 570961.8 Easting (US ft): 1461784.57
5	-5		
10	-10	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010" 1-5' PrePacked PVC Well Screen (29-34')	
15	-15		
20	-20	Sand Pack: Top: 29' bgs Bottom: 34' bgs Grain Size: WG #1	
25	-25		
30	-30	Bentonite Seal: Top: 0 (surface) Bottom: 29' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 24') granular (24-29') 1 bentonite sleeve	No NAPL's encountered
35	-35	End of Boring	
40			



Total Depth: 34'

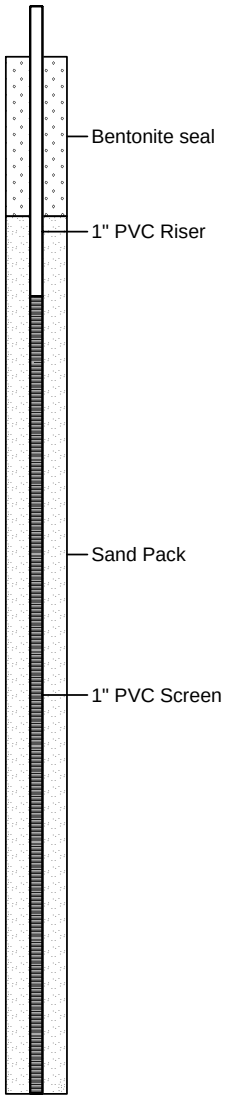
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-007-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 05-18-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 13.4'
Borehole Diameter	: 2.25"	0-Hr DTW	: No water detected
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 5.98' TOC
Driller	: Kevin Pumphrey	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.0' Riser Amount: 3.96'
		Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"
5	-5	Sand Pack: Top: 2' bgs Bottom: 13' bgs Grain Size: WG #1
10	-10	Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/granular (0- 0.5') granular (0.5-1.5') chips (1.5-2') granular
		End of Boring
15		



REMARKS

Northing (US ft): 570960.51
Easting (US ft): 1461781.24

No NAPL's encountered

Total Depth: 13.0'

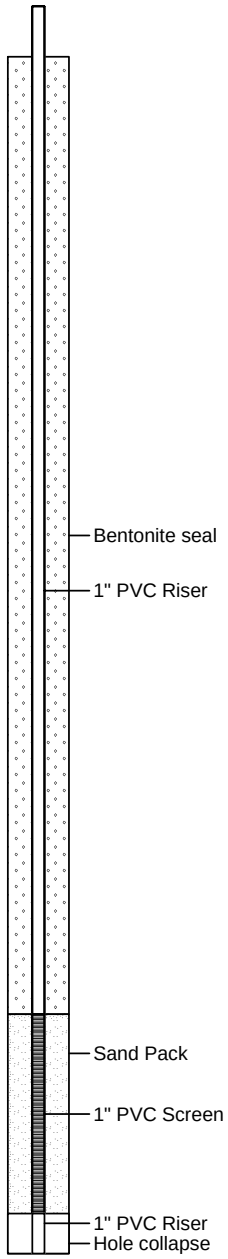
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-008-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-22-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.72'
Borehole Diameter	: 2.25"	0-Hr DTW	: 10.56' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 10.52' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.2' Riser Amount: 28.2'	Northing (US ft): 570624.99 Easting (US ft): 1462721.88
5	-5		
10	-10	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010" 1-5' PrePacked PVC Well Screen (24-29')	
15	-15	Sand Pack: Top: 24' bgs Bottom: 29' bgs Grain Size: WG #1	
20	-20		
25	-25	Bentonite Seal: Top: 0 (surface) Bottom: 29' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 19') granular (19-24') 1 Bentonite Sleeve	No NAPL's encountered
30		End of Boring	



Total Depth: 30'

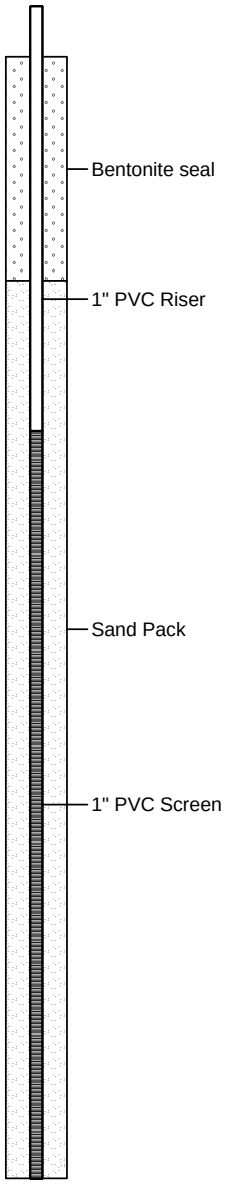
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-008-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 05-18-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.2'
Borehole Diameter	: 2.25"	0-Hr DTW	: 9.45' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 9.71' TOC
Driller	: Kevin Pumphrey	ARM Representative	: B. Gehman

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.9' Riser Amount: 7.5'
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"
10	-10	Sand Pack: Top: 3' bgs Bottom: 15' bgs Grain Size: WG #1
		Bentonite Seal: Top: 0 (surface) Bottom: 3' bgs Grain Size: 3/8" chips/granular
15		End of Boring



REMARKS

Northing (US ft): 570624.5
Easting (US ft): 1462707.78

No NAPL's encountered

Total Depth: 15'

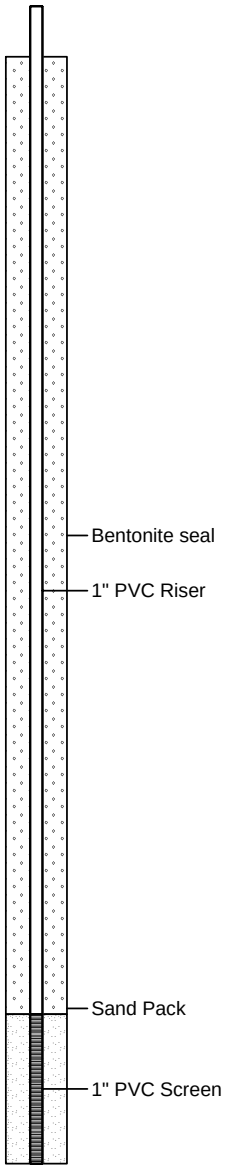
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-009-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-28-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 17.98'
Borehole Diameter	: 2.25"	0-Hr DTW	: 14.97' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 13.98' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.1' Riser Amount: 35.2'
5	-5	
10	-10	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010" 1-5' PrePacked PVC Well Screen (32-37')
15	-15	
20	-20	Sand Pack: Top: 32' bgs Bottom: 37' bgs Grain Size: WG #1
25	-25	
30	-30	Bentonite Seal: Top: 0 (surface) Bottom: 32' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 27') granular (27-32') 1 Bentonite Sleeve
35	-35	
40		End of Boring



REMARKS

Northing (US ft): 569968.89
Easting (US ft): 1462819.29

No NAPL's encountered

Total Depth: 37'

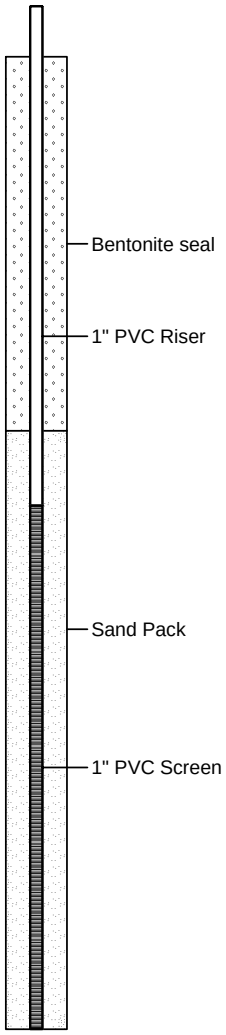
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-009-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-10-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 17.66'
Borehole Diameter	: 2.25"	0-Hr DTW	: 13.88' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 14.01' TOC
Driller	: Kevin Pumphrey	ARM Representative	: B. Gehman

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.7' Riser Amount: 8.7'
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 7 feet Slot Size: 0.010"
		Sand Pack: Top: 5' bgs Bottom: 13' bgs Grain Size: WG #1
10	-10	Bentonite Seal: Top: 0 (surface) Bottom: 5' bgs Grain Size: 3/8" chips/granular
		End of Boring
15		



REMARKS

Northing (US ft): 569980.51
Easting (US ft): 1462820.63

No NAPL's encountered

Total Depth: 13'

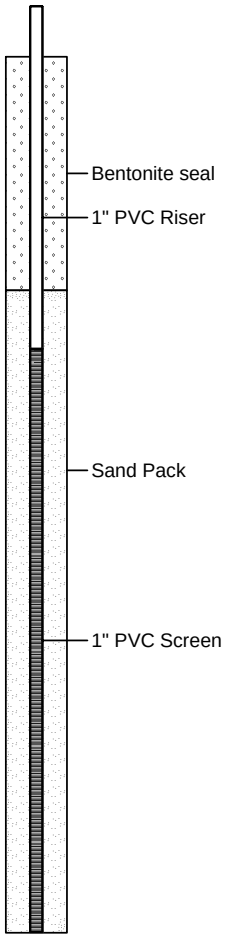
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-010-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3

Date Installed	: 06-24-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 9.87'
Borehole Diameter	: 2.25"	0-Hr DTW	: 7.40' TOC
Drilling Method	: 7822DT Geoprobe	24-Hr DTW	: 7.50' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.1' Riser Amount: 8.1'
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"
10	-10	Sand Pack: Top: 4' bgs Bottom: 15' bgs Grain Size: WG #1
		Bentonite Seal: Top: 0 (surface) Bottom: 4' bgs Grain Size: 3/8" chips/granular 30-50 mesh
15	-15	End of Boring
20		



REMARKS

Northing (US ft): 571826.42
Easting (US ft): 1462218.46

No NAPL's encountered

Total Depth: 15'

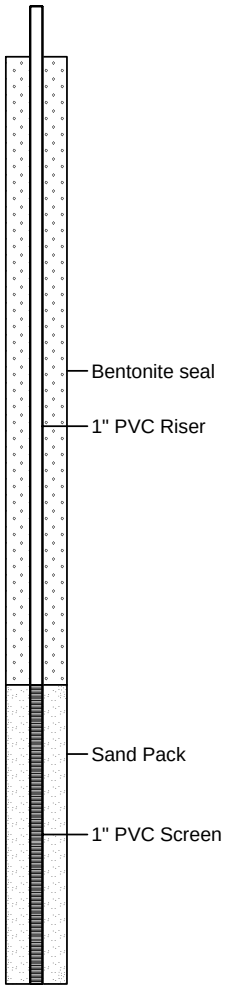
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-011-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3

Date Installed	: 06-24-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 12.39'
Borehole Diameter	: 2.25"	0-Hr DTW	: 7.43' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 7.26' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.1' Riser Amount: 24.4'	Northing (US ft): 571620.4 Easting (US ft): 1463013.18
5	-5		
10	-10	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010" 2-5' PrePacked PVC Well Screen (21-31' bgs)	
15	-15	Sand Pack: Top: 21' bgs Bottom: 31' bgs Grain Size: WG #1	1-5' Bentonite Sleeve (16-21' bgs)
20	-20		
25	-25	Bentonite Seal: Top: 0 (surface) Bottom: 16' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 16') granular (16-21') 1 Bentonite Sleeve	2-5' PrePacked PVC Well Screen (21-31' bgs)
30	-30	End of Boring	No NAPL's encountered
35	-35		
40			



Total Depth: 31'

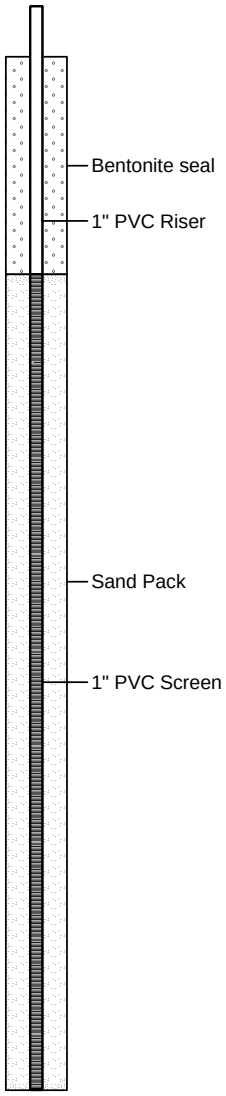
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-011-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-10-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 12'
Borehole Diameter	: 2.25"	0-Hr DTW	: 18.94' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 7.55' TOC
Driller	: Kevin Pumphrey	ARM Representative	: B. Gehman

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.7'
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"
10	-10	Sand Pack: Top: 4' bgs Bottom: 19' bgs Grain Size: WG #1
15	-15	Bentonite Seal: Top: 0 (surface) Bottom: 4' bgs Grain Size: 3/8" chips/granular
20		End of Boring



REMARKS

Northing (US ft): 571622.76
Easting (US ft): 1463015.69

No NAPL's encountered

Total Depth: 19'

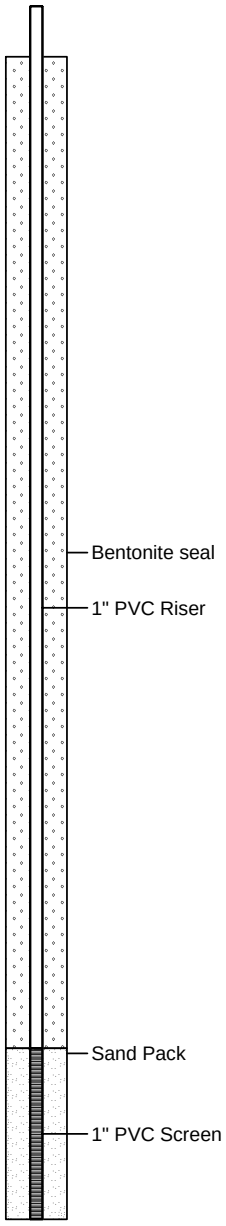
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-012-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-27-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.64'
Borehole Diameter	: 2.25"	0-Hr DTW	: 13.69' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 13.69' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.1'
5	-5	
10	-10	
15	-15	
20	-20	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010" 2-5' PrePacked PVC Well Screen (58-68')
25	-25	
30	-30	
35	-35	Sand Pack: Top: 58' bgs Bottom: 68' bgs Grain Size: WG #1
40	-40	
45	-45	
50	-50	
55	-55	Bentonite Seal: Top: 0 (surface) Bottom: 58' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 53') granular (53-58') 1 Bentonite Sleeve
60	-60	
65	-65	
70		End of Boring



REMARKS

Northing (US ft): 570732.06
Easting (US ft): 1463341.74

No NAPL's encountered

Total Depth: 68'

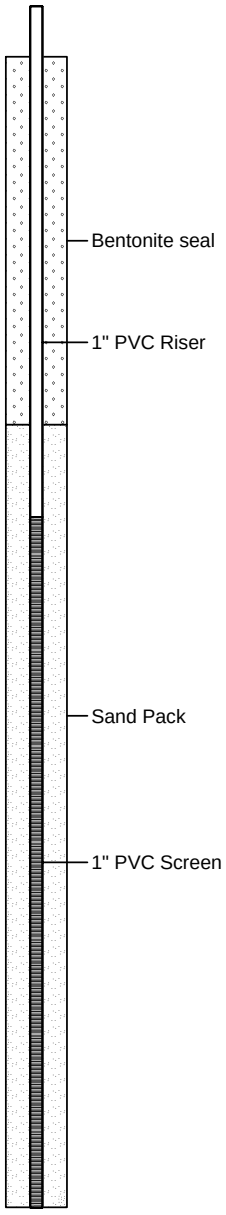
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-012-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-10-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 13.97'
Borehole Diameter	: 2.25"	0-Hr DTW	: 9.05' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 8.61' TOC
Driller	: Kevin Pumphrey	ARM Representative	: B. Gehman

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.6'	Northing (US ft): 570734.98 Easting (US ft): 1463340.86
5	-5		
10	-10	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 15 feet Slot Size: 0.010"	
15	-15	Sand Pack: Top: 8' bgs Bottom: 25' bgs Grain Size: WG #1	
20	-20	Bentonite Seal: Top: 0 (surface) Bottom: 8' bgs Grain Size: 3/8" chips/granular	No NAPL's encountered
25		End of Boring	



Total Depth: 25'

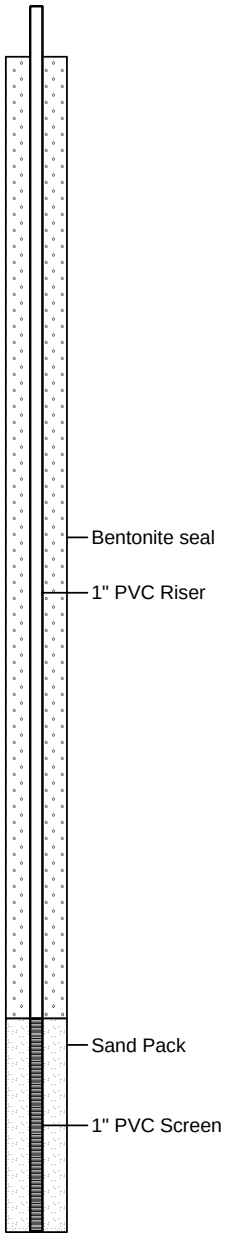
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-013-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-10-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.9'
Borehole Diameter	: 2.25"	0-Hr DTW	: 14.84' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 14.91' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.2'
5	-5	
10	-10	
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010" 2-5' PrePacked PVC Well Screen (45-55' TOC)
20	-20	
25	-25	
30	-30	Sand Pack: Top: 45' bgs Bottom: 55' bgs Grain Size: WG #1
35	-35	
40	-40	
45	-45	Bentonite Seal: Top: 0 (surface) Bottom: 45' bgs Grain Size: 3/8" chips/granular 30-50 mesh 1-5' Bentonite Sleeve (40-45' TOC)
50	-50	
55		End of Boring



REMARKS

Northing (US ft): 570271.36
Easting (US ft): 1461726.85

No NAPL's encountered

Total Depth: 55'

ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-013-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3

Date Installed	: 05-18-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.26'
Borehole Diameter	: 2.25"	0-Hr DTW	: 9.43' TOC
Drilling Method	: 7822DT Geoprobe	24-Hr DTW	: 6.98' TOC
Driller	: Kevin Pumphrey	ARM Representative	: L. Perrin

Depth in Feet | Surf. Elev. --- | DESCRIPTION | REMARKS

0 — 0

Riser Type: PVC
Riser Diameter: 1 inch
Riser Stickup: 2.5'

5 — -5

Screen Type: PVC
Screen Diameter: 1 inch
Screen Amount: 20 feet
Slot Size: 0.010"

10 — -10

Sand Pack:
Top: 3' bgs
Bottom: 25' bgs
Grain Size: WG #1

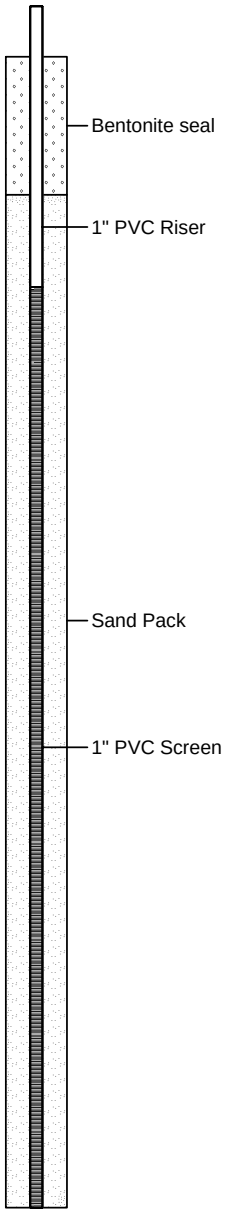
15 — -15

Bentonite Seal:
Top: 0 (surface)
Bottom: 3' bgs
Grain Size: 3/8" chips/granular 30-50 mesh

(0- 0.5') granular
(0.5-2.5') chips
(2.5-32') granular

20 — -20

25



Northing (US ft): 570268.11
Easting (US ft): 1461727.93

No NAPL's encountered

Total Depth:25'

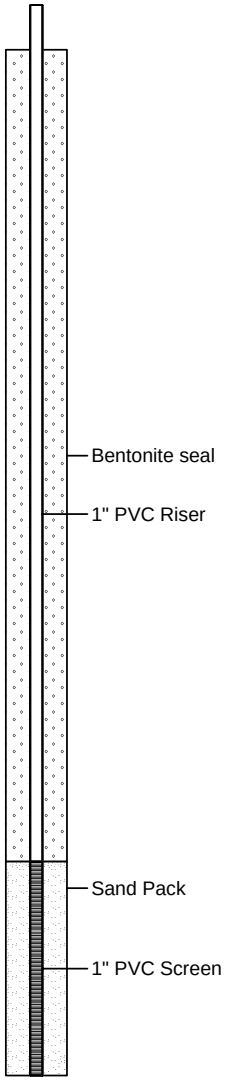
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-014-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-07-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 13.97'
Borehole Diameter	: 2.25"	0-Hr DTW	: 13.28' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 13.61' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.4'	Northing (US ft): 569541.35 Easting (US ft): 1462083.52
5	-5		
10	-10		
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010" 2-5' PrePacked PVC Well Screen (38-48')	
20	-20		
25	-25	Sand Pack: Top: 40' bgs Bottom: 50' bgs Grain Size: WG #1	
30	-30		
35	-35		
40	-40	Bentonite Seal: Top: 0 (surface) Bottom: 38' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 33') granular (33-38') 1-5' Bentonite Sleeve	No NAPL's encountered
45	-45		
50	-50	End of Boring	
55			



Total Depth: 48'

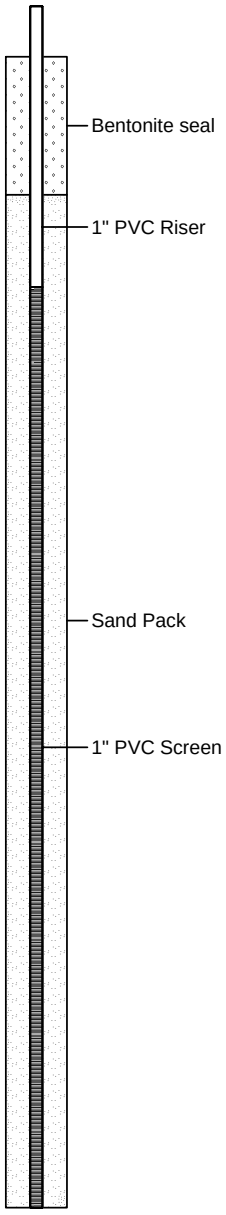
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-014-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3

Date Installed	: 05-18-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 15'
Borehole Diameter	: 2.25"	0-Hr DTW	: 8.35' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 7.74' TOC
Driller	: Kevin Pumphrey	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.4'
5	-5	
		Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 20 feet Slot Size: 0.010" 2-5' PrePacked PVC Well Screen (40-50')
10	-10	
		Sand Pack: Top: 3' bgs Bottom: 25' bgs Grain Size: WG #1
15	-15	
		Bentonite Seal: Top: 0 (surface) Bottom: 3' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 0.5') granular (0.5-2.5') chips (2.5-3') granular
20	-20	
25		End of Boring



REMARKS

Northing (US ft): 569536.31
Easting (US ft): 1462083.86

No NAPL's encountered

Total Depth: 25'

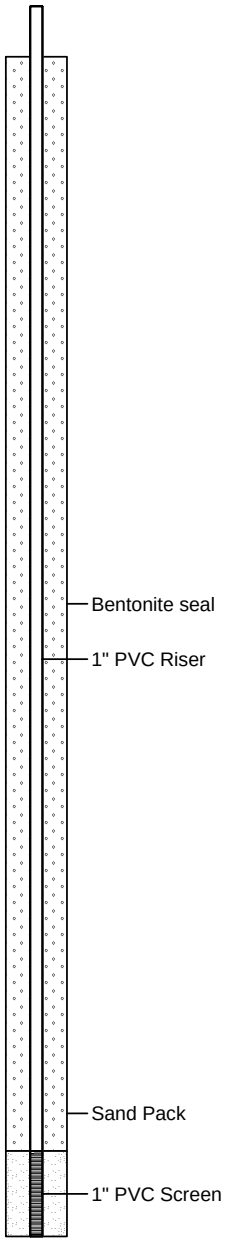
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-015-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3

Date Installed	: 06-20-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 16.89'
Borehole Diameter	: 2.25"	0-Hr DTW	: 16.66' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 16.75' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.7'
5	-5	
10	-10	
15	-15	
20	-20	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010" 1-5' PrePacked PVC Well Screen (64-69')
25	-25	
30	-30	
35	-35	Sand Pack: Top: 64' bgs Bottom: 69' bgs Grain Size: WG #1
40	-40	
45	-45	
50	-50	
55	-55	Bentonite Seal: Top: 0 (surface) Bottom: 64' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 59') granular (59-64') 1 bentonite sleeve
60	-60	
65	-65	
70		End of Boring



REMARKS

Northing (US ft): 568440.69
Easting (US ft): 1462479.04

No NAPL's encountered

Total Depth: 69'

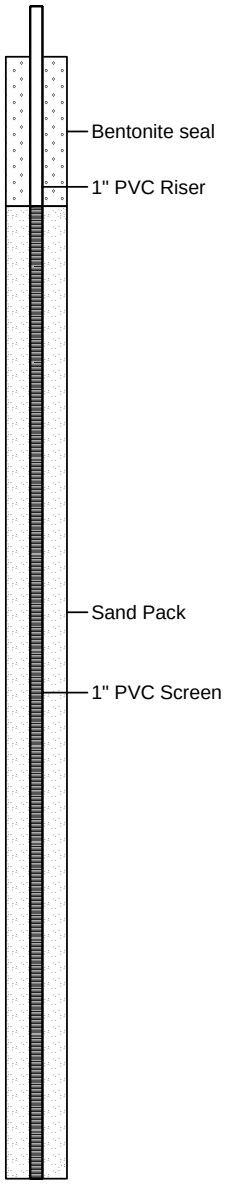
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-015-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3

Date Installed	: 06-09-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 15.8'
Borehole Diameter	: 2.25"	0-Hr DTW	: 5.59' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 5.94' TOC
Driller	: Kevin Pumphrey	ARM Representative	: B. Gehman

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.2'	Northing (US ft): 568438.52 Easting (US ft): 1462482.27
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 13 feet Slot Size: 0.010"	
10	-10	Sand Pack: Top: 2' bgs Bottom: 15' bgs Grain Size: WG #1	
		Bentonite Seal: Top: 0 (surface) Bottom: 2' bgs Grain Size: 3/8" chips/granular 30-50 mesh	No NAPL's encountered
15		End of Boring	



Total Depth: 15'

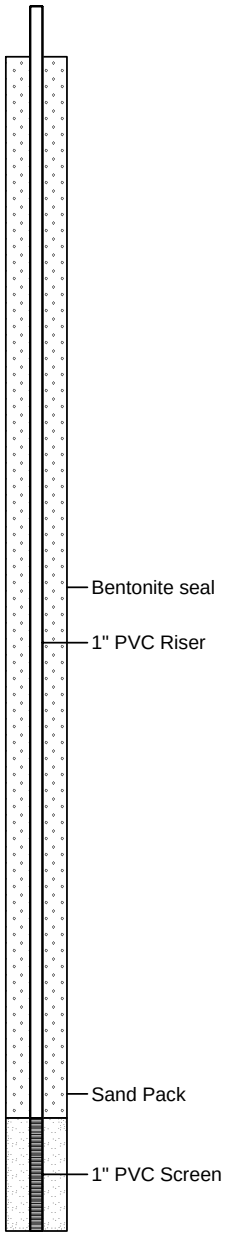
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-016-PZI

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-22-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 15.26'
Borehole Diameter	: 2.25"	0-Hr DTW	: 15.33' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 15.10' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 3.3'
5	-5	
10	-10	
15	-15	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 5 feet Slot Size: 0.010" 1-5' PrePacked PVC Well Screen (47-52')
20	-20	
25	-25	Sand Pack: Top: 47' bgs Bottom: 52' bgs Grain Size: WG #1
30	-30	
35	-35	
40	-40	Bentonite Seal: Top: 0 (surface) Bottom: 47' bgs Grain Size: 3/8" chips/granular 30-50 mesh
45	-45	(0- 42') granular (42-47') 1 bentonite sleeve
50		End of Boring



REMARKS

Northing (US ft): 568827.21
Easting (US ft): 1461007.05

No NAPL's encountered

Total Depth: 52'

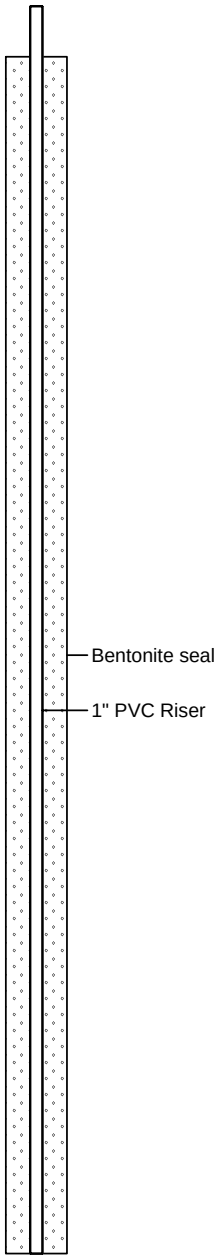
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-016-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-23-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 14.69'
Borehole Diameter	: 2.25"	0-Hr DTW	: 9.18' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 9.23' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION	REMARKS
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 2.7'	Northing (US ft): 568829.88 Easting (US ft): 1461007.58
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 10 feet Slot Size: 0.010"	
10	-10	Sand Pack: Top: 47' bgs Bottom: 52' bgs Grain Size: WG #1	
		Bentonite Seal: Top: 0 (surface) Bottom: 47' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 42') granular (42-47') 1 bentonite sleeve	No NAPL's encountered
15		End of Boring	



Total Depth: 15'

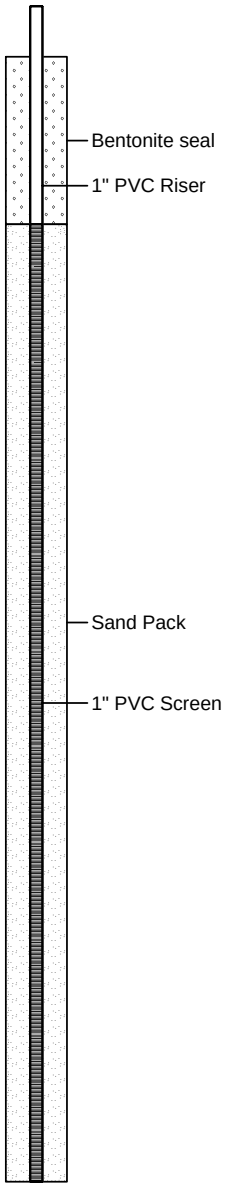
ARM Group Inc.
Earth Resource Engineers and Consultants

LOG OF TEMPORARY GROUNDWATER SAMPLE COLLECTION POINT: FM-017-PZS

Client: EnviroAnalytics Group
Site: Finishing Mills Ground Water
Sparrows Point, MD
ARM Project No.: 150300M-21-3
Page 1 of 1

Date Installed	: 06-23-16	Drilling Company	: Green Services, Inc
Casing/Riser Type	: PVC	TOC Elevation	: 13.44'
Borehole Diameter	: 2.25"	0-Hr DTW	: 5.70' TOC
Drilling Method	: 7822DT Geoprobe	48-Hr DTW	: 6.44' TOC
Driller	: Don Marchese	ARM Representative	: L. Perrin

Depth in Feet	Surf. Elev. ---	DESCRIPTION
0	0	Riser Type: PVC Riser Diameter: 1 inch Riser Stickup: 1.8'
5	-5	Screen Type: PVC Screen Diameter: 1 inch Screen Amount: 20 feet Slot Size: 0.010"
10	-10	Sand Pack: Top: 3.5' bgs Bottom: 23.5' bgs Grain Size: WG #1
15	-15	Bentonite Seal: Top: 0 (surface) Bottom: 3.5' bgs Grain Size: 3/8" chips/granular 30-50 mesh (0- 3.5') granular
20	-20	End of Boring
25		



REMARKS

Northing (US ft): 569903.2
Easting (US ft): 1461148.43

No NAPL's encountered

Total Depth: 23.5'

ARM Group Inc.
Earth Resource Engineers and Consultants

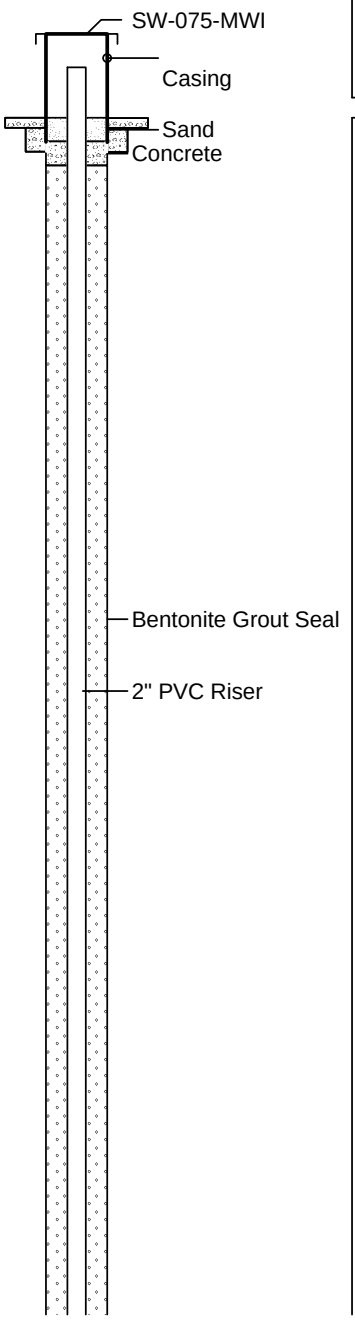
Well ID: SW-075-MWI

(page 1 of 2)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571472.28
Easting (ft)	: 1459393.74
Date/Time Started	: 6/10/16 / 1630
Date/Time Completed	: 6/13/16 / 1745
Surf. Elev. (ft AMSL)	: 10
TOC Elev. (ft AMSL)	: 13.09
Total Well Depth (ft)	: 55.8' (TOC)
Depth to Water (ft)	: 12.8 TDR - 1805 hr.
Depth to Water (ft)	:
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-50	1.6	1 8 19 7	(0-3.5') SLAG, sand sized, medium dense, dark grayish brown, dry, non plastic, non cohesive, some oxidization and roots, ~30% <1/2" slag gravels	SW
2	2-71	0.2	5 8 12 14		
4	3-42	0.9	8 13 8 3	(3.5-7') SAND, fine to coarse grained, medium dense, reddish brown, wet, non plastic, non cohesive ~30-40% dark gray slag, (<1"), slag has whitish coatings	SW
6	4-0	-	6 6 10 13	(7-12') SLAG GRAVEL with some brown SAND, medium dense, dark gray, wet, non plastic, non cohesive, slag is maximum 1"	GW
8	5-25	0.6	5 5 8 9		
10	6-33	0.3	4 6 6 4		
12	7-29	7.0	4 6 9 11	(12-16') SAND, fine to coarse grained, medium dense, black, wet, non plastic, non cohesive, ~20-30% SLAG GRAVELS, strong chemical odor on cuttings	SW
14	8-58	9.2	1 5 50/2		
16	9-46	0.5	1 1 4 4	(16-18.2') SILT, very soft to soft, gray with many olive brown oxidation, cohesive, low plasticity, strong chemical odor on cuttings	ML
18	10-33	0.6	4 50/4	(18.2-22') SAND, fine to medium grained, with silty CLAY, medium dense to stiff, yellowish brown (SAND) and pale yellowish brown with RMFs (CLAY), wet, weathered sandstone/conglomerate RFs in upper part	SW/CL
20	11-75	0.1	18 6 5 6		
22	12-100	0.5	W 3 5 6	(22-27.5') SIlty CLAY, stiff, reddish brown and pale reddish brown to light gray, very moist to wet, cohesive, medium plasticity to high plasticity, common RMFs along parting planes	CL/CH
24	13-100	1.0	4 9 9 8		
26	14-100	1.0	W 2 2 3		
28	15-100	0.3	W W 1 1	(27.5-28') SAND, fine to medium grained, loose, olive-gray, moist to wet, non plastic, non cohesive	SW
30					



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 3.1'

Bentonite/Grout Seal:
Top: 1.2 Bottom: 38.0'

Slag fill 0-16

Native alluvium 16+

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 42 gal.
Well Volumes Removed: 5.5

ARM Group Inc.
Earth Resource Engineers and Consultants

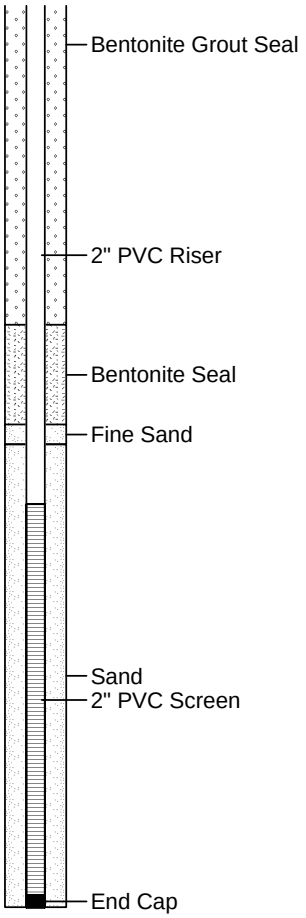
Well ID: SW-075-MWI

(page 2 of 2)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571472.28
Easting (ft)	: 1459393.74
Date/Time Started	: 6/10/16 / 1630
Date/Time Completed	: 6/13/16 / 1745
Surf. Elev. (ft AMSL)	: 10
TOC Elev. (ft AMSL)	: 13.09
Total Well Depth (ft)	: 55.8' (TOC)
Depth to Water (ft)	: 12.8 TDR - 1805 hr.
Depth to Water (ft)	:
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
30					
	16-83	0.5	1 2 1 2	(28-39') Clayey SILT, soft to very soft, dark olive gray, wet, cohesive, low plasticity to medium plasticity	
32	17-75	0.8	2 2 2 2		
34	18-100	0.3	W W W W		ML
36	19-100	0.8	W 1 1 2		
38	20-92	0.3	W 5 7 8		
40	21-63	0.5	3 5 9 10	(39-46') SAND, fine to coarse grained, medium dense, pale yellowish brown, some grayish brown, wet, non plastic, non cohesive, common mica flecks and thin gray fine sand lenses	
42	22-100	0.4	4 7 9 11		SW
44	23-100	1.0	9 5 7 9		
46	24-83	0.3	3 6 12 15	(46-52.6') SAND, medium to coarse grained, loose to medium dense, brownish yellow, pale brown, olive brown, wet, non plastic, non cohesive	
48	25-58	0.3	10 10 13 10		SW
50	26-100	0.4	3 5 8 8		
52				END OF BORING	
54					
56					
58					
60					



COMPLETION DETAILS

Bentonite Seal:
Top: 38.0' Bottom: 40.5'
Fine Sand: FilPro #000
Top: 40.5' Bottom: 41.0'

Filter Pack: FilPro W.G. #2 Sand
Top: 41.0' Bottom: 52.6'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 42.5' Bottom: 52.6'
Total Screen: 10.1'

2 3/4" long PVC tapered slip cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 42 gal.
Well Volumes Removed: 5.5

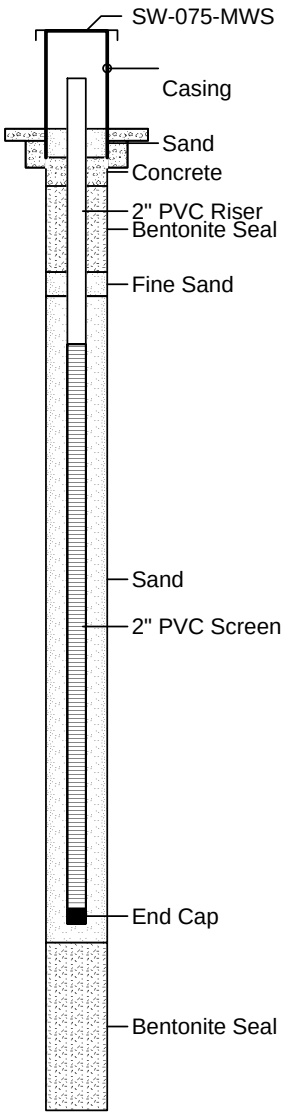
ARM Group Inc.
Earth Resource Engineers and Consultants

Well ID: SW-075-MWS

(page 1 of 1)

Project Name	: Sparrows Point	Northing (ft)	: 571466.89
Project Number	: 150300M-21-3	Easting (ft)	: 1459390.63
Client	: EnviroAnalytics Group	Date/Time Started	: 6/13/16 / 1150
Site	: Finishing Mills	Date/Time Completed	: 6/13/16 / 1330
Borehole Location	: Parcel B-6	Surf. Elev. (ft AMSL)	: 10.27
ARM Representative	: W. Mader, P.G., CPSS	TOC Elev. (ft AMSL)	: 12.53
Checked by	: W. Mader, P.G., CPSS	Total Well Depth (ft)	: 18.8' (TOC)
Drilling Company	: Allied Well Drilling	Depth to Water (ft)	: 6.84 (tTOC) 1405
Driller	: Mike Waller, Austin Bonacum	Depth to Water (ft)	: -
Drilling Equipment	: Diedrich-D120	Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-50	1.6	1 8 19 7	(0-3.5') SLAG, sand sized, medium dense, dark grayish brown, dry, non plastic, non cohesive, some oxidization and roots, ~30% <1/2" slag gravels	SW
2	2-71	0.2	5 8 12 14		
4	3-42	0.9	8 13 8 3	(3.5-7') SAND, fine to coarse grained, medium dense, reddish brown, wet, non plastic, non cohesive ~30-40% dark gray slag, (<1"), slag has whitish coatings	SW
6	4-0	-	6 6 10 13	(7-12') SLAG GRAVEL with some brown SAND, medium dense, dark gray, wet, non plastic, non cohesive, slag is maximum 1"	GW
8	5-25	0.6	5 5 8 9		
10	6-33	0.3	4 6 6 4		
12	7-29	7.0	4 6 9 11	(12-16') SAND, fine to coarse grained, medium dense, black, wet, non plastic, non cohesive, ~20-30% SLAG GRAVELS	SW
14	8-58	9.2	1 5 50/2		
16	9-46	0.5	1 1 4 4	(16-18.2') SILT, very soft to soft, gray with many olive brown oxidation, cohesive, low plasticity	ML
18	10-80	0.6	4 50/4	(18.2-20.5') SAND, fine to medium grained, with silty CLAY, medium dense to stiff, yellowish brown (SAND) and pale yellowish brown with RMFs (CLAY), wet, weathered sandstone/cons/om RFs in upper part	SW/CL
20				END OF BORING	
22					
24					



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.3'
Bentonite Seal:
Top: 1.2' Bottom: 3.0'

Fine Sand: FilPro #000
Top: 3.0' Bottom: 4.5'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 4.5' Bottom: 16.6'
Total Screen: 12.1'

Filter Pack: FilPro W.G. #2 Sand
Top: 3.0' Bottom: 17.0'

Slag fill 0-16' bgs

Native alluvium 16+

2 3/4" long PVC tapered slip cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 60 gal.
Well Volumes Removed: 25

ARM Group Inc.
Earth Resource Engineers and Consultants

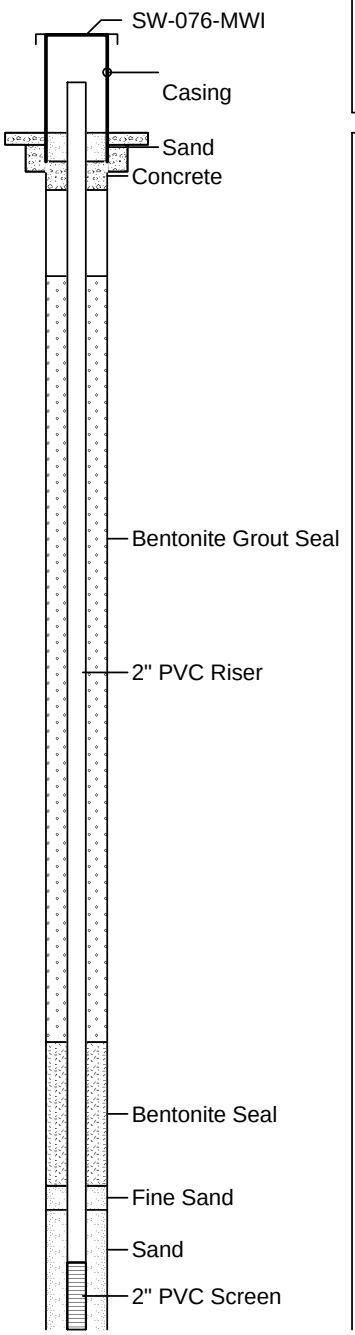
Well ID: SW-076-MWI

(page 1 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571138.83
Easting (ft)	: 1463610.23
Date/Time Started	: 6/17/16 / 1140
Date/Time Completed	: 6/21/16 / 1745
Surf. Elev. (ft AMSL)	: 13.93
TOC Elev. (ft AMSL)	: 16.45
Total Well Depth (ft)	: 36.4' (TOC)
Depth to Water (ft)	: 11.8' (TOC) 1810 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-100	0.5	3 4 3 4	(0-1.3') Sandy Silt, medium stiff, dark brown to dark grayish brown with RMFs, slightly moist, cohesive, low plasticity - FILL	ML
2	2-75	0.3	2 5 8 8	(1.3-6') SILT, medium stiff, pale olive brown with RMFs, moist, cohesive, low plasticity, native soils at 1.2' +	ML
4	3-75	0.4	3 6 5 4		
6	4-100	0.3	4 5 7 7	(6-7') SILT, stiff, dark gray brown with ??? faint RMFs, moist to very moist, cohesive, low plasticity	ML
8	5-100	0.1	7 6 2 3	(7-9') Silty SAND, fine grained, medium dense, grayish brown to pale yellowish brown, distinct RMFs	SM/SW
10	6-88	4.2	2 2 3 2	(9-10') Clayey SILT, medium soft, light gray with strong reddish yellow oxidation, wet	ML
12	7-100	0.2	1 2 2 2	(10-11.4') Silty SAND, loose, pale brown with RMFs, moist to wet, non plastic, non cohesive one ~1" SR white quartz gravel	SM/SW
14	8-100	0.8	W W W 2	(11.4-16') Clayey SILT to silty CLAY, soft, dark gray to very dark gray, cohesive, low plasticity	ML/CL
16	9-100	0.5	2 2 2 2	(16-23') Clayey SILT, soft, very dark gray, wet, cohesive, low plasticity	ML
18	10-100	0.6	W W W 1		
20	11-100	0.4	W W 3 3		
22	12-100	0.4	W 2 3 4		
24	13-100	0.4	1 1	(23-26') Silty SAND grading to SAND, fine to medium grained, loose, dark gray, wet, non plastic, non cohesive	SM/SW



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.5'

Bentonite/Grout Seal:
Top: 3.0' Bottom: 19.0'

Bentonite Seal:
Top: 19.0' Bottom: 22.0'

Fine Sand: FilPro #000
Top: 22.0' Bottom: 22.5'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Note- 70' boring abandoned with grout. 2nd boring drilled to ~12' south to 35' TD for well install.

Monitoring Well Development
Date: 6/24/16
Purged Amount: 36 gal
Well Volumes Removed: 9

ARM Group Inc.
Earth Resource Engineers and Consultants

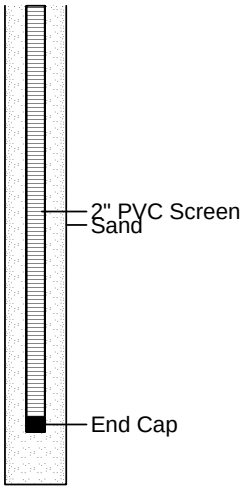
Well ID: SW-076-MWI

(page 2 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571138.83
Easting (ft)	: 1463610.23
Date/Time Started	: 6/17/16 / 1140
Date/Time Completed	: 6/21/16 / 1745
Surf. Elev. (ft AMSL)	: 13.93
TOC Elev. (ft AMSL)	: 16.45
Total Well Depth (ft)	: 36.4' (TOC)
Depth to Water (ft)	: 11.8' (TOC) 1810 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
25	13-100	0.4	2 2		SM/SW
27	14-100	0.0	2 3 4 4	(26-32.4') SAND, fine to medium grained, loose to medium dense, pale brown and dark reddish brown, wet, non plastic, non cohesive	SW
29	15-50	0.0	2 4 6 7		
31	16-63	0.7	3 6 9 10		
33	17-71	2.7	2 3 3 3	(32.4-33.7') Silty and clayey SAND, loose, dark grayish, wet, cohesive, low plasticity	SM/SC
35	18-100	0.3	W 3 5 5	(33.7-36') Silty CLAY, soft, dark gray, wet, cohesive, medium plasticity	CL
37	19-100	0.5	3 4 4 3	(36-38') Silty CLAY grading to clayey SILT, medium, dark grayish, wet, cohesive, medium plasticity	CL
39	20-100	0.5	W 2 2 3	(38-39.8') Silty CLAY, soft, dark grayish, wet, cohesive, medium plasticity	CL
41	21-100	1.4	6 5 5 5	(39.8-40') Sandy SILT, soft, dark ??, cohesive, low plasticity (40-42') Clayey SILT and some sandy SILT, stiff, dark grayish, wet, cohesive, low plasticity	ML ML/SM
43	22-100	0.4	3 4 6 6	(42-44') Clayey SILT, stiff, dark grayish, wet, cohesive, low plasticity	ML/CL
45	23-100	0.1	3 4 5 5	(44-46') Silty CLAY, stiff, very dark greenish gray, wet, cohesive, medium plasticity to high plasticity	CL/CH
47	24-100	0.0	W 1 5 4	(46-70') Clayey SILT and silty CLAY, soft, very dark greenish gray, wet, cohesive, medium plasticity	ML/CL
49	25-100	0.3	2 2 3 2		



COMPLETION DETAILS

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 23.6' Bottom: 33.9'
Total Screen: 10.3'

Filter Pack: FilPro W.G. #2 Sand
Top: 22.5' Bottom: 35.0'

4" Long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Note- 70' boring abandoned with grout. 2nd boring drilled to ~12' south to 35' TD for well install.

Monitoring Well Development
Date: 6/24/16
Purged Amount: 36 gal
Well Volumes Removed: 9

ARM Group Inc.
Earth Resource Engineers and Consultants

Well ID: SW-076-MWI

(page 3 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571138.83
Easting (ft)	: 1463610.23
Date/Time Started	: 6/17/16 / 1140
Date/Time Completed	: 6/21/16 / 1745
Surf. Elev. (ft AMSL)	: 13.93
TOC Elev. (ft AMSL)	: 16.45
Total Well Depth (ft)	: 36.4' (TOC)
Depth to Water (ft)	: 11.8' (TOC) 1810 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS	COMPLETION DETAILS
50						
	26-83	0.4	W W W 1	(46-70') Clayey SILT and silty CLAY, soft, very dark greenish gray, wet, cohesive, medium plasticity		
52	27-100	0.5	3 3 2 3			
54	28-100	0.3	1 5 4 5			
56	29-75	0.4	1 3 4 3			
58	30-100	0.2	W W 3.3			
60	31-100	0.6	2 4 3 4		ML/CL	
62	32-100	0.5	4 4 4 5			
64	33-100	0.4	W W W 4			
66	34-100	0.3	2 2 3 4			
68	35-100	0.3	6 5 6 4			
70				END OF BORING		
72						
74						

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Note- 70' boring abandoned with grout. 2nd boring drilled to ~12' south to 35' TD for well install.

Monitoring Well Development
Date: 6/24/16
Purged Amount: 36 gal
Well Volumes Removed: 9

ARM Group Inc.
Earth Resource Engineers and Consultants

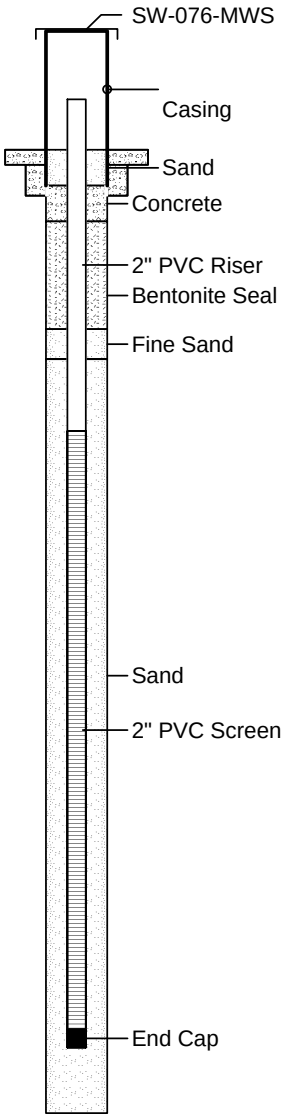
Well ID: SW-076-MWS

(page 1 of 1)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571145.33
Easting (ft)	: 1463609.59
Date/Time Started	: 6/22/16 / 0900
Date/Time Completed	: 6/22/16 / 1015 hr.
Surf. Elev. (ft AMSL)	: 13.79
TOC Elev. (ft AMSL)	: 16.36
Total Well Depth (ft)	: 17.4' (TOC)
Depth to Water (ft)	: 6.8' (TOC) / 1042 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-100	0.5	3 4 3 4	(0-1.3') Sandy Silt, medium stiff, dark brown to dark grayish brown with RMFs, slightly moist, cohesive, low plasticity	ML
				(1.3-6') SILT, medium stiff, pale olive brown with RMFs, moist, cohesive, low plasticity	
	2-75	0.3	2 5 8 8		ML
5	3-75	0.4	3 6 5 4		
	4-100	0.3	4 5 7 7	(6-7') SILT, stiff, dark gray brown with ??? faint RMFs, moist to very moist, cohesive, low plasticity	ML
				(7-9') Silty SAND, fine grained, medium dense, grayish brown to pale yellowish brown, distinct RMFs	SM/SW
	5-100	0.1	7 6 2 3	(9-10') Clayey SILT, medium soft, light gray with strong reddish yellow oxidation, wet	ML
10	6-88	4.2	2 2 3 2	(10-11.4') Silty SAND, loose, pale brown with RMFs, moist to wet, non plastic, non cohesive one ~1" SR white quartz gravel	SM/SW
				(11.4-16') Clayey SILT to silty CLAY, soft, dark gray to very dark gray, cohesive, low plasticity	
	7-100	0.2	1 2 2 2		ML/CL
15	8-100	0.8	W W W 2		
				END OF BORING	
20					



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.6'

Bentonite Seal:
Top: 1.2' Bottom: 3.0'

Fine Sand: FilPro #000
Top: 3.0' Bottom: 3.5'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 4.7' Bottom: 15.0'
Total Screen: 10.3'

Filter Pack: FilPro W.G. #2 Sand
Top: 3.0' Bottom: 16.1'

4" Long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 3/24/16
Purged Amount: 16 gal.
Well Volumes Removed: 8

ARM Group Inc.
Earth Resource Engineers and Consultants

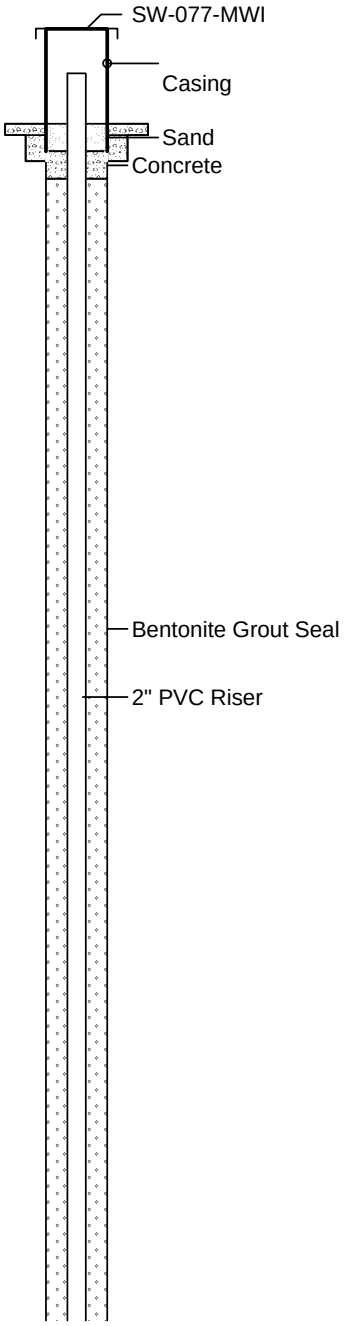
Well ID: SW-077-MWI

(page 1 of 2)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 572224.85
Easting (ft)	: 1463610.87
Date/Time Started	: 6/15/16 - 1545 hr.
Date/Time Completed	: 6/16/16 - 1600 hr.
Surf. Elev. (ft AMSL)	: 9.97
TOC Elev. (ft AMSL)	: 12.34
Total Well Depth (ft)	: 53.8' (TOC)
Depth to Water (ft)	: 10.3' (TOC) 6/16/16 (1650 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-100	0.2	16 13 13 11	(0-3.3') SAND and SLAG GRAVEL, medium dense, dark grayish brown, dry to moist, non plastic, non cohesive	SM/GM
2	2-50	0.3	12 14 50/3 -		
4	3-58	2.5	44 36 50/4 -	(3.3-7') Sandy SLAG, very dense, dark grayish brown, moist to very moist, non plastic, non cohesive	SM
6	4-80	10.2	24 50/4 - -		
8	5-63	0.7	10 17 15 7	(7-12') SLAG GRAVEL with SAND, dense to medium dense, light grayish and grayish black, whitish and greenish slag fragments, wet, non plastic, non cohesive	GW
10	6-63	0.7	4 9 7 3		
12	7-71	1.0	4 1 3 3	(12-14.5') Sandy SLAG, loose to medium dense, grayish to black, wet, non plastic, non cohesive	SW
14	8-71	0.6	6 2 2 1	(14.5-29.3') Clayey SILT with some SAND, soft to very soft, dark grayish brown, wet, cohesive, low plasticity to medium plasticity	
16	9-0	-	2 W W W		
18	10-54	0.1	W W 1 1		
20	11-100	0.2	W W W 1		ML/CL
22	12-54	0.1	W W W W		
24	13-100	0.2	W W W W		
26					



REMARKS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.4'

Slag fill 0-14.5' bgs

Native alluvium 14.5+

Bentonite/Grout Seal:
Top: 1.2' Bottom: 36.5.0'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 60 gal.
Well Volumes Removed: 8

ARM Group Inc.
Earth Resource Engineers and Consultants

Well ID: SW-077-MWI

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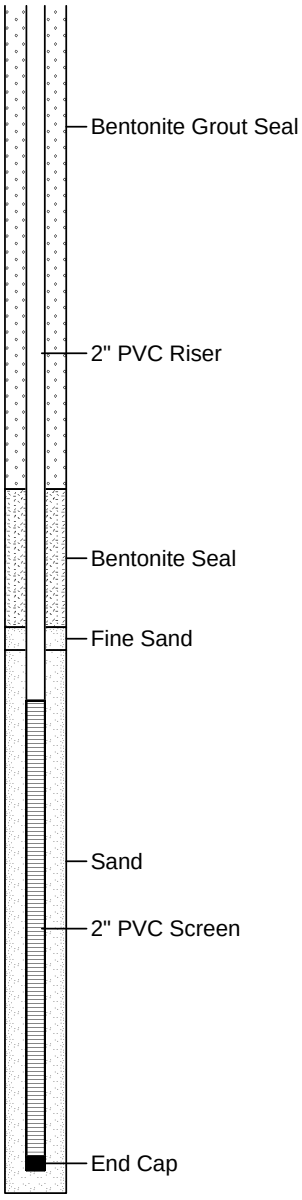
Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B-6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 572224.85
Easting (ft)	: 1463610.87
Date/Time Started	: 6/15/16 - 1545 hr.
Date/Time Completed	: 6/16/16 - 1600 hr.
Surf. Elev. (ft AMSL)	: 9.97
TOC Elev. (ft AMSL)	: 12.34
Total Well Depth (ft)	: 53.8' (TOC)
Depth to Water (ft)	: 10.3' (TOC) 6/16/16 (1650 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
26					
	14-100	0.2	W W W W		ML/CL
28	15-100	0.5	W W 1 2		
30	16-88	0.4	1 3 2 3	(29.3-30.5') Organic SILT (peat?), soft, black to very dark gray, moist, non plastic, non cohesive	ML/OL
				(30.5-31.8') SILT, soft, dray, wet, cohesive, low to medium plasticity	ML
32	17-100	0.3	W 2 3 4	(31.8-34') Silty CLAY, gray, wet, cohesive, medium to high plasticity	CL/CH
34	18-100	0.1	5 4 8 5	(34-36.7') Silty CLAY, medium stiff, gray to gray with common pale yellowish brown oxidation, wet, cohesive, high plasticity	CH
36	19-100	0.3	2 2 4 9	(36.7-38') Clayey SAND, medium dense, strong brownish yellow with chr 2 gray, wet, low plasticity	SC
38	20-100	0.1	2 7 6 5	(38-46') SAND, fine to medium grained, loose to dense, pale brown to light gray, faint high chr. oxidation, wet, non plastic, non cohesive	SW
40	21-100	0.8	1 3 4 6		
42	22-100	1.2	6 6 7 8		
44	23-100	1.4	5 14 23 13		
46	24-8	-	3 4 7 10	(46-51.8') SAND/CLAYEY SAND, medium dense to loose to medium dense, pale gray/yellow and grayish brown and dark red and yellowish brown, with trace oxidation, wet, cohesive	SW/SC
48	25-71	1.2	4 6 9 12		
50					
52					



REMARKS

Bentonite Seal:
Top: 36.5' Bottom: 39.5'

Fine Sand: FilPro #000
Top: 39.5' Bottom: 40.0'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 41.1' Bottom: 51.1'
Total Screen: 10.3'

Filter Pack: FilPro W.G. #2 Sand
Top: 40.0' Bottom: 51.8'

2" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 60 gal.
Well Volumes Removed: 8

ARM Group Inc.
Earth Resource Engineers and Consultants

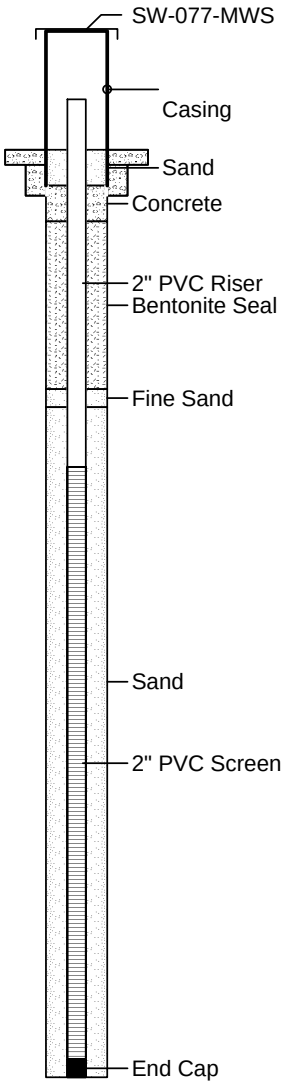
Well ID: SW-077-MWS

(page 1 of 1)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 572228.44
Easting (ft)	: 1463614.02
Date/Time Started	: 6/16/16
Date/Time Completed	: 6/16/16
Surf. Elev. (ft AMSL)	: 9.8
TOC Elev. (ft AMSL)	: 12.14
Total Well Depth (ft)	: 17.7' (TOC)
Depth to Water (ft)	: 12.3' (TOC) - 1810 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-100	0.2	16 13 13 11	(0-3.3') SAND and SLAG GRAVEL, medium dense, dark grayish brown, dry to moist, non plastic, non cohesive	SM/GM
	2-50	0.3	12 14 50/3 -		
5	3-58	2.5	44 36 50/4 -	(3.3-7') Sandy SLAG, very dense, dark grayish brown, moist to very moist, non plastic, non cohesive	SM
	4-80	10.2	24 50/4 - -		
	5-63	0.7	10 17 15 7	(7-12') SLAG GRAVEL with SAND, dense to medium dense, light grayish and grayish black, whitish and greenish slag fragments, wet, non plastic, non cohesive	GW
10	6-63	0.7	4 9 7 3		
	7-71	1.0	4 1 3 3	(12-14.5') Sandy SLAG, loose to medium dense, grayish to black, wet, non plastic, non cohesive	SW
	8-71	0.6	6 2 2 1	(14.5-15.5') Clayey SILT with some SAND, soft to very soft, dark grayish brown, wet, cohesive, low plasticity to medium plasticity	ML/CL
15				END OF BORING	
20					



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Bentonite Seal:
Top: 1.2' Bottom: 4.0'

Fine Sand: FilPro #000
Top: 4.0' Bottom: 4.3'

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.3'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 5.3' Bottom: 15.5'
Total Screen: 10.2'

Filter Pack: FilPro W.G. #2 Sand
Top: 4.0' Bottom: 15.5'

2" flush-threaded long PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 35 gal.
Well Volumes Removed: 13.6

ARM Group Inc.
Earth Resource Engineers and Consultants

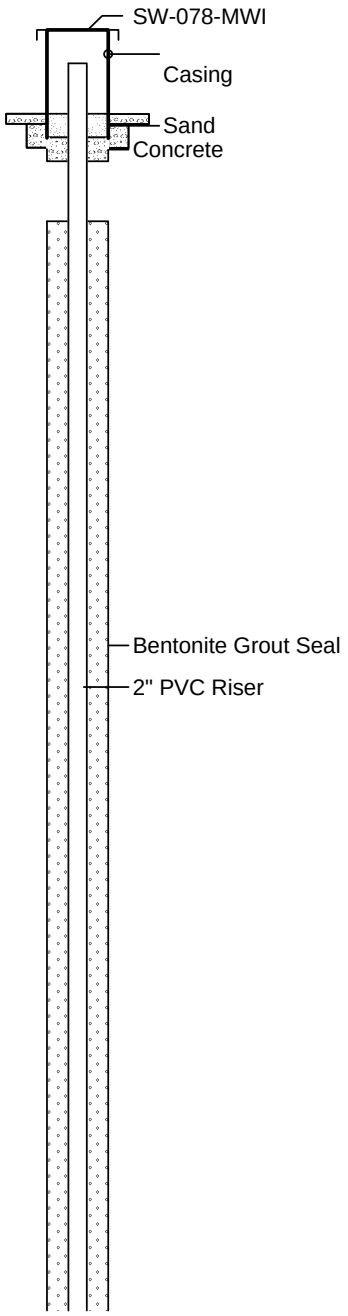
Well ID: SW-078-MWI

(page 1 of 2)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 572112.3
Easting (ft)	: 1460690.77
Date/Time Started	: 6/13/16 / 1620 hr.
Date/Time Completed	: 6/14/16 / 1020 hr.
Surf. Elev. (ft AMSL)	: 11
TOC Elev. (ft AMSL)	: 13.47
Total Well Depth (ft)	: 56.4' (TOC)
Depth to Water (ft)	: 12.9' (TOC) 6/14/16
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-75	1.2	26 27 32 30	(0-4') Sandy SLAG, very dense, dark grayish brown and dark brown, dry, non plastic, non cohesive, ~20% slag gravel (<2"), coal fragments	SW
2	2-58	1.8	28 36 30 32		
4	3-46	2.6	5 19 9 4	(4-6') Sandy SILT and SAND, stiff and medium dense, dark brown #$* black and light brownish yellow, moist (slag fill)	ML/SW
6	4-50	0.7	6 3 3 3	(6-12') SILT, medium to soft, dark olive gray with black organics grading to pale yellowish brown, common RMFs, moist to wet, cohesive, low to medium plasticity	ML
8	5-46	0.6	2 2 1 2		
10	6-100	0.1	2 3 5 4		
12	7-75	0.1	3 5 7 8	(12-16') Sandy SILT, medium stiff, grayish brown with many RMFs, strong reddish yellow and light gray, moist, cohesive, low plasticity	ML
14	8-67	0.2	6 10 7 6		
16	9-0	-	1 1 1 1	(16-21.3') Silty SAND, loose, strong yellowish red, moist, non plastic, non cohesive	SM
18	10-92	0.3	W 2 2 4		
20	11-63	0.6	3 4 1 2		
22	12-58	0.4	W W 2 2	(21.3-25') Sandy SILT/SILT, soft, dark gray, cohesive, low plasticity	ML
24	13-100	0.2	W W 1 2		
26	14-100	0.3	1 2 2 2	(25-29.3') SILT, soft, dark gray with black organic streaks, wet, cohesive, low plasticity	ML
28	15-100	0.5	W 1 2 5		
30				(29.3-31') Silty SAND, loose, dz# gray sig pias, wet, cohesive	SM/SW



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Prob base of slag at 6'

Native alluvium 6+

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.5'

Bentonite/Grout Seal:
Top: 1.2' Bottom: 39.0'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 55 gal.
Well Volumes Removed: 7.5

ARM Group Inc.
Earth Resource Engineers and Consultants

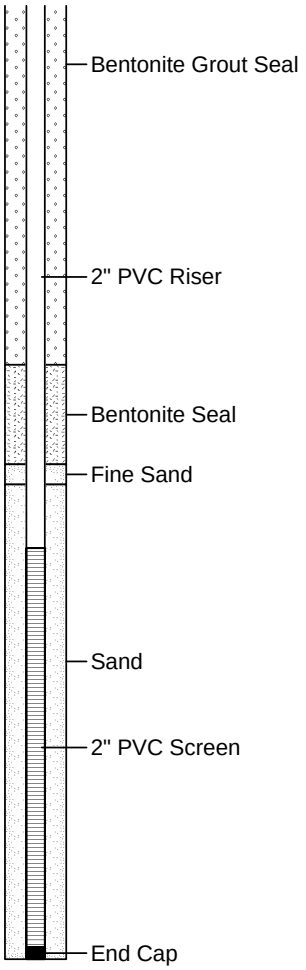
Well ID: SW-078-MWI

(page 2 of 2)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 572112.3
Easting (ft)	: 1460690.77
Date/Time Started	: 6/13/16 / 1620 hr.
Date/Time Completed	: 6/14/16 / 1020 hr.
Surf. Elev. (ft AMSL)	: 11
TOC Elev. (ft AMSL)	: 13.47
Total Well Depth (ft)	: 56.4' (TOC)
Depth to Water (ft)	: 12.9' (TOC) 6/14/16
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
30					
	16-83	1.2	2 1 2 2		SM/SW
32				(31-42') SILT, soft to medium, dark olive gray, very moist, cohesive, low to medium plasticity	
	17-100	0.3	W W 2 3		
34					
	18-100	0.8	W 2 2 2		
36					ML
	19-100	0.2	W W 2 2		
38					
	20-100	0.8	W 1 2 2		
40					
	21-100	0.3	W W 5 10		
42					
	22-63	0.8	2 6 8 10	(42-46') SAND, fine to coarse grained, loose to medium dense, pale olive gray to yellowish brown, wet, non plastic, non cohesive, common silver mica	SW
44					
	23-100	1.0	5 TO 10		
46					
	24-83	0.5	3 5 7 10	(46-54') SAND, fine to coarse grained, medium dense, pale greenish yellowish brown, ~30% SR quartz gravel in lower 12", non plastic, non cohesive	
48					
	25-79	0.9	3 4 9 10		
50					SW
	26-63	1.8	7 7 7 9		
52					
	27-100	1.3	7 11 11 10		
54				END OF BORING	
56					
58					
60					



COMPLETION DETAILS

Bentonite Seal:
Top: 39' Bottom: 41.5'

Fine Sand: FilPro #000
Top: 41.5' Bottom: 42.0'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 42.0' Bottom: 53.9'
Total Screen: 10.3'

Filter Pack: FilPro W.G. #2 Sand
Top: 41.5' Bottom: 53.9'

4" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 55 gal.
Well Volumes Removed: 7.5

ARM Group Inc.
Earth Resource Engineers and Consultants

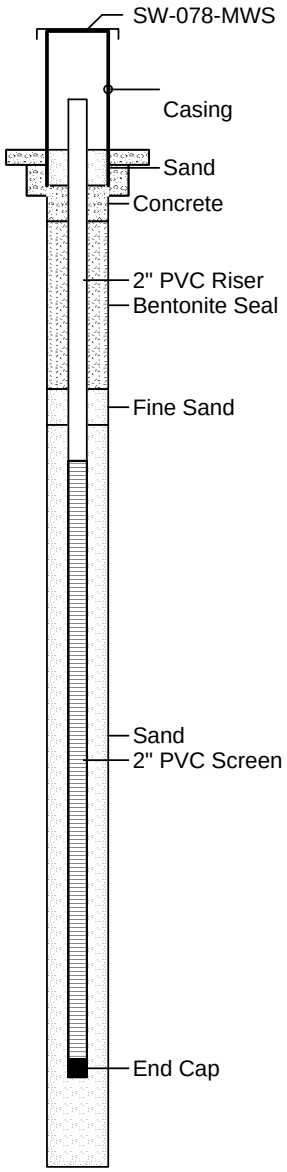
Well ID: SW-078-MWS

(page 1 of 1)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 572115.04
Easting (ft)	: 1460695.61
Date/Time Started	: 6/15/16 / 0935
Date/Time Completed	: 6/15/16 / 1020
Surf. Elev. (ft AMSL)	: 11.13
TOC Elev. (ft AMSL)	: 13.44
Total Well Depth (ft)	: 18.0' (TOC)
Depth to Water (ft)	: 8.3' (TOC) 6/15/16 - 1130 hr.
Depth to Water (ft)	:
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	DESCRIPTION	USCS
0	1-75	1.2	26 27 32 30	(0-4') Sandy SLAG, very dense, dark grayish brown and dark brown, dry, non plastic, non cohesive, ~20% slag gravel (<2"), coal fragments	SW
2	2-58	1.8	28 36 30 32		
4	3-46	2.6	5 19 9 4	(4-6') Sandy SILT and SAND, stiff and medium dense, dark brown #$* black and light B yellowish, moist	ML/SW
6	4-50	0.7	6 3 3 3	(6-12') SILT, medium to soft, dark olive gray with black organics grading to pale yellowish brown, common RMFs, moist to wet, cohesive, low to medium plasticity	ML
8	5-46	0.6	2 2 1 2		
10	6-100	0.1	2 3 5 4		
12	7-75	0.1	3 5 7 8	(12-16') Sandy SILT, medium stiff, grayish brown with many RMFs, strong reddish yellow and light gray, moist, cohesive, low plasticity	ML
14	8-67	0.2	6 10 7 6		
16	9-0	-	1 1	(16-17') Silty SAND, loose, strong yellowish red, moist, non plastic, non cohesive	SM
				END OF BORING	
18					
20					



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Bentonite Seal:
Top: 1.2' Bottom: 4.0'

Fine Sand: FilPro #000
Top: 4.0' Bottom: 4.6'

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.3'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 5.2' Bottom: 15.5'
Total Screen: 10.3'

Filter Pack: FilPro W.G. #2 Sand
Top: 4.0' Bottom: 17.0'

4" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 12 gal.
Well Volumes Removed: 8

ARM Group Inc.
Earth Resource Engineers and Consultants

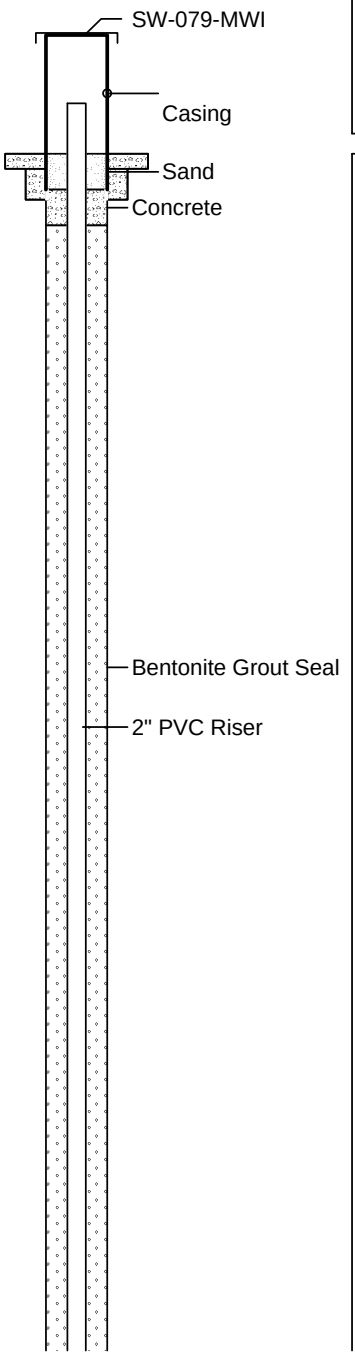
Well ID: SW-079-MWI

(page 1 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 569137.43
Easting (ft)	: 1460072.19
Date/Time Started	: 6/8/16 / 0946
Date/Time Completed	: 6/9/16 / 1235
Surf. Elev. (ft AMSL)	: 11.91
TOC Elev. (ft AMSL)	: 14.19
Total Well Depth (ft)	: 56.8' (TOC)
Depth to Water (ft)	: 14.7' (TOC) 6/9/16 / 1555 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0						
1	1-83		0.2	11 13 14 70	(0-8') Sandy SLAG, medium grained to coarse grained, dense to very dense, dark brown, dark gray to black, some whitish and dark reddish brown colors, dry, non plastic, non cohesive, ~30% slag gravels <2"	SW
2						
3	2-42		1.7	28 35 50/2 -		
4						
5	3-100		0.0	9 12 4 3		
6						
7	4-75		0.4	6 6 7 12		
8						
9	5-42		1.3	6 3 2 5	(8-13') Sandy and gravelly SLAG, loose, dark grayish brown and dark brown, loose to medium dense, moist to wet, non plastic, non cohesive	SW/GW
10						
11	6-42		0.2	8 9 9 5		
12						
13	7-75		0.8	2 1 1 2	(13-15.5') Clayey SILT, very soft, dark grayish, low plasticity, cohesive	ML
14						
15	8-42		0.3	W 1 W 1		
16					(15.5-17') SAND, very loose, dark grayish, wet, with some chemical or petro odor, non plastic, non cohesive	SW
17	9-100		0.7	W W 1 1	(17-23') Clayey SILT with some SAND, very soft, dark gray to pale gray with RMFs, cohesive, low plasticity	ML
18						
19	10-100		0.1	W W W W		
20						



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.3'

Base of slag fill at 13'
Native alluvium 13+

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/22/16
Purged Amount: 77 gal.
Well Volumes Removed: 12.5

ARM Group Inc.
Earth Resource Engineers and Consultants

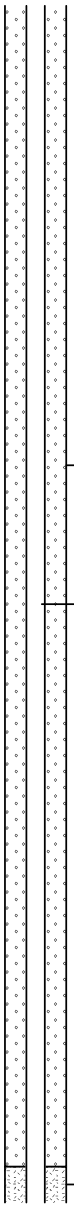
Well ID: SW-079-MWI

(page 2 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 569137.43
Easting (ft)	: 1460072.19
Date/Time Started	: 6/8/16 / 0946
Date/Time Completed	: 6/9/16 / 1235
Surf. Elev. (ft AMSL)	: 11.91
TOC Elev. (ft AMSL)	: 14.19
Total Well Depth (ft)	: 56.8' (TOC)
Depth to Water (ft)	: 14.7' (TOC) 6/9/16 / 1555 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
20						
21	11-100		0.1	4 4 3 4	(17-23') Clayey SILT with some SAND, very soft, dark gray to pale gray with RMFs, cohesive, low plasticity	ML
22						
23	12-100		0.1	6 4 4 6	(23-27') SAND to silty SAND, loose to medium dense, dark grayish brown, wet, with small SR quartz gravel, cohesive, low plasticity	SW/SM/ML
24						
25	13-100		0.1	W W W W		
26						
27	14-100		0.0	W W 3 4	(27-34') Sandy SILT, sandy GRAVEL, gravelly SAND, soft, loose, dark brownish gray and dark grayish, cohesive, low plasticity	ML/GW/SW
28						
29	15-100		0.5	3 5 2 6		
30						
31	16-100		0.1	3 4 5 6		
32						
33	17-100		0.1	W W 2 2		
34						
35	18-83		0.4	2 2 2 2	(34-35') SAND, fine to medium grained, loose, dark grayish, very moist to wet, non plastic, non cohesive	SW
36					(35-43') Clayey SILT, soft, dark gray, wet to very moist, cohesive, low plasticity	
37	19-92		0.2	3 5 8 2		ML
38						
39	20-100		0.1	W W 2 2		
40						



COMPLETION DETAILS

Bentonite/Grout Seal:
Top: 1.2' Bottom: 39.4'

Bentonite Seal:
Top: 39.4' Bottom: 41.6'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/22/16
Purged Amount: 77 gal.
Well Volumes Removed: 12.5

ARM Group Inc.
Earth Resource Engineers and Consultants

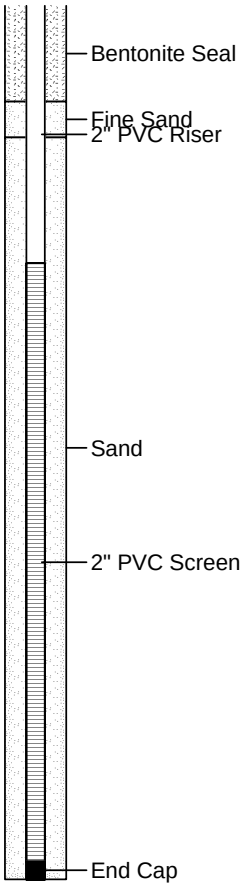
Well ID: SW-079-MWI

(page 3 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 569137.43
Easting (ft)	: 1460072.19
Date/Time Started	: 6/8/16 / 0946
Date/Time Completed	: 6/9/16 / 1235
Surf. Elev. (ft AMSL)	: 11.91
TOC Elev. (ft AMSL)	: 14.19
Total Well Depth (ft)	: 56.8' (TOC)
Depth to Water (ft)	: 14.7' (TOC) 6/9/16 / 1555 hr.
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
40					
41	21-100	0.1	W 1 2 3	(35-43') Clayey SILT, soft, dark gray, wet to very moist, cohesive, low plasticity	ML
42					
43	22-100	0.0	4 7 18 25	(43-48') SAND with GRAVEL, fine to coarse grained, dense, brownish gray to grayish brown, wet, non plastic, non cohesive	SW
44					
45	23-67	0.0	W W W 1		
46					
47	24-75	0.3	3 20 30 50		
48					
49	25-54	0.3	3 8 13 11	(48-54.6') SAND, fine to medium grained, medium dense, grayish and brownish gray and brown, wet, non plastic, non cohesive, some fine to medium SR quartz gravel (<1/4")	SW
50					
51	26-63	0.3	4 5 8 9		
52					
53	27-100	0.3	8 11 18 12		
54					
55				END OF BORING	
56					
57					
58					
59					
60					



COMPLETION DETAILS

Fine Sand: FilPro #000
Top: 41.6' Bottom: 42.2'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 44.3' Bottom: 54.6'
Total Screen: 10.3'

Filter Pack: FilPro W.G. #2 Sand
Top: 41.6' Bottom: 54.6'

4" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/22/16
Purged Amount: 77 gal.
Well Volumes Removed: 12.5

ARM Group Inc.
Earth Resource Engineers and Consultants

Well ID: SW-079-MWS

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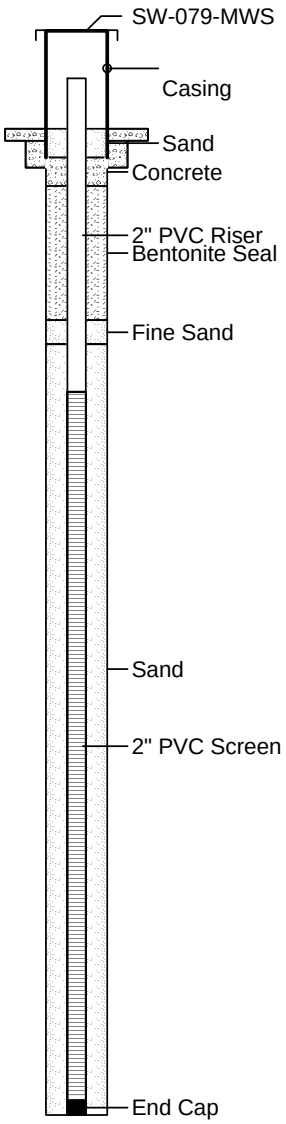
Project Name	: Sparrows Point	Northing (ft)	: 569137.88
Project Number	: 150300M-21-3	Easting (ft)	: 1460079.67
Client	: EnviroAnalytics Group	Date/Time Started	: 6/8/16 / 1355
Site	: Finishing Mills	Date/Time Completed	: 6/8/16 / 1500
Borehole Location	: Parcel B21	Surf. Elev. (ft AMSL)	: 11.85
ARM Representative	: W. Mader, P.G., CPSS	TOC Elev. (ft AMSL)	: 14.21
Checked by	: W. Mader, P.G., CPSS	Total Well Depth (ft)	: 23.1' (TOC)
Drilling Company	: Allied Well Drilling	Depth to Water (ft)	: 12.7' (TOC) 6/8/16
Driller	: Mike Waller, Ryan Sites	Depth to Water (ft)	: -
Drilling Equipment	: Diedrich-D120	Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#/%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0	1-83	0.2	11 70 13 14	(0-8') Sandy SLAG, medium grained to coarse grained, dense to very dense, dark brown, dark gray to black, some whitish and dark reddish brown colors, dry, non plastic, non cohesive, ~30% slag gravels <2"	SW
2	2-42	1.7	28 35 50/2 -		
4	3-100	0.0	9 12 4 3		
6	4-75	0.4	6 6 7 12		
8	5-42	1.3	6 3 2 5	(8-13') Sandy and gravelly SLAG, loose, dark grayish brown and dark brown, loose to medium dense, moist to wet, non plastic, non cohesive	SW/GW
10	6-42	0.2	8 9 9 5		
12	7-75	0.8	2 1 1 2	(13-15.5') Clayey SILT, very soft, dark grayish, low plasticity, cohesive	ML
14	8-42	0.3	W 1 W 1		
16	9-100	0.7	W W 1 1	(15.5-17') SAND, very loose, dark grayish, wet, with some chemical or petro odor, non plastic, non cohesive	SW
18	10-100	0.1	W W W W	(17-20.6') Clayey SILT with some SAND, very soft, dark gray to pale gray with RMFs, cohesive, low plasticity	ML
20				END OF BORING	
22					
24					



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.4'

Bentonite Seal:
Top: 1.2' Bottom: 4.0'

Fine Sand: FilPro #000
Top: 4.0' Bottom: 4.5'

Base of slag at 13'

Native alluvium at 13'+

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 5.5' Bottom: 20.6'
Total Screen: 10.1'

2" long PVC slip cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/22/16
Purged Amount: 29 gal.
Well Volumes Removed: 16.5

ARM Group Inc.
Earth Resource Engineers and Consultants

Well ID: SW-080-MWI

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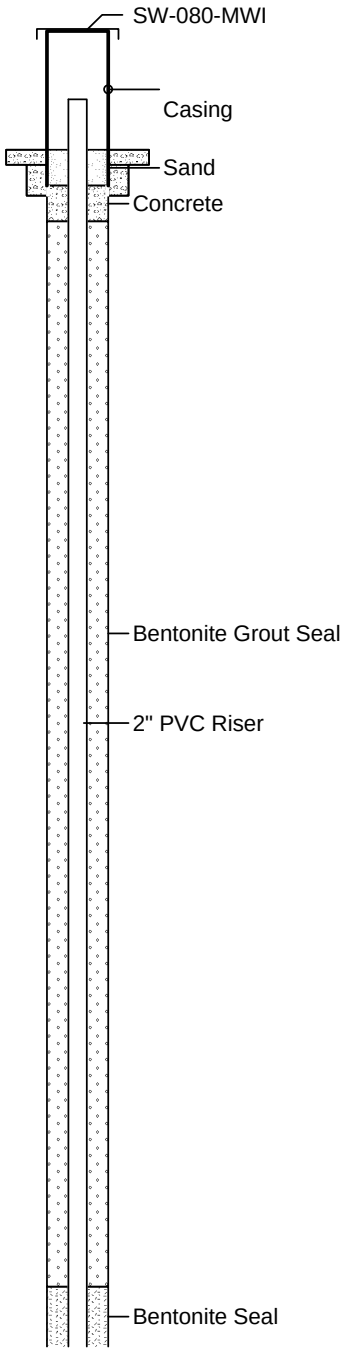
Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 570166.41
Easting (ft)	: 1463672.56
Date/Time Started	: 6/24/16 / 0910 hr.
Date/Time Completed	: 6/27/16 / 1720 hr.
Surf. Elev. (ft AMSL)	: 12.01
TOC Elev. (ft AMSL)	: 13.85
Total Well Depth (ft)	: 36.6' (TOC)
Depth to Water (ft)	: 8.75' (TOC) 6/27/16 (1800 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0–1	1-71		6.7	8 12 8 5	(0-1') Silty SAND SLAG, medium dense, dark brown, brown, bluish green SLAG, moist, cohesive	SM
1–2					(1-2') SILT, stiff, pale yellow brown with oxidation, moist, cohesive	ML
2–3	2-100		5.4	3 4 3 3	(2-8') SILT to clayey SILT, medium to very stiff, pale brown with many RMFs, moist, cohesive, low to medium plasticity	ML/CL
4–5	3-46		2.2	3 5 9 8		
6–7	4-46		0.3	7 10 10 10		
8–9	5-75		0.2	3 7 5 7	(8-11.3') Silty SAND, some CLAY, loose to medium dense, pale gray and yellowish brown to strong brown, non plastic, non cohesive	SM
10–11	6-83		1.0	1 3 2 2		
11–12					(11.3-12') Clayey SILT, soft, pale gray and pale brown with RMFs, wet	ML
12–13	7-83		0.9	2 2 2 2	(12-14') Silty SAND, loose, strong reddish yellow, wet, non plastic, non cohesive	SM
14–15	8-100		0.5	W W 1 3	(14-18') Clayey SILT, silty CLAY, very soft, pale grayish with many RMFs, wet, cohesive, low to medium plasticity	ML/CL
16–17	9-100		1.0	1 3 2 2		
18–19	10-92		1.7	W 2 3 3	(18-19') Sandy SILT to silty SAND, medium to loose, dark gray, wet, cohesive to non cohesive	ML-SM
19–20					(19-26.3') SAND, fine to medium grained, very loose, very dark gray, wet, non plastic, non cohesive	SW



COMPLETION DETAILS

4.25" Protective Steel Casing
w/Locking Lid
Weep hole approximately 6"
above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 1.8'

Bentonite/Grout Seal:
Top: 1.2' Bottom: 19.0'

Bentonite Seal:
Top: 19.0' Bottom: 21.5'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/29/16
Purged Amount: 47 gal.
Well Volumes Removed: 11

ARM Group Inc.
Earth Resource Engineers and Consultants

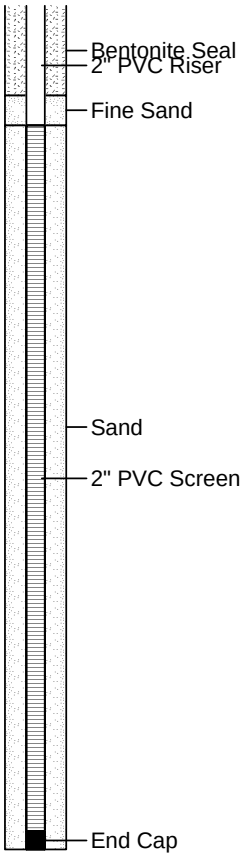
Well ID: SW-080-MWI

(page 2 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 570166.41
Easting (ft)	: 1463672.56
Date/Time Started	: 6/24/16 / 0910 hr.
Date/Time Completed	: 6/27/16 / 1720 hr.
Surf. Elev. (ft AMSL)	: 12.01
TOC Elev. (ft AMSL)	: 13.85
Total Well Depth (ft)	: 36.6' (TOC)
Depth to Water (ft)	: 8.75' (TOC) 6/27/16 (1800 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
20					
21	11-42	1.3	W 1 1 1	(19-26.3') SAND, fine to medium grained, very loose, very dark gray, wet, non plastic, non cohesive	SW
22					
23	12-100	2.4	2 2 3 3		
24					
25	13-0	-	W 1 1 4		
26					
27	14-100	1.5	13 9 8 8	(26.3-27') Clayey SILT, medium stiff, dark gray, wet, cohesive, low plasticity	ML
				(27-28.3') Sandy SILT to silty SAND, medium to loose, dark gray, wet, cohesive to non cohesive	SW
28					
29	15-83	1.9	9 6 3 1	(28.3-29') Clayey SILT, medium stiff, dark gray, wet, cohesive, low plasticity	ML
30				(29-32.8') SAND, fine to medium grained, loose, dark grayish brown, wet, non plastic, non cohesive	SW
31	16-75	2.3	3 3 4 4		
32					
33	17-100	1.8	W 2 2 3	(32.8-33.5') Clayey SILT, soft, dark grayish brown, wet, organic streak and fibers black	ML
34				(33.5-34.8') Clayey sandy SILT, soft, dark gray, wet	ML/SM
35	18-100	0.1	2 2 3 3	(34.5-37.3') Clayey SILT and Silty SAND, soft, dark gray, dark grayish brown, black organic streaks, wet, cohesive, low to medium plasticity	ML
36					
37	19-100	1.3	3 3 4 4		
38				(37.3-38') Clayey and silty SAND or sandy CLAY, loose, dark grayish brown, wet	SM/SC/CL
39	20-100	0.7	3 3 3 3	(38-42') Clayey SILT with very fine SAND, soft, dark gray, wet, cohesive, low to medium plasticity, possible whitish shell debris	ML/SM
40					



COMPLETION DETAILS

Bentonite Seal:
Top: 19.0' Bottom: 21.5'

Fine Sand: FilPro #000
Top: 19.0' Bottom: 21.5'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 23.9' Bottom: 34.1'
Total Screen: 10.0'

Filter Pack: FilPro W.G. #2 Sand
Top: 21.5' Bottom: 34.1'

2 1/2" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/29/16
Purged Amount: 47 gal.
Well Volumes Removed: 11

ARM Group Inc.
Earth Resource Engineers and Consultants

Well ID: SW-080-MWI

(page 3 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 570166.41
Easting (ft)	: 1463672.56
Date/Time Started	: 6/24/16 / 0910 hr.
Date/Time Completed	: 6/27/16 / 1720 hr.
Surf. Elev. (ft AMSL)	: 12.01
TOC Elev. (ft AMSL)	: 13.85
Total Well Depth (ft)	: 36.6' (TOC)
Depth to Water (ft)	: 8.75' (TOC) 6/27/16 (1800 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS	COMPLETION DETAILS
40						
41	21-100	0.7	3 3 3 3	(38-42') Clayey SILT with very fine SAND, soft, dark gray, wet, cohesive, low to medium plasticity, possible whitish shell debris	ML/SM	
42						
43	22-100	0.9	2 5 3 4	(42-54') SILT to clayey SILT, soft, dark gray to dark gray black, very moist, cohesive, low to medium plasticity, numerous whitish shell fragments		
44						
45	23-100	0.6	W W 2 3			
46						
47	24-100	0.0	2 3 3 3			
48					ML/CL	
49	25-100	0.8	2 2 3 3			
50						
51	26-100	0.9	2 3 2 3			
52						
53	27-100	1.0	2 3 4 3			
54						
55	28-100	0.7	W 3 4 3	(54-60') SILT to clayey SILT, soft, dark gray to dark gray black, very moist, cohesive, low to medium plasticity		
56						
57	29-100	0.6	3 3 4 4		ML/CL	
58						
59	30-100	0.5	4 3 4 4			
60						

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/29/16
Purged Amount: 47 gal.
Well Volumes Removed: 11

ARM Group Inc.
Earth Resource Engineers and Consultants

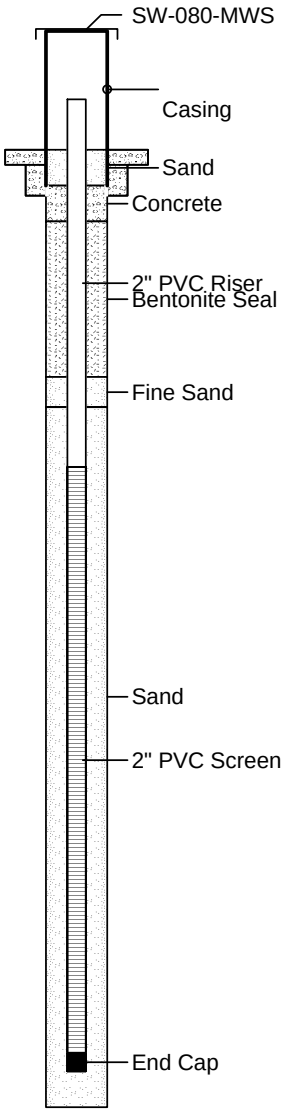
Well ID: SW-080-MWS

(page 1 of 1)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 570161.03
Easting (ft)	: 1463670.6
Date/Time Started	: 6/27/16 / 1150
Date/Time Completed	: 6/27/16 / 1250
Surf. Elev. (ft AMSL)	: 11.96
TOC Elev. (ft AMSL)	: 14.07
Total Well Depth (ft)	: 17.9' (TOC)
Depth to Water (ft)	: 5.85' (TOC) 6/27/16 (1755 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0–1	1-71	6.7	8 12 8 5	(0-1') Silty SAND SLAG, medium dense, dark brown, brown, bluish green SLAG, moist, cohesive	SM
1–2				(1-2') SILT, stiff, pale yellow brown with oxidation, moist, cohesive	ML
2–3	2-100	5.4	3 4 3 3	(2-8') SILT to clayey SILT, medium to very stiff, pale brown with many RMFs, moist, cohesive, low to medium plasticity	ML/CL
4–5	3-46	2.2	3 5 9 8		
6–7	4-46	0.3	7 10 10 10		
8–9	5-75	0.3	3 7 5 7	(8-11.3') Silty SAND, some CLAY, loose to medium dense, pale gray and yellowish brown to strong brown, non plastic, non cohesive	SM
10–11	6-83	1.0	1 3 2 2		
11–12				(11.3-12') Clayey SILT, soft, pale gray and pale brown with RMFs, wet	ML
12–13	7-83	0.9	2 2 2 2	(12-14') Silty SAND, loose, strong reddish yellow, wet, non plastic, non cohesive	SM
14–15	8-100	0.5	W W 1 3	(14-16') Clayey SILT, silty CLAY, very soft, pale grayish with many RMFs, wet, cohesive, low to medium plasticity	ML/CL
16				END OF BORING	



COMPLETION DETAILS

Base of slag at 1'
Native alluvium 1' +

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap
Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.1'

Bentonite Seal:
Top: 1.2' Bottom: 3.8'

Fine Sand: FilPro #000
Top: 3.8' Bottom: 4.3'

Filter Pack: FilPro W.G. #2 Sand
Top: 4.3' Bottom: 16'

2 1/2" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/29/16
Purged Amount: 26 gal.
Well Volumes Removed: 10

ARM Group Inc.
Earth Resource Engineers and Consultants

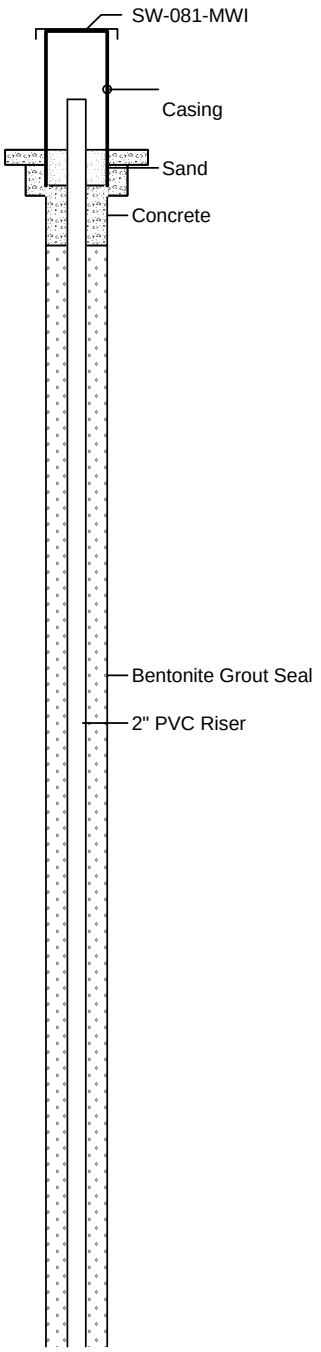
Well ID: SW-081-MWI

(page 1 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 569928.64
Easting (ft)	: 1459928.00
Date/Time Started	: 6/22/16 / 1205 hr.
Date/Time Completed	: 6/23/16 / 1350 hr.
Surf. Elev. (ft AMSL)	: 10.02
TOC Elev. (ft AMSL)	: 12.49
Total Well Depth (ft)	: 56.1' (TOC)
Depth to Water (ft)	: 11.8' (TOC) 6/23/16 (1635 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0						
1	1-58		2.0	5 21 24 13	(0-0.5') Silty SAND, fine to medium grained, dense, medium brown, dry, non plastic, non cohesive, some roots/topsoil fill	SM
2						SW
3	2-25		1.4	10 12 8 7	(0.5-2') Gravelly SAND SLAG, dense, light gray and brown, dry, non plastic, non cohesive (2-10') SAND and GRAVEL SLAG, medium dense to loose, olive gray, brown, dry to very moist, non plastic, non cohesive, some SLAG has reddish-brown oxidation	
4						
5	3-25		2.6	5 7 8 9		
6						SW/GW
7	4-21		21.1	3 4 4 5		
8						
9	5-25		54.0	8 3 4 6		
10						
11	6-21		7.6	3 3 2 1	(10-11') Clayey SILT and SLAG GRAVEL, loose, olive gray and reddish brown, wet, cohesive, medium plasticity	GM
12					(11-13') Clayey SILT, trace SAND, soft, olive gray and reddish brown, wet, cohesive, low plasticity	ML
13	7-100		10.1	3 3 15 25	(13-16') SAND and GRAVEL SLAG, dense, very dark gray, very moist to wet, non plastic, non cohesive	
14						SW/GW
15	8-75		13.1	8 15 14 5		
16						
17	9-67		3.2	2 2 3 1	(16-16.5') Sandy SILT, soft, olive gray, wet, cohesive, slight pungent odor (16.5-19') Silty SAND (black) to medium SAND (dark gray), loose, wet, non plastic, non cohesive, very pungent petroleum like odor	ML SM/SW
18						
19	10-100		1.4	1 W W W	(19-21') Silty SAND, very loose, dark gray, wet, non plastic, non cohesive	SM
20						



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.9'

Approximate base of slag is 19'

Native alluvium at 19' +

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 45 gal.
Well Volumes Removed: 6

ARM Group Inc.
Earth Resource Engineers and Consultants

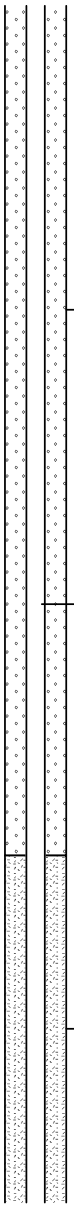
Well ID: SW-081-MWI

(page 2 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 569928.64
Easting (ft)	: 1459928.00
Date/Time Started	: 6/22/16 / 1205 hr.
Date/Time Completed	: 6/23/16 / 1350 hr.
Surf. Elev. (ft AMSL)	: 10.02
TOC Elev. (ft AMSL)	: 12.49
Total Well Depth (ft)	: 56.1' (TOC)
Depth to Water (ft)	: 11.8' (TOC) 6/23/16 (1635 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
20					
21	11-100	0.4	W W W 1		SM
22				(21-22.8') Silty SAND and sandy SILT, loose-soft, cark olive gray, wet, cohesive, low plasticity	SM/ML
23	12-100	0.8	4 6 7 7	(22.8-23.1') Sandy SILT, medium stiff, dark gray, cohesive, low plasticity	ML
24				(23.1-24.7') Silty SAND, medium dense, loose, yellowish brown to gray, very moist	SM
25	13-75	0.4	W W W 1	(24.7-26') Silty CLAY and Clayey SILT, soft, medium gray, cohesive, medium plasticity, RBR	ML/CL
26					SM/SC
27	14-88	0.2	W 2 2 2	(26-27') Clayey silty SAND, fovt, yellowish brown, cohesive	
28				(27-29.5') Silty CLAY, soft, weak red, very moist to wet, cohesive, medium plasticity	CL/ML
29	15-71	0.4	W 3 11 9		
30				(29.5-31') Silty SAND, medium dense to loose, yellowish brown with some gray, wet, non plastic, non cohesive	SM
31	16-83	1.2	W 1 W 1	(31-32') C;aueu SILT, soft, light gray with common yellowish brown oxidation, cohesive, low plasticity	ML
32					SW
33	17-83	1.7	1 1 1 1	(32-32.5') SAND, fine to medium grained, loose, pale brownish gray, non plastic, non cohesive	SC/CL
34				(32.5-32.9') Clayey SAND, soft, pale grayish brown	SW
35	18-79	0.5	1 W W 1	(32.9-34') SAND, fine to medium grained, loose, pale brownish gray, non plastic, non cohesive	
36					
37	19-83	1.8	1 2 2 3	(34-40') Clayey SILT, soft, yellowish brown and gray, wet to moist, cohesive, low plasticity, many pale yellowish brown oxidation	ML
38					
39	20-100	1.1	W W 4 6		
40					



COMPLETION DETAILS

Bentonite/Grout Seal:
Top: 1.6' Bottom: 39.2'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 45 gal.
Well Volumes Removed: 6

ARM Group Inc.
Earth Resource Engineers and Consultants

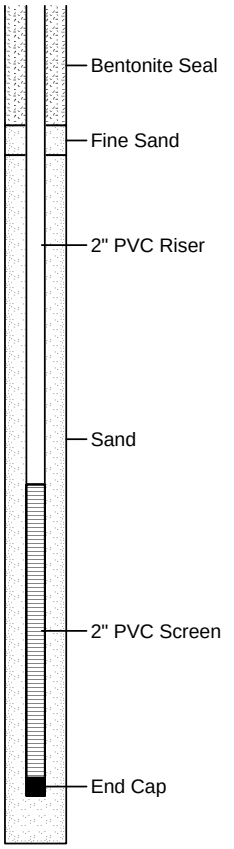
Well ID: SW-081-MWI

(page 3 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 569928.64
Easting (ft)	: 1459928.00
Date/Time Started	: 6/22/16 / 1205 hr.
Date/Time Completed	: 6/23/16 / 1350 hr.
Surf. Elev. (ft AMSL)	: 10.02
TOC Elev. (ft AMSL)	: 12.49
Total Well Depth (ft)	: 56.1' (TOC)
Depth to Water (ft)	: 11.8' (TOC) 6/23/16 (1635 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
40						
41	21-100		0.7	6 6 9 10	(40-41') CLAY and silty SAND, medium dense, pale grownish gray with strong red oxidation, common small sub-rounded quartz gravel, very moist	SW/SC
42					(41-42') Clayey SILT, soft, dark gray, cohesive, low plasticity, bottom becoming sandy	ML
43	22-100		3.9	5 6 10 10	(42-44') Silty SAND, loose to medium dense, grayish brown with yellowish brown oxidized zones, very moist, non plastic, non cohesive	SM
44						
45	23-100		1.9	6 4 4 8	(44-50') SAND, fine to coarse grained, loose to medium dense, mixed dark grayish brown and dark yellowish brown, wet, non plastic, non cohesive, trace SR-R quartz gravels (< 1/2")	SW
46						
47	24-100		0.8	3 4 6 4		
48						
49	25-100		1.5	4 4 5 4		
50						
51	26-100		2.8	7 22 15 50	(50-52') SAND, medium to coarse grained, dense, grayish brown and yellowish brown, wet, non plastic, non cohesive, common SR-R small quartz gravel, common RY and pale yellow oxidation	SW
52						
53	27-46		0.9	6 12 12 18	(52-54') SAND, fine to coarse grained, medium dense, brown and yellowish brown, wet, non plastic, non cohesive	SW
54					END OF BORING	
55						
56						
57						
58						
59						
60						



COMPLETION DETAILS

Bentonite Seal:
Top: 39.2' Bottom: 42.0'

Fine Sand: FilPro #000
Top: 42' Bottom: 42.5'

Filter Pack: FilPro W.G. #2 Sand
Top: 42.5' Bottom: 54.0'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 48.0' Bottom: 53.2'
Total Screen: 5.2'

2 3/4" long
flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 45 gal.
Well Volumes Removed: 6

ARM Group Inc.
Earth Resource Engineers and Consultants

Well ID: SW-081-MWS

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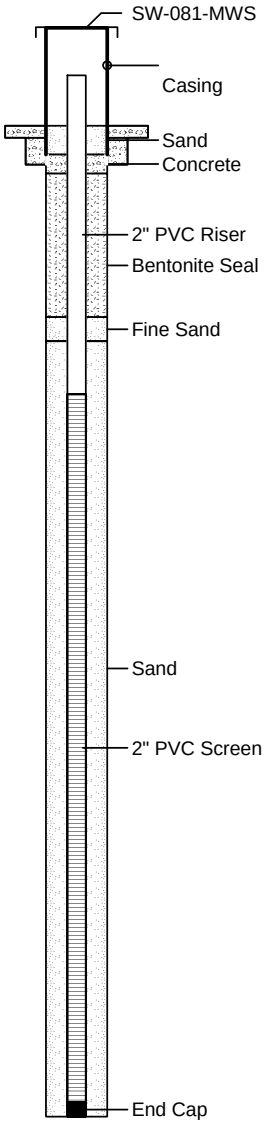
Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 569933.18
Easting (ft)	: 1459925.44
Date/Time Started	: 6/7/16 / 1500
Date/Time Completed	: 6/7/16 / 1600
Surf. Elev. (ft AMSL)	: 10.03
TOC Elev. (ft AMSL)	: 12.53
Total Well Depth (ft)	: 23.2' (TOC)
Depth to Water (ft)	: ???' (TOC) 6/?/16
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0						
1	1-58		2.0	5 21 24 13	(0-0.5') Silty SAND, fine to medium grained, dense, medium brown, dry, non plastic, non cohesive, some roots/topsoil fill	SM SW
2						
3	2-25		1.4	10 12 8 7	(0.5-2') Gravelly SAND SLAG, dense, light gray and brown, dry, non plastic, non cohesive	
4						
5	3-25		2.6	5 7 8 9	(2-10') SAND and GRAVEL SLAG, medium dense to loose, olive gray, brown, dry to very moist, non plastic, non cohesive, some SLAG has reddis-brown oxidation	SW/GW
6						
7	4-21		21.1	3 4 4 5		
8						
9	5-25		54.0	8 3 4 6		
10						
11	6-21		7.6	3 3 2 1	(10-11') Clayey SILT and SLAG GRAVEL, loose, olive gray and reddish brown, wet, cohesive, medium plasticity	GM
12					(11-13') Clayey SILT, trace SAND, soft, olive gray and reddish brown, wet, cohesive, low plasticity	ML
13	7-100		10.1	3 3 15 25		
14					(13-16') SAND and GRAVEL SLAG, dense, very dark gray, very moist to wet, non plastic, non cohesive	SW/GW
15	8-75		13.1	8 15 14 5		
16						
17	9-67		3.2	2 2 3 1	(16-16.5') Sandy SILT, soft, olive gray, wet, cohesive, slight pungent odor	ML
18					(16.5-19') Silty SAND (black) to medium SAND (dark gray), loose, wet, non plastic, non cohesive, very pungent petroleum like odor	SM/SW
19	10-100		1.4	1 W W W		
20					(19-20.7') Silty SAND, very loose, dark gray, wet, non plastic, non cohesive	SM
21					END OF BORING	
22						
23						
24						
25						



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Fine Sand: FilPro #000
Top: 4' Bottom: 4.5'

Bentonite Seal:
Top: 1.0' Bottom: 4.0'

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.5'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 5.6' Bottom: 20.7'
Total Screen: 10.1'

Filter Pack: FilPro W.G. #2 Sand
Top: 4.5' Bottom: 20.7'

Approximate base of slag/fill is 19'
Native alluvium at 19' +

2 3/4" long
fllush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/23/16
Purged Amount: 25 gal.
Well Volumes Removed: 13.75

ARM Group Inc.
Earth Resource Engineers and Consultants

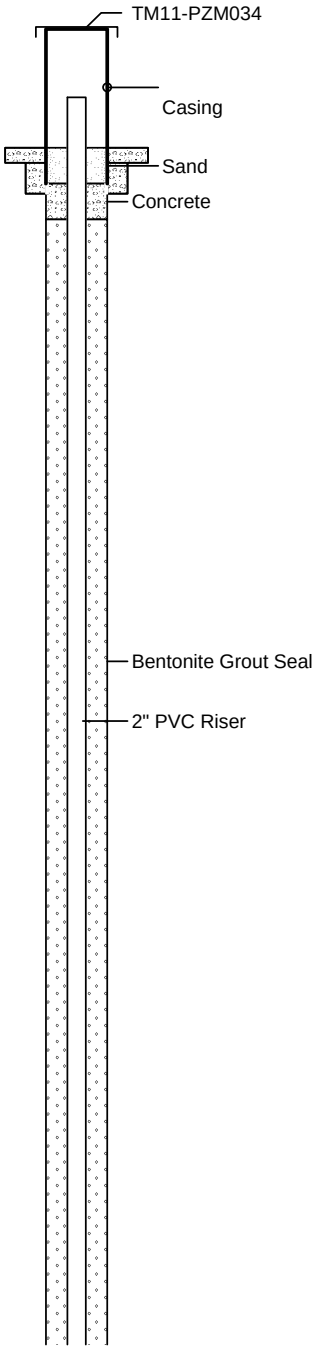
Well ID: TM11-PZM034

(page 1 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571172.04
Easting (ft)	: 1460045.01
Date/Time Started	: 6/28/16 / 0845 hr.
Date/Time Completed	: 6/29/16 / 0940 hr.
Surf. Elev. (ft AMSL)	: 10.61
TOC Elev. (ft AMSL)	: 12.81
Total Well Depth (ft)	: ~54.4' (TOC)
Depth to Water (ft)	: 12.5' (TOC) 6/29/16 (1000 hr.)
Depth to Water (ft)	:
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0–2	1-17	8.1		5 6 12 15	(0-4') Sandy and gravelly SLAG, medium dense to very dense, dark gray and gray and dark brown, dry	SM/GM
2–4	2-50	2.4		20 24 28 18		
4–10					Hollow stem auger interval only	
10–12	3-100		-	16 9 7 7	(10-12') SLAG GRAVEL with some SAND, SILT and CLAY, dark gray and brown, wet	GM
12–16						
16–18	4-38		6.2	2 5 2 5	(16-26.3') Sandy gravelly SLAG, medium dense, medium to dark gray, wet, non plastic, non cohesive	SW/GW
18–20	5-29		3.0	5 5 7 7		



COMPLETION DETAILS

4.25" Protective Steel Casing
w/Locking Lid
Weep hole approximately 6"
above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): ~2.3'

Description (10-12') taken
from CH2M Hill log
TM11-PZM007 (9/25/01)

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 7/1/16
Purged Amount: 75 gal.
Well Volumes Removed: 10

ARM Group Inc.
Earth Resource Engineers and Consultants

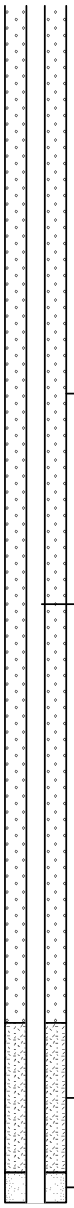
Well ID: TM11-PZM034

(page 2 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571172.04
Easting (ft)	: 1460045.01
Date/Time Started	: 6/28/16 / 0845 hr.
Date/Time Completed	: 6/29/16 / 0940 hr.
Surf. Elev. (ft AMSL)	: 10.61
TOC Elev. (ft AMSL)	: 12.81
Total Well Depth (ft)	: ~54.4' (TOC)
Depth to Water (ft)	: 12.5' (TOC) 6/29/16 (1000 hr.)
Depth to Water (ft)	:
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
20					
21	6-50	5.6	9 5 7 5	(16-26.3') Sandy gravelly SLAG, medium dense, medium to dark gray, wet, non plastic, non cohesive	
22					
23	7-63	11.0	5 5 9 13		SW/GW
24					
25	8-50	24.6	5 6 5 6		
26					
27	9-67	1.6	3 2 1 2	(26.3-34') Clayey SILT, soft, dark greenish gray, wet, cohesive, low plasticity, some whitish shell fragments	
28					
29	10-42	3.8	5 1 1 1		
30					ML
31	11-100	1.2	2 2 1 2		
32					
33	12-100	0.4	2 2 2 1		
34					
35	13-100	0.1	W 2 3 4	(34-35') Silty CLAY, soft, pale greenish gray with pale yellowish brown oxidation, cohesive, medium plasticity, wet	CL/CH
36				(35-38') Silty CLAY, medium, pale greenish gray with abundant yellowish brown oxidation, cohesive, medium plasticity, with small shale fragments	CL/CH
37	14-88	0.2	3 3 3 4		
38					
39	15-100	0.2	2 3 5 6	(38-40') Silty CLAY, medium, yellowish brown with abundent ???? gray coatings along fracture zones, wet, cohesive, medium plasticity	CL
40					



COMPLETION DETAILS

Bentonite/Grout Seal:
Top: 4.0' Bottom: 37.0'

Base of slag at 26.2'

Native alluvium at 26.2' +

Bentonite Seal:
Top: 37.0' Bottom: 39.5'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 7/1/16
Purged Amount: 75 gal.
Well Volumes Removed: 10

ARM Group Inc.
Earth Resource Engineers and Consultants

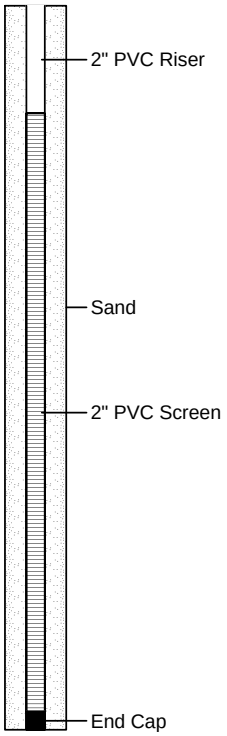
Well ID: TM11-PZM034

(page 3 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B21
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571172.04
Easting (ft)	: 1460045.01
Date/Time Started	: 6/28/16 / 0845 hr.
Date/Time Completed	: 6/29/16 / 0940 hr.
Surf. Elev. (ft AMSL)	: 10.61
TOC Elev. (ft AMSL)	: 12.81
Total Well Depth (ft)	: ~54.4' (TOC)
Depth to Water (ft)	: 12.5' (TOC) 6/29/16 (1000 hr.)
Depth to Water (ft)	:
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
40						
41	16-100		1.0	3 7 8 9	(40-42') SAND, medium to coarse grained, medium dense, pale yellowish brown, some silt, wet, non plastic, non cohesive, becoming finer grained, ~20% fine SR Quartz gravel	SW
42					(42-44') No return	-
43						
44				5 9 12 14	(44-46') SAND, fine to medium grained, medium dense, yellowish brown, wet, non plastic, non cohesive, high mica content	
45	17-100		2.3			SW
46				6 8 10 11	(46-50') No recovery, apparent sandy intervals	
47						
48				3 7 9 14		-
49						
50				4 8 14 18	(50-52') SAND, fine to medium grained, medium dense, dark yellowish brown, wet, non plastic, non cohesive	
51	18-42		0.3			SW
52					END OF BORING	
53						
54						
55						
56						
57						
58						
59						
60						



COMPLETION DETAILS

Fine Sand: FilPro #000
Top: 39.5' Bottom: 40.0'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 41.8' Bottom: 51.8'
Total Screen: 10.0'
Filter Pack: FilPro W.G. #2 Sand
Top: 40.0' Bottom: 52.1'

4" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 7/1/16
Purged Amount: 75 gal.
Well Volumes Removed: 10

ARM Group Inc.
Earth Resource Engineers and Consultants

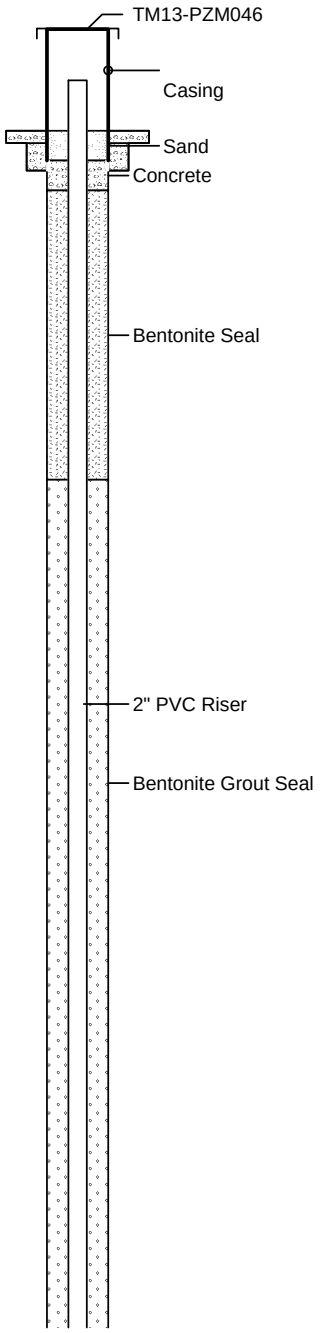
Well ID: TM13-PZM046

(page 1 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B22
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571536.04
Easting (ft)	: 1460925.99
Date/Time Started	: 6/22/16 / 1205 hr.
Date/Time Completed	: 6/23/16 / 1500 hr.
Surf. Elev. (ft AMSL)	: 9.29
TOC Elev. (ft AMSL)	: 11.70
Total Well Depth (ft)	: 64.4' (TOC)
Depth to Water (ft)	: 11.2' (TOC) 6/23/16 (1600 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0–16					(0-16') See CH2M Hill drill log from 09/24/01	-
16–18	1-75		70.1	18 50 31 50/4	(16-21') Sandy SLAG, very dense, dark gray to black, wet, non plastic, non cohesive, ~30% SLAG gravels, strong moth ball odor	SW
18–20	2-100		11.3	12 26 15 16		
20–21	3-100		8.4	8 12 8 5		
21–24	4-33		-	2 4 4 5	(21-24') Clayey SILT with SLAG GRAVEL, medium stiff, medium loose, grayish black, gray, olive gray, wet, cohesive, low plasticity	ML/CL/GP



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.4'

Bentonite Seal:
Top: 4' Bottom: 7'

Bentonite/Grout Seal:
Top: 7' Bottom: 47.5'

Slag fill to 21'

Apparent mixed slag and disturbed alluvium ~21-31'

Apparent mixed slag and disturbed alluvium ~21-31'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/24/16
Purged Amount: 80 gal.
Well Volumes Removed: 10

ARM Group Inc.
Earth Resource Engineers and Consultants

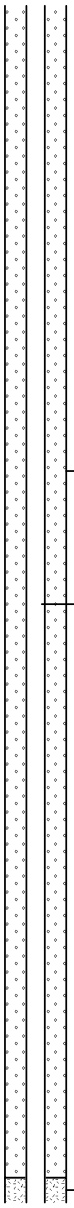
Well ID: TM13-PZM046

(page 2 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B22
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571536.04
Easting (ft)	: 1460925.99
Date/Time Started	: 6/22/16 / 1205 hr.
Date/Time Completed	: 6/23/16 / 1500 hr.
Surf. Elev. (ft AMSL)	: 9.29
TOC Elev. (ft AMSL)	: 11.70
Total Well Depth (ft)	: 64.4' (TOC)
Depth to Water (ft)	: 11.2' (TOC) 6/23/16 (1600 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
24–26	5-92	-	2 5 5 3	(24-28') Clayey SILT and sandy SLAG GRAVEL, medium dense to stiff, olive brown, olive gray, light gray, wet, cohesive	ML/SM/GM
26–28	6-100	-	3 8 8 6		
28–30	7-100	-	2 4 5 2	(28-31') Silty SLAG with some clayey SAND and SLAG GRAVEL, medium stiff to loose, grayish brown with abundant RMFs, olive green silty inclusions, wet, cohesive, medium plasticity	ML/CL/SM
30–32	8-100	-	2 2 2 1	(31-38') Clayey SILT and silty CLAY, soft, dark greenish gray, very moist, cohesive, low to medium plasticity	
32–34	9-100	-	W W W W		
34–36	10-100	-	W W W W		ML/CL
36–38	11-100	-	W W W W		
38–40	12-83	-	W 2 3 3	(38-48') Silty CLAY, soft to medium, pale olive gray with common pale yellow oxidation, wet to slightly moist, cohesive, medium plasticity	
40–42	13-67	-	4 6 6 4		
42–44	14-100	-	1 3 4 5		CL
44–46	15-100	-	2 2 3 3		
46–48	16-100	-	2 2 3 2		



COMPLETION DETAILS

Apparent mixed slag and disturbed alluvium ~21-31'

Native alluvium 31' +

Bentonite Seal:
Top: 47.5' Bottom: 50.0'

Fine Sand: FilPro #000
Top: 50.0' Bottom: 50.5'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 51.8' Bottom: 61.8'
Total Screen: 10.0'

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/24/16
Purged Amount: 80 gal.
Well Volumes Removed: 10

ARM Group Inc.
Earth Resource Engineers and Consultants

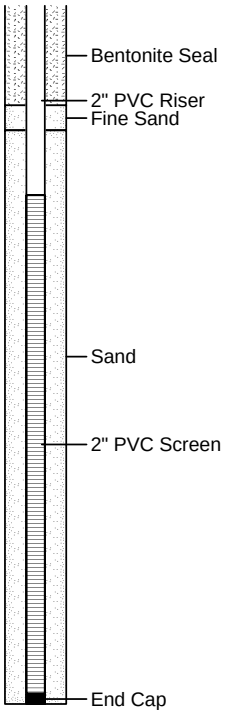
Well ID: TM13-PZM046

(page 3 of 3)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B22
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571536.04
Easting (ft)	: 1460925.99
Date/Time Started	: 6/22/16 / 1205 hr.
Date/Time Completed	: 6/23/16 / 1500 hr.
Surf. Elev. (ft AMSL)	: 9.29
TOC Elev. (ft AMSL)	: 11.70
Total Well Depth (ft)	: 64.4' (TOC)
Depth to Water (ft)	: 11.2' (TOC) 6/23/16 (1600 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS# %Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
48					
49	17-100	-	W W 3 5	(48-50') Clayey SILT and silty CLAY, soft to medium, dark gray, wet, cohesive, low to medium plasticity	ML/CL
50					
51	18-75	-	W 1 5 9	(50-54') SAND, medium to coarse grained, loose, brown to pale yellowish brown, wet, non plastic, non cohesive, very small SR quartz gravel, thin lenses of dark brown clayey SAND	SW
52					
53	19-92	-	3 5 7 9		
54					
55	20-92	-	3 7 15 18	(54-54.8') Silty SAND, loose, dark grownish gray, wet, non plastic, non cohesive, micascoles	SM
56				(54.8-62') SAND, medium to coarse grained, with small SR quartz, dense, yellowish brown to brown, wet, non plastic, non cohesive, some dark red oxidation	SW/GW
57	21-100	-	10 13 15 18		
58					
59	22-50	-	6 11 11 13		
60					
61	23-50	-	5 5 9 10		
62				END OF BORING	
63					
64					
65					
66					
67					
68					
69					
70					
71					
72					



COMPLETION DETAILS

Filter Pack: FilPro W.G. #2 Sand
Top: 50.5' Bottom: 62.0'

2 1/2" long flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 6/24/16
Purged Amount: 80 gal.
Well Volumes Removed: 10

ARM Group Inc.
Earth Resource Engineers and Consultants

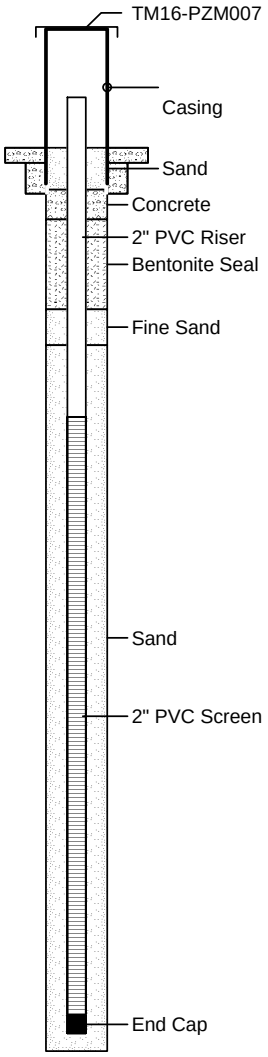
Well ID: TM16-PZM007

(page 1 of 1)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571856.99
Easting (ft)	: 1462548.95
Date/Time Started	: 6/29/16 / 1310
Date/Time Completed	: 6/29/16 / 1545
Surf. Elev. (ft AMSL)	: 9.78
TOC Elev. (ft AMSL)	: 12.29
Total Well Depth (ft)	: 17.2' (TOC)
Depth to Water (ft)	: 9.84' (TOC) 6/29/16 (1230 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0–2	1-83		2.0	27 32 32 28	(0-4') Sandy SLAG, very dense, dark brown and gark grayish brown, dry, non plastic, non cohesive, fine glassy slag in spots	SM/SW
2–4	2-17		0.7	50/4 - - -		
4–6	3-75		1.8	21 41 38 22	(4-8') Sandy SLAG, very dense, dark brown, dark gray, some yellow to pale yellow, moist, non plastic, non cohesive, trace oxidation, wet at 7.5'	SM/SW
6–8	4-67		1.0	16 28 22 15		
8–10	5-83		8.0	11 7 20 34	(8-14.1') Silty SAND SLAG, medium dense to dense, very dark gray with some light olive gray, some dark brown, wet, non plastic, non cohesive,	SM/GM
10–12	6-54		6.0	19 42 50/1 -		
12–14	7-0		-	50/0 - - -		
14–16	8-92		0.5	1 2 6 2	(14.1-16') Sandy SILT, soft to medium, olive gray, wet, cohesive, low plasticity	ML
16–20					END OF BORING	



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Bentonite Seal:
Top: 1.2' Bottom: 2.7'

Fine Sand: FilPro #000
Top: 2.7' Bottom: 3.3'

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.5'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020" 14.5'
Total Screen: 10.0'

Filter Pack: FilPro W.G. #2 Sand
Top: 3.3' Bottom: 15.1'

Slag fill to ~14'

Native alluvium 14' +

2 1/2" long
flush-threaded PVC end cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 7/1/16
Purged Amount: 15 gal.
Well Volumes Removed: 15

ARM Group Inc.
Earth Resource Engineers and Consultants

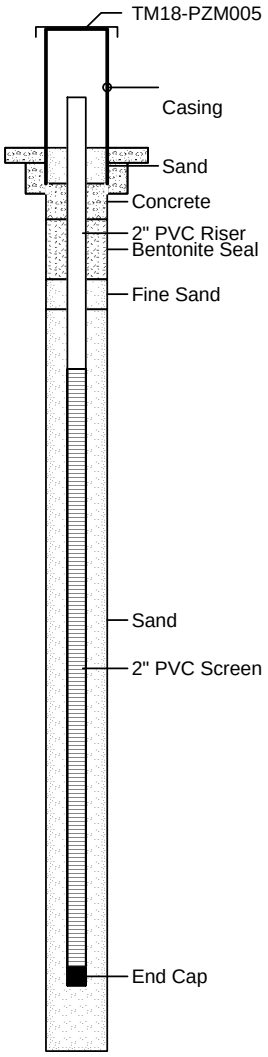
Well ID: TM18-PZM005

(page 1 of 1)

Project Name	: Sparrows Point
Project Number	: 150300M-21-3
Client	: EnviroAnalytics Group
Site	: Finishing Mills
Borehole Location	: Parcel B6
ARM Representative	: W. Mader, P.G., CPSS
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Allied Well Drilling
Driller	: Mike Waller, Ryan Sites
Drilling Equipment	: Diedrich-D120

Northing (ft)	: 571885.60
Easting (ft)	: 1463340.90
Date/Time Started	: 6/29/16 1100 hr.
Date/Time Completed	: 6/29/16 1245 hr.
Surf. Elev. (ft AMSL)	: 8.54
TOC Elev. (ft AMSL)	: 10.64
Total Well Depth (ft)	: 16.8' (TOC)
Depth to Water (ft)	: 7.7' (TOC) 6/29/16 (1905 hr.)
Depth to Water (ft)	: -
Bit/Auger Size (in.)	: 7.75" OD (4.25" ID) HSA

Depth (ft.)	SS#	%Recovery	PID (ppm)	Blow Count	LITHOLOGIC DESCRIPTION	USCS
0–2	1	58	1.2	2 6 6 5	(0-2') Sandy SILT, stiff, dark brown to grayish brown, dry to moist, cohesive, low plasticity	ML
2–4	2	17	2.1	50/4 - - -	(2-4') Sandy SLAG GRAVEL, very dense, brown and gray, dry, non plastic, non cohesive	GM
4–6	3	92	66.2	3 6 3 3	(4-6') Silty SAND to clayey SILT, loose to medium, dark gray, very moist, cohesive, low plasticity, moderate chemical odor	SM/ML
6–8	4	83	6.2	3 4 3 2	(6-8') Clayey SILT to silty SAND to clayey SILT, medium to loose, dark gray, wet, cohesive, low plasticity, moderate chemical odor	ML/SM
8–9	5	42	4.2	2 3 6 2	(8-12.2') Sandy SILT and silty SAND, medium to loose, blackish gray, wet, non plastic, non cohesive, moderate chemical odor, numerous small, thick, clear glass fragments	ML/SM
10–11	6	42	9.1	6 4 2 1		
12–13	7	83	6.7	1 2 5 6	(12.2-14') Sandy SILT to silty SAND, medium loose, olive gray to light gray with strong yellowish red oxidation, cohesive, low plasticity	ML/SM
14–15	8	92	6.5	3 4 6 6	(14-16') SAND grading to silty SAND, loose, strong reddish yellow to pale gray with oxidation, moist to wet, non plastic, non cohesive	SW-SM
16					END OF BORING	
17–20						



COMPLETION DETAILS

4.25" Protective Steel Casing w/Locking Lid
Weep hole approximately 6" above concrete pad
2x2' concrete pad
2" Vented PVC slip cap

Bentonite Seal:
Top: 0.6' Bottom: 2.2'

Fine Sand: FilPro #000
Top: 2.2' Bottom: 2.7'

Riser: Sch 40 PVC
Riser Diameter: 2 in
Riser Stickup (ags): 2.8'

Screen: Sch 40 PVC
Screen Diameter: 2 in
Slot Size: 0.020"
Top: 3.7' Bottom: 13.7'
Total Screen: 10.0'

Filter Pack: FilPro W.G. #2 Sand
Top: 2.7' Bottom: 15.1'

Base of slag fill at 12.2'
Native alluvium at 12.2' +

2 3/4" long PVC tapered slip cap

TOC - Top of PVC Casing
AMSL - Above Mean Sea Level
ags - above ground surface
bgs - below ground surface
W - weight of hammer

Monitoring Well Development
Date: 7/1/16
Purged Amount: 15 gal.
Well Volumes Removed: 10

APPENDIX B

Finishing Mills Existing Well Construction Information
Former Sparrows Point Steel Mill
Sparrows Point, Maryland

Well ID	TOC Elevation (ft AMSL)	Installation Method	Date Installed	Protection	Total Installed Depth (ft)	Riser Length (ft)	Screen Length (ft)	Top of Screen Elevation (ft AMSL)	Bottom of Screen Elevation (ft AMSL)	Filter Pack Interval (ft)	Seal Interval (ft)	Grout Interval (ft)	Diameter (in)	Observed Condition	Sample for Finishing Mills GW Work Plan?
Shallow Hydrogeologic Zone Wells															
FM01-PZM003	10.11	Hollow Stem Auger	9/21/2001	Flush mount	13.5	3.5	10	6.61	-3.39	13.5 - 2	2 - 0.5	0.5 - 0	2	Useable	**Area B**
FM02-PZM002	11.51	Hollow Stem Auger	9/15/2001	Flush mount	14	4	10	7.51	-2.49	14 - 3	3 - 2	2 - 0	2	Replace	**Yes**
FM03-PZM005	1.935	Hollow Stem Auger	9/26/2001	Flush mount	13.2	3.2	10	-1.265	-11.265	13.2 - 2	2 - 0.5	0.5 - 0	NA	Replace	**Yes**
FM04-PZM009	11.46	Hollow Stem Auger	9/29/2000	Flush Mount	21	11	10	0.46	-9.54	9 - 21	8 - 9	0.5 - 9	NA	Damaged	**No**
FM05-PZM004	9.3	Hollow Stem Auger	9/21/2001	Flush mount	14	4	10	5.3	-4.7	14 - 3	3 - 2	2 - 0	NA	Replace	**Area B**
HI06-PZM002	13.09	Hollow Stem Auger	9/28/2000	Steel Riser	12	2	10	11.09	1.09	1 - 12	0.5 - 1	0 - 0.5	NA	Damaged	**No**
SW05-PZM004	16.5	Hollow Stem Auger	9/18/2000	Steel Riser	18	8	10	8.5	-1.5	6 - 18	5 - 6	0 - 5	2	Damaged	**No**
SW06-PZM001	17.51	Hollow Stem Auger	10/5/2000	Steel Riser	15	5	10	12.51	2.51	3 - 15	2 - 3	0 - 2	NA	Replace	**Area B**
TM07-PZM005	13.89	Hollow Stem Auger	2/26/1986	Steel Riser	17	7	10	6.89	-3.11	17 - 6	6 - 2	2 - 0	2	Useable	**Yes**
TM09-PZM007	11.28	Hollow Stem Auger	9/25/2001	Steel Riser	16	6	10	5.28	-4.72	16 - 4	4 - 2	2 - 0	2	Useable	**Yes**
TM10-PZM007	11.3	Hollow Stem Auger	9/21/2001	Steel Riser	15	5	10	6.3	-3.7	15 - 3	3 - 2	2 - 0	2	Useable	**Yes**
TM11-PZM007	10.83	Hollow Stem Auger	9/25/2001	Flush mount	18	8	10	2.83	-7.17	18 - 6	6 - 4	4 - 0	2	Useable	**Yes**
TM12-PZM006	12.41	Hollow Stem Auger	9/25/2001	Steel Riser	16	6	10	6.41	-3.59	16 - 4	4 - 2	2 - 0	2	Useable	**Yes**
TM13-PZM007	12.57	Hollow Stem Auger	9/24/2001	Steel Riser	16	6	10	6.57	-3.43	16 - 4	4 - 2	2 - 0	2	Useable	**Yes**
TM14-PZM005	10.31	Hollow Stem Auger	9/29/2000	Flush Mount	16	6	10	4.31	-5.69	4 - 16	3 - 4	0.5 - 3	2	Useable	**Yes**
TM15-PZM007	10.6	Hollow Stem Auger	9/21/2000	Steel Riser	14	4	10	6.6	-3.4	2 - 14	1 - 2	0 - 1	2	Useable	**Yes**
TM15-PZM011	10.1	Hollow Stem Auger	9/21/2000	Steel Riser	18	13	5	-2.9	-7.9	11 - 18	10 - 11	0 - 10	2	Useable	**Yes**
TM16-PZM007	11.96	Hollow Stem Auger	9/24/2001	Steel Riser	17	7	10	4.96	-5.04	17 - 5	5 - 3	3 - 0	NA	Replace	**Yes**
TM17-PZM005	11.32	Hollow Stem Auger	9/24/2001	Steel Riser	14	4	10	7.32	-2.68	14 - 3	3 - 2	2 - 0	2	Useable	**Yes**
TM18-PZM005	11.27	Hollow Stem Auger	9/24/2001	Steel Riser	14	4	10	7.27	-2.73	14 - 3	3 - 2	2 - 0	2	Replace	**Yes**
SW-048-MWS	16.73	Hollow Stem Auger	12/9/2015	Steel Riser	15	6.5	10	10.23	0.23	15 - 3.5	4 - 14	1.5 - 0	2	Useable	**Area B**
SW-053-MWS	13.84	Hollow Stem Auger	12/8/2015	Steel Riser	15	6.4	10	7.44	-2.56	15 - 3.0	5 - 14	1.0 - 0	2	Useable	**Area B**
Intermediate Hydrogeologic Zone Wells															
FM01-PZM041	9.97	Direct Push	9/19/2001	Flush mount	51	41	10	-31.03	-41.03	51 - 41	41 - 40	40 - 0	0.5	Useable	**Area B**
FM02-PZM033	11.32	Direct Push	9/27/2001	Flush mount	45	34	11	-22.68	-33.68	45 - 34	34 - 33	33 - 0	0.75	Damaged	**No**
FM03-PZM026	11.93	Direct Push	9/26/2001	Flush mount	36	25	11	-13.07	-24.07	36 - 25	25 - 24	24 - 0	NA	Replace	**Yes**
FM04-PZM036	11.8	Direct Push	10/16/2000	Flush Mount	48	45	3	-33.2	-36.2	45 - 48	44 - 45	0.5 - 44	NA	Damaged	**No**
FM05-PZM024	9.53	Direct Push	9/19/2001	Flush mount	32	22	10	-12.47	-22.47	32 - 22	22 - 21	21 - 0	NA	Replace	**Area B**
SW05-PZM039	18.14	Direct Push	10/18/2000	Steel Riser	53	50	3	-31.86	-34.86	50 - 53	49 - 50	0 - 49	0.75	Damaged	**No**
SW06-PZM053	17.44	Direct Push	10/23/2000	Steel Riser	67	64	3	-46.56	-49.56	64 - 67	63 - 64	0 - 63	NA	Replace	**Area B**
TM07-PZM045	13.81	Hollow Stem Auger	2/26/1986	Steel Riser	57	47	10	-33.19	-43.19	57 - 40	40 - 2	2 - 0	2	Useable	**Yes**
TM09-PZM047	11.38	Direct Push	9/19/2001	Steel Riser	55	45	10	-33.62	-43.62	55 - 45	45 - 44	44 - 0	0.75	Useable	**Yes**
TM11-PZM034	11.01	Direct Push	9/18/2001	Flush mount	45	35	10	-23.99	-33.99	45 - 35	35 -34	34 - 0	0.75	Replace	**Yes**
TM13-PZM046	12.34	Direct Push	9/18/2001	Steel Riser	55	45	10	-32.66	-42.66	55 - 45	45 - 44	44 - 0	0.75	Replace	**Yes**
TM15-PZM031	11.04	Direct Push	10/10/2000	Steel Riser	38	35	3	-23.96	-26.96	35 - 38	34 - 35	0 - 34	0.75	Useable	**Yes**
Lower Hydrogeologic Zone Wells															
FM03-PZM082	NA	NA	NA	NA	90	NA	NA	NA	NA	NA	NA	NA	NA	Damaged	**No**
FM04-PZM054	11.83	Direct Push	10/16/2000	Flush Mount	66.5	63.5	3	-51.67	-54.67	63.5 - 66.5	62.5 - 63.5	0.5 - 62.5	NA	Damaged	**No**
HI06-PZM058	13.72	Direct Push	10/27/2000	Steel Riser	68	65	3	-51.28	-54.28	65 - 68	64 - 65	0 - 64	NA	Damaged	**No**
TM09-PZM067	9.553	NA	NA	Steel Riser	76	NA	NA	NA	-66.447	NA	NA	NA	2	Useable	**No**
TM15-PZM065	11.35	Direct Push	10/13/2000	Steel Riser	72.5	69.5	3	-58.15	-61.15	69.5 - 72.5	68.5 - 69.5	0 - 68.5	0.75	Damaged	**No**

Existing groundwater wells were classified as shallow, intermediate, or lower based on contour maps of these hydrogeologic zones in the Site-Wide Investigation Groundwater Study • Site-Wide Investigation: Report of Nature & Extent of Releases to Groundwater from the Special Study Areas (SSAs) (URS 2005), revised 2007.

NA: Information not available
Useable: Well was observed to be in good/fair structural condition in the field.
Damaged: Well was observed with structural damage or could not be located in the field, and will NOT be replaced.
Replace: Well was observed with structural damage, but will be (or was) replaced with either a permanent well or a temporary piezometer.
Area B: Wells have already been sampled for the Area B GW Work Plan.

APPENDIX C

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-001-PZI

(page 1 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/6/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568350.09
Easting (US ft)	: 1461447.35

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2.5') SILT with small SLAG GRAVEL, soft, brown, dry, non plastic, non cohesive	ML	
		9.3				
	70	4.3		(2.5-4') SILT, hard, brown, dry, cohesive, low plasticity	ML	
		4.0				
		2.1		(4-5') Silty CLAY, soft to firm, brown, moist, cohesive, low plasticity	CL	
5		-		(5-7') CLAY, soft, brownish yellow and light gray mottling, moist, cohesive, medium plasticity	CL	
		-				
	70	2.1		(7-8.5') SLAG GRAVEL and SAND, loose, gray, wet, non plastic, non cohesive	GW/SW	
		1.3		(8.5-10') CLAY, soft to firm, light olive brown, moist, cohesive, high plasticity	CH	
		1.0				
10		-		(10-15') SLAG GRAVEL, loose, gray, wet, non plastic, non cohesive	GW	
		-				
	8	-				
		-				
		1.1				
15		0.2		(15-25') CLAY, very soft, light grayish green grading to light gray and reddish yellow mottling, wet, cohesive, high plasticity	CH	Trace red sand in spot
		0.2				
	100	0.1				
		0.2				
		0.2				
20		0.5				
		0.5				
	100	0.5				
		0.5				
		0.4				
25						

Total Borehole Depth: 65' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-001-PZI

(page 2 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/6/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568350.09
Easting (US ft)	: 1461447.35

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.3		(25-26') Sandy CLAY, soft, light gray and very pale brown, very moist to wet, cohesive, non plastic	CL	
		0.2		(26-27') SAND, medium dense, yellowish brown, wet, non plastic, non cohesive	SP	Coarse grained
	100	0.1		(27-27.5') Sandy CLAY, soft to firm, dark gray ahd yellowish brown, very moist, cohesive, medium plasticity	CL	
		0.2		(27.5-29.4') CLAY, very soft to soft, dark gray, wet, cohesive, high plasticity	CH	
30		0.2		(29.4-35') SAND, medium dense, dark gray, wet, non plastic, non cohesive		
		0.6				
		1.1				
	100	2.7			SP	Coarse grained
		4.9				
		0.4				
35		0.8		(35-40') CLAY, soft, pale brown and reddish yellow grading to dark gray, very moist, cohesive, high plasticity		
		0.5				
	100	0.5			CH	
		0.5				
		0.4				
40		0.2		(40-45') CLAY, firm, dark gray, moist, cohesive, high plasticity		
		0.2				
	100	0.2			CH	
		0.2				
		0.3				
45		0.2		(45-49.8') CLAY, very soft, dark gray, very moist, cohesive, high plasticity		
		0.2				
	100	0.2			CH	
		0.2				
		0.4				
50					SP	Wet sand layer

Total Borehole Depth: 65' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-001-PZI

(page 3 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/6/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568350.09
Easting (US ft)	: 1461447.35

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.5		(49.8-51.5') SAND with small gravel, very coarse grained, very dense, gray, wet, non plastic, non cohesive	SP	
		0.4				
	100	0.4		(51.5-60') CLAY, very soft, gray, very moist, cohesive, high plasticity		
		0.4				
		0.2				
55		0.2			CH	
		0.2				
	100	0.2				
		0.1				
		0.2				
60		0.1		(60-65') CLAY, soft, gray, very moist, cohesive, high plasticity		
		0.2				
	100	0.2			CH	
		0.1				
		0.1				
65						
70						
75						

Total Borehole Depth: 65' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-001-PZS

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: P. Vogel, P.G.
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 5/17/2016
Weather	: 50s, Rainy
Northing (US ft)	: 568352.50
Easting (US ft)	: 1461443.85

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B22-078-SB-1	(0-3') Sandy SILT, soft, dark brown, dry, non plastic, non cohesive	ML	
	80	0.6				
		1.7				
		1.6		(3-5') CLAY with SAND and GRAVEL, firm, brown, moist, medium to high plasticity	CL-CH	
		1.1				
5		-		(5-9') CLAY, firm, light gray, moist, high plasticity, cohesive	CH	Water measured in hole at 7' bgs
		2.8				
	70	2.1	B22-073-SB-7.5			
		1.8				
		0.3		(9-15') Slag GRAVEL and SAND, loose, light gray and biege, wet, non plastic, non cohesive	GP/SP	Wet at 9' bgs
10		-				
		-				
	10	-				
		-				
		0.0				Boring terminated at 15' bgs and installed piezometer to 14' bgs
15						

Total Borehole Depth: 15' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-002-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/6/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568970.89
Easting (US ft)	: 1461318.92

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2.2') CONCRETE, loose, light gray, dry, non plastic, non cohesive	-	
		-				
	60	1.3		(2.2-3') SAND and small GRAVEL, medium dense, brown and black, dry, non plastic, non cohesive	SP/GP	
		0.0		(3-5') CLAY with intermittend layers of gravelly SAND, soft, pale brown, moist, cohesive, medium plasticity	CL	
5		0.0				
		-		(5-8.5') Sandy CLAY with large BRICK GRAVEL, soft, dark brown and red, wet, cohesive, low plasticity	CL	
		-				
	50	0.0				
		0.1		(8.5-9.5') SAND, very coarse with wood fragments, gray and dark brown, wet, non plastic, non cohesive	SP	
		0.0		(9.5-15') CLAY, soft, pale brown, moist to very moist, cohesive, high plasticity	CH	
10		-				
		-				
	50	0.2				
		0.0				
		0.0				
15		0.0		(15-24') CLAY, very soft, gray, wet, cohesive, high plasticity	CH	
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
20		0.1				
		0.1				
	80	0.1				
		0.1				
		0.0		(24-24.7') SAND, medium grained, loose, gray, wet, non plastic, non cohesive	SP	
25					SP	

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs for piezometer installation from 45-55' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-002-PZI

(page 2 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/6/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568970.89
Easting (US ft)	: 1461318.92

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.1		(24.7-25') CLAY, very soft, gray, wet, cohesive, high plasticity		
		0.0		(25-30') CLAY, very soft, gray to dark olive gray, wet, non plastic, non cohesive	CH	
	100	0.1				
		0.0				
		0.0				
30		-		(30-32.5') CLAY, very soft, gray, wet, cohesive, high plasticity	CH	
		0.1				
	90	0.0		(32.5-33.5') SAND, fine to medium grained, loose, gray wet, non plastic, non cohesive	SW	
		0.0		(33.5-35') CLAY, very soft, gray, wet, cohesive, high plasticity	CH	
		0.1				
35		0.0		(35-45') CLAY, firm to soft, grayish green, moist to very moist, cohesive, high plasticity	CH	
		0.0				
	100	0.1				
		0.0				
		0.0				
40		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
45		0.0				
		0.0		(45-47.8') CLAY, soft to very soft, dark greenish gray, wet, cohesive, high plasticity	CH	
	100	0.0				
		0.1		(47.8-52.3') SAND, fine to very coarse, medium dense, gray grading to very pale brown, wet, non plastic, non cohesive	SW	
50		0.0				

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs for piezometer installation from 45-55' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-002-PZI

(page 3 of 3)

Client	: EnviroAnalytics Group	Date	: 6/6/2016
ARM Project No.	: 150300M-21-3	Weather	: 80s, Sunny
Project Description	: Finishing Mills Ground Water		
Site Location	: Sparrows Point, MD		
ARM Representative	: L. Perrin		
Checked by	: W. Mader, P.G., CPSS	Northing (US ft)	: 568970.89
Drilling Company	: Green Services, Inc	Easting (US ft)	: 1461318.92
Driller	: Don Marchese		
Drilling Equipment	: Geoprobe 7822DT		

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50	100	0.0 0.0 0.0 0.0 0.0		(47.8-52.3') SAND, fine to very coarse, medium dense, gray grading to very pale brown, wet, non plastic, non cohesive	SW	
				(52.3-55') CLAY, very firm, greenish gray, moist, cohesive, high plasticity	CH	
55						
60						
65						
70						
75						

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs for piezometer installation from 45-55' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-002-PZS

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: P. Vogel, P.G.
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 5/17/2016
Weather	: 50s, Rainy
Northing (US ft)	: 568971.52
Easting (US ft)	: 1461315.77

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1') Concrete, loose, light beige, sand sized, dry, non plastic, non cohesive	-	
		1.4	B22-073-SB-1	(1-3.5') Well graded SAND, loose, dark brown and black, fine to medium grained, dry, non plastic, non cohesive	SW	
	70	4.0				
		3.7		(3.5-4.2') CLAY, very soft, tan, moist, cohesive, high plasticity	CH	
		0.8	B22-073-SB-5	(4.2-4.4') Brick GRAVEL and SAND, loose, beige, non plastic	GP	
					CH	
5				(4.4-5') CLAY with SAND, soft, brown and dark brown, moist to wet at the bottom, high plasticity		Wet at 5' bgs
		-		(5-8.5) Brick GRAVEL, loose, black and beige, wet, non plastic, non cohesive	GP	
		-				
	50	0.4				
		1.8				Black product present, strong odor with sheen
				(8.5-9.8') Slag GRAVEL and SAND, loose, black, wet, non plastic, non cohesive	GP/SP	
		0.2				
10				(9.8-10') CLAY with fine slag GRAVEL, very soft, greenish biege, wet, cohesive, high plasticity	CH	
		0.0		(10-13') CLAY, soft, light biege and light orange, moist, cohesive, high plasticity		
	100	0.0			CH	
		0.0				Boring terminated at 13' bgs and installed piezometer.
15						

Total Borehole Depth: 13' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-003-PZI

(page 1 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/13/2016
Weather	: 80s, Sunny
Northing (US ft)	: 569527.42
Easting (US ft)	: 1460670.51

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		0.0		(0-1.5') CONCRETE		
		0.0		(1.5-5.5') CLAY, very soft grading to soft, brownish yellow, very moist to moist, cohesive, high plasticity	CH	
	80	0.0				
		0.0				
		0.0				
5		0.0				
		0.0		(5.5-8') CLAY, very soft, grownish yellow grading to brownish gray, moist to wet, cohesive, high plasticity	CH	Wet at 6' bgs
	100	0.0				
		0.0		(8-10') CLAY, soft, reddish yellow and light gray with some mottling, moist, cohesive, high plasticity	CH	
		0.0				
10		0.0		(10-15') CLAY with trace SAND, soft, reddish yellow and light gray, moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
15		0.0		(15-17') CLAY with trace SAND grading to SILT, soft, reddish yellow and light gray, moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0		(17-23.5') SILT, soft, dark gray, moist, cohesive, low plasticity	ML	
		0.0				
		0.0				
20						

Total Borehole Depth: 55' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-003-PZI

(page 2 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/13/2016
Weather	: 80s, Sunny
Northing (US ft)	: 569527.42
Easting (US ft)	: 1460670.51

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
20		0.0		(17-23.5') SILT, soft, dark gray, moist, cohesive, low plasticity	ML	
		0.0				
	100	0.0				
		0.0				
		0.0		(23.5-23.8') Sandy SILT, dark gray, very moist, cohesive, low plasticity	ML	
		0.0			SW	
25		0.0		(23.8-24.5') SAND, fine to coarse grained, loose, dark gray, wet, non plastic, non cohesive	CH	
		0.0		(24.5-25') Sandy CLAY, soft, dark gray, very moist, cohesive, high plasticity		
		0.0		(25-30') CLAY, very soft, grayish olive with dark gray streaks throughout, very moist to wet, cohesive, high plasticity		
	100	0.0			CH	
		0.0				
		0.0				
30		0.0		(30-32') CLAY, very soft, greenish gray, very moist to wet, cohesive, high plasticity	CH	
		0.0				
		0.0		(32-32.2') Sandy CLAY, soft, greenish gray, very moist, cohesive, low plasticity	CL	
	100	0.0			SW	
		0.0		(32.2-32.7') SAND, fine to medium grained, loose, dark gray, wet, non plastic, non cohesive	CL	
		0.0		(32.7-32.8') Sandy CLAY, soft, greenish gray, very moist, cohesive, low plasticity	CH	
35		0.0		(32.8-35') CLAY, very soft, greenish gray, very moist, cohesive, high plasticity		
		0.0		(35-45') CLAY, very soft, grayish green, very moist, cohesive, high plasticity		
		0.0				
	100	0.0			CH	
		0.0				
		0.0				
40						

Total Borehole Depth: 55' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-003-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/13/2016
Weather	: 80s, Sunny
Northing (US ft)	: 569527.42
Easting (US ft)	: 1460670.51

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
40		0.0		(35-45') CLAY, very soft, grayish green, very moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
45		0.0		(45-48.5') CLAY, very soft grading to soft, grayish green, wet to very moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0		(48.5-50') SAND, fine to very coarse grained, dense, brownish yellow, wet, non plastic, non cohesive	SW	
		0.0				
50		0.0		(50-54.3') SAND, fine grading to coarse grained with small GRAVEL, loose, brownish yellow, wet, non plastic, non cohesive	SP/SW	
		0.0				
	100	0.0				
		0.0				
		0.0		(54.3-55') CLAY, hard, light gray, moist, cohesive, medium plasticity	CL	
55						
60						

Total Borehole Depth: 55' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-003-PZS

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: B. Gehman
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/9/2016
Weather	: 60s, Partly Sunny
Northing (US ft)	: 569534.00
Easting (US ft)	: 1460671.22

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-5') CLAY with some SAND, gray to orangish brown, slightly moist, cohesive, high plasticity		
		0.0				
	80	0.0			CH	
		0.0				
		0.0				
5		-		(5-9') CLAY with some SAND, very dense, soft, gray to orangish brown, wet, cohesive, high plasticity		
		-				
					CH	
	70	0.2				Wet at 8' bgs
		0.3				
		0.2		(9-10') Sandy CLAY, orangish brown to gray, cohesive, medium plasticity	CL	
10		-		(10-16') CLAY, soft to medium dense, light to orangish brown to gray, cohesive, high plasticity		
		-				
	100	-			CH	
		-				
		-				
15		-				
		-				
		-		(16-17.5') CLAY with some SAND, very soft, gray to dark gray, cohesive, high plasticity		
	100	-			CH	
		-				
		-				
20						

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-004-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/13/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570066.19
Easting (US ft)	: 1460466.45

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-3') CONCRETE, loose, white dry, non plastic, non cohesive	-	
		-				
	70	-				
		11.0		(3-4.5') Sandy SILT with SLAG GRAVEL, soft, dark brown with iron staining, dry, non plastic, non cohesive	ML	
		20.5		(4.5-4.6') CLAY, soft, pale brown, moist, cohesive, medium plasticity	CL	
5		-		(4.6-4.8') CONCRETE, loose, light gray, dry, non plastic, non cohesive	ML	
		-		(4.8-5') Sandy SILT with SLAG GRAVEL, soft, dark brown with iron staining, dry, non plastic, non cohesive	-	
	40	-				
		0.8		(5-8.7') Fill, gravel and sand sized, loose, red yellow and dark brown, dry, non plastic, non cohesive	ML	
		0.5		(8.7-9') Sandy SILT, soft, dark brown with few white and black areas, moist, non plastic, non cohesive	- SW	Wet at 9.6' bgs
10		-		(9-9.6') Fill, gravel and sand sized, loose, red and yellow, moist, non plastic, non cohesive		
		-		(9.6-10') SAND, fine to medium grained, loose, very dark brown, wet, non plastic, non cohesive	GP	
	40	-		(10-15') SLAG GRAVEL with SILT, loose, dark brown, wet, non plastic, non cohesive		
		1.9				
		0.2				
15		-		(15-17') Gravelly SAND, medium to coarse, loose, dark brown, wet, non plastic, non cohesive	SW	
		0.3				
	70	0.0		(17-17.3') Sandy SILT, soft, very dark brown, wet, cohesive, low plasticity	ML	
		0.0		(17.3-20') SILT with SAND grading to clayey SILT, soft, dark gray to gray, very moist to moist, cohesive, low to medium plasticity	ML	
		0.0				
20		0.0		(20-25') Silty CLAY, soft to very soft, greenish gray, very moist, cohesive, medium plasticity		
		0.0				
	100	0.0			CL	
		0.0				
		0.0				
25						

Total Borehole Depth: 52' bgs.
Boring terminated at 52' bgs due to refusal, sand layer and intermediate piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-004-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/13/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570066.19
Easting (US ft)	: 1460466.45

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(25-28.5') CLAY, soft, gray grading to greenish gray, very moist, cohesive, medium plasticity	CL	
		0.0				
	90	0.0				
		0.0				
		0.0		(28.5-29.5') SAND, fine to medium grained, loose to medium dense, light gray, wet, non plastic, non cohesive	SW	
		0.0		(29.5-30') Sandy CLAY, firm, light gray with iron staining, moist, cohesive, medium plasticity	CL	
30		0.0		(30-33.5') CLAY grading to sandy CLAY, firm to soft, light yellowish brown, moist, cohesive, high plasticity to low plasticity	CH/CL	
		0.4				
	100	1.5				
		1.9				
		0.0		(33.5-35') SAND, fine to medium grained, medium dense to dense, reddish yellow to strong brown, wet, non plastic, non cohesive	SW	
35		0.0		(35-44.3') CLAY, firm to soft, light greenish gray to gray, moist to veery moist, cohesive, high plasticity	CH	
		0.1				
	100	0.0				
		0.0				
		0.0				
40		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
45		-		(44.3-45') SAND, fine to coarse grained, dense, brownish yellow, wet, non plastic, non cohesive	SW	
		0.0		(45-52') SAND, fine to coarse grained, stiff, loose, grayish brown, wet, non plastic, non cohesive	SW	
	60	0.0				
		0.0				
		0.0				
50						

Total Borehole Depth: 52' bgs.
Boring terminated at 52' bgs due to refusal, sand layer and intermediate piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-004-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/13/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570066.19
Easting (US ft)	: 1460466.45

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50	100	0.0 0.0		(45-52') SAND, fine to coarse grained, stiff, loose, grayish brown, wet, non plastic, non cohesive	SW	
55						
60						
65						
70						
75						

Total Borehole Depth: 52' bgs.
Boring terminated at 52' bgs due to refusal, sand layer and intermediate piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-004-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: B. Gehman
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/9/2016
Weather	: 70s, Partly Sunny
Northing (US ft)	: 570071.39
Easting (US ft)	: 1460466.11

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	24	- - - - -		(0-4') CONCRETE, hard, white, dry	-	
				(4-5') Gravelly SAND with SILT, loose, black, dry, non plastic, non cohesive	SW	
5				(5-9.8') GRAVEL with SAND, loose, black, dry, non plastic, non cohesive	GW	Wet at 9' bgs
	20	- - - - -				
10				(9.8-10') BRICK debris, loose, wet, non plastic, non cohesive	-	
				(10-14) No Return		
	20	- - - - -				
15				(14-15') Fill, GRAVEL and BRICK, large, black to red, wet, non plastic, non cohesive		
				(15-17') No Return		
	0	-				
20						

Total Borehole Depth:17' bgs.
Boring terminated at 17' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-005-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/14/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570670.96
Easting (US ft)	: 1460700.24

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-4.8') SILT with few SLAG GRAVEL, soft, dark brown, dry, non plastic, non cohesive		
		-				
	40	-			ML	
		1.6				
		43.6				
5		-		(4.8-5') SILT with SAND, medium dense, strong brown, moist, non plastic, non cohesive	ML	
		-		(5-8.5') SILT with SAND and BRICK GRAVEL, soft, dark brown, dry, non plastic, non cohesive	ML	
	40	-				
		57.4		(8.5-8.8') SILT, soft, strong brown, moist, cohesive, low plasticity	ML	
		5.9		(8.8-10') Sandy SILT with GRAVEL, soft, dark brown, dry, non plastic, non cohesive	ML	
10		-		(10-15') Fill GRAVEL, loose, yellow, wet, non plastic, non cohesive	GP	
		-				
	30	-				
		5.3				Wet at 13.5' bgs
		1.8				
15		-		(15-19.8') SLAG GRAVEL, sand to gravel sized, loose, yellow, gray and brown, wet, non plastic, non cohesive	GP/SP	
		-				
	40	-				
		0.0				
		0.0				
20		0.0		(19.8-27.5') CLAY, soft to very soft, very dark gray to light gray, very moist to wet, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
25						

Total Borehole Depth: 58.5' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-005-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/14/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570670.96
Easting (US ft)	: 1460700.24

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(19.8-27.5') CLAY, soft to very soft, very dark gray to light gray, very moist to wet, cohesive, high plasticity	CH	
	100	0.0				
		0.0		(27.5-28') Sandy CLAY, soft, light gray, very moist, cohesive, low plasticity	CL	
		0.0		(28-29') SAND, medium grained, medium dense, strong brown, wet, non plastic, non cohesive	SP	
30		0.0		(29-35') CLAY, soft to firm, gray, moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
35		0.0		(35-35.2') Sandy CLAY, soft, gray, wet, cohesive, low plasticity	CL	
		0.0		(35.2-37') SAND, medium grained, loose, gray, wet, non plastic, non cohesive	SP	
	100	0.0		(37-52') CLAY, firm, gray to greenish gray, moist, cohesive, high plasticity	CH	
		0.0				
40		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
45		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
50		0.0				

Total Borehole Depth: 58.5' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-005-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/14/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570670.96
Easting (US ft)	: 1460700.24

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.0		(37-52') CLAY, firm, gray to greenish gray, moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0		(52-53') Sandy CLAY, soft, gray, moist, cohesive, medium plasticity	CL	
		0.0		(53-54') SAND, fine to coarse, medium dense, brown, wet, non plastic, non cohesive	SP	
		0.0		(54-55.2') SAND, fine to coarse, loose, yellowish brown, wet, non plastic, non cohesive	SW	
55	100	0.0		(55.2-58.5') CLAY, firm light yellowish brown with reddish yellow mottling, moist, cohesive, high plasticity	CH	
		0.0				
		0.0				
60						
65						
70						
75						

Total Borehole Depth: 58.5' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-005-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: P. Vogel, P.G.
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 5/18/2016
Weather	: 60s, Sunny
Northing (US ft)	: 571149.95
Easting (US ft)	: 1460689.17

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B22-071-SB-1	(0-3.0') SILT, soft, brown, dry, non plastic, non cohesive		
		1.6			ML	
	80	2.4				
		2.9	B22-071-SB-4	(3-4') SILT, firm, yellowish brown, dry, cohesive, low plasticity	ML	
		0.6		(4-5') Slag GRAVEL and SAND, loose, non cohesive	GP/SP	Some white coating
5		-		(5-10.0') Well graded slag GRAVEL, loose, gray to yellowish red, dry to wet, non plastic, non cohesive		
		-				
	50	0.3			GW	
		0.3				
		0.3				
10		-		(10-16) Poorly graded slag GRAVEL and SAND, loose, gray, wet, non plastic, non cohesive		Wet @ 10' bgs
		-				
	27	-			GP/SP	
		0.0				
		0.0				Product noted at 14.8' bgs, no odor noted, oily feel, brownish-red
15	50	0.0				Boring refusal at 16' bgs and installed piezometer.

Total Borehole Depth: 16' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-006-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/8/2016
Weather	: 70s, Sunny, Windy
Northing (US ft)	: 571251.68
Easting (US ft)	: 1461510.81

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-4') SILT with SLAG GRAVEL, soft, dark brown, moist, non plastic, non cohesive	ML	
		-				
	40	-				
		0.0				
		0.0		(4-4.5') Clayey SILT, soft, brown, wet, cohesive, low plasticity	ML	
5				(4.5-7.5') SILT with SLAG GRAVEL, soft, dark brown, dry, non plastic, non cohesive, iron stained	ML	
		-				
		-				
	60	0.0		(7.5-8.5') Clayey SILT grading to CLAY, soft, light gray and reddish yellow, cohesive, low plasticity	ML/CL	
		0.0				
		0.0		(8.5-10') CLAY, soft to very soft, greenish gray and reddish yellow mottling, very moist, cohesive, medium plasticity to high plasticity	CL/CH	
10				(10-13') CLAY, very soft, grayish green, wet, cohesive, high plasticity	CH	Wet at 12' bgs
		-				
		-				
	60	0.0				
		0.0		(13-14') Gravelly SAND with SILT, loose, brown, wet, non plastic, non cohesive	SP	
		0.0		(14-14.2') CONCRETE, loose, white, dry, non plastic, non cohesive	CH	
15				(14.2-15') CLAY, very soft, olive gray and black, very moist, cohesive, high plasticity	ML	
		-				
		-		(15-17') SILT, soft, greenish gray, moist, cohesive, low plasticity		
	70	0.0		(17-19') Silty CLAY grading to CLAY, very soft, grayish green and black at top and botton, moist to very moist, cohesive, medium plasticity to high plasticity	CL/CH	
		0.0				
		0.0		(19-19.8') SAND, fine grained, loose, very dark brown, wet, non plastic, non cohesive	SP	
20				(19.8-23.7') CLAY grading to sandy CLAY, very soft grading tofirm, greenish gray, wet to moist, cohesive, high plasticity to medium plasticity	CH/CL	
		0.0				
		0.0				
	90	0.0				
		0.0				
		0.0		(23.7-24') SAND, medium grained, medium dense, greenish gray, wet, non plastic, non cohesive	SP	
25					CL	

Total Borehole Depth: 62' bgs.
Boring terminated at 62' bgs due to piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-006-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/8/2016
Weather	: 70s, Sunny, Windy
Northing (US ft)	: 571251.68
Easting (US ft)	: 1461510.81

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(24-30') CLAY, very firm, yellowish brown and light gray, moist, cohesive, low plasticity to medium plasticity	CL	
	100	0.0				
		0.0				
		0.0				
30		0.0		(30-35') SILT, firm, gray to dark gray, moist, cohesive, low plasticity	ML	
		0.0				
	100	0.0				
		0.0				
		0.0				
35		0.0		(35-38.5') SAND, fine to medium grained, grading to clayey SAND, medium dense, gray, wet, non plastic, non cohesive	SW	
		0.0				
	100	0.0				
		0.0		(38.5-47.2') CLAY, very firm to soft to firm, dark gray, very moist, cohesive, medium plasticity	CL	
40		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
45		0.0				
		0.0				
		0.0				
	100	0.0		(47.2-47.5') SAND, medium grained, medium dense, dark gray, wet, non plastic, non cohesive	SP	
		0.0		(47.5-62') CLAY, soft, dark gray to greenish grey to grayish green, very moist to wet, cohesive, medium plasticity	CL	
50		0.0				

Total Borehole Depth: 62' bgs.
Boring terminated at 62' bgs due to piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-006-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/8/2016
Weather	: 70s, Sunny, Windy
Northing (US ft)	: 571251.68
Easting (US ft)	: 1461510.81

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.0		(47.5-62') CLAY, soft, dark gray to greenish grey to grayish green, very moist to wet, cohesive, medium plasticity	CL	
	100	0.0				
		0.0				
		0.0				
55		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
60		0.0				
	100	0.0				
65						
70						
75						

Total Borehole Depth: 62' bgs.
Boring terminated at 62' bgs due to piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-006-PZS

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: P. Vogel, P.G.
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 5/18/2016
Weather	: 60s, Sunny
Northing (US ft)	: 571246.35
Easting (US ft)	: 1461514.90

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B22-118-SB-1	(0-1.3') SILT with GRAVEL, soft, brown, dry, non plastic, non cohesive	ML	
		3.0		(1.3-1.4') Concrete, loose, light gray, dry	GP	
	90	3.9		(1.4-2.5') SILT, soft, brown, dry, non plastic, non cohesive	ML	
		13.6		(2.5-2.9') Concrete, loose, gray, dry,	GP	
		6.5		(2.9-3.2') SILT, brown, dry, soft, no cohesion, no plasticity	ML	
5		-		(3.2-6.3') Silty CLAY, firm, brown, moist, non plastic, non cohesive	CL	
		2.5		(6.3-6.5') Concrete, loose, light gray, dry	GP	Some sand intermixed
	70	4.1		(6.5-8.5') Silty CLAY with some SAND, firm, brown, moist, cohesive, low plasticity	CL	
		18.1	B22-118-SB-9	(8.5-8.7') Brick GRAVEL, loose, light yellowish brown, moist, non plastic, non cohesive	GP	
		1.6	B22-118-SB-10	(8.7-10') Silty CLAY with SAND, soft, brown, moist, cohesive, non plastic	CL	
10		-		(10-15') Gravelly SAND, loose, greenish black, wet, non plastic, non cohesive	SP	
		-				
	20	-				
		-				Wet at 14' bgs
		0.0				
15		-		(15-18') CLAY with trace sand, very soft, greenish black, very moist, high plasticity	CH	
		0.0				
	70	0.0				
		0.0		(18-20') SAND, medium dense, greenish black, wet, non plastic, non cohesive	SP	
		0.0				
20						Boring terminated at 20' bgs

Total Borehole Depth: 20' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-007-PZIa

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/8/2016
Weather	: 70s, Sunny, Windy
Northing (US ft)	:
Easting (US ft)	:

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-5') SILT, hard, brown, dry, non plastic, non cohesive	ML	
	80	8.5				
		1.6				
		1.8				
		0.1				
5		-		(5-10') CLAY, soft to very soft, olive and greenish gray to black and greenish gray, very moist to wet,	CH	Wet at 7' bgs
		0.0				
	80	0.0				
		0.0				
		0.0				
10		-		(10-13') Silty CLAY grading to fine sandy CLAY, very soft, olive to olive brown, wet, cohesive, high plasticity to low plasticity	CH/CL	Black streaks
		-				
	70	0.0		(13-15') CLAY, hard, light gray and reddish yellow, dry, cohesive, medium plasticity	CL	
		0.0				
		0.0				
15		0.0		(15-20') CLAY, hard, light gray and reddish yellow, moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
20		0.0		(20-23') CLAY grading to SILT, soft, light olive brown with some reddish yellow mottling, moist to very moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0		(23-29') SILT, soft to firm, gray to dark gray, moist, cohesive, low plasticity	ML	
25		0.0				

Total Borehole Depth: 60' bgs.
Boring terminated at 60' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-007-PZIa

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/8/2016
Weather	: 70s, Sunny, Windy
Northing (US ft)	:
Easting (US ft)	:

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(23-29') SILT, soft to firm, gray to dark gray, moist, cohesive, medium plasticity	ML	
		0.0				
	100	0.0				
		0.0				
		0.0		(29-29.8') SILT with trace SAND, firm, gray, moist, cohesive, medium plasticity	ML	
30		0.0		(29.8-31') SAND, fine to medium grained, loose, gray, wet, non plastic, non cohesive	SW	
		0.0		(31-31.5') Sandy CLAY, firm, gray, very moist, cohesive, medium plasticity	CL	
	100	0.0		(31.5-41') CLAY, soft to very soft, gray to dark gray, wet, cohesive, high plasticity	CH	
		0.0				
		0.0				
35		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
40		0.0				
		0.0		(41-41.5') Clayey SILT, soft, dark gray, moist, cohesive, medium plasticity	ML	Small micas
	100	0.0		(41.5-43.5') CLAY, soft to very soft, dark gray, moist, cohesive, medium plasticity to high plasticity	CL/CH	
		0.0		(43.5-44.3') Sandy CLAY grading to SAND	SW	
		0.0		(44.3-45') CLAY with SAND, soft, dark gray, very moist, cohesive, high plasticity	CH	
45		0.0		(45-50') CLAY, very soft, dark gray, wet, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
50						

Total Borehole Depth: 60' bgs.
Boring terminated at 60' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-007-PZIa

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/8/2016
Weather	: 70s, Sunny, Windy
Northing (US ft)	:
Easting (US ft)	:

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.0		(50-60') CLAY, very soft to soft, dark grayish green, wet, cohesive, high plasticity		
		0.0				
	100	0.0				Small shells throughout
		0.0				
		0.0				
55		0.0			CH	
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
60						
65						
70						
75						

Total Borehole Depth: 60' bgs.
Boring terminated at 60' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-007-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/7/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570961.80
Easting (US ft)	: 1461784.57

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-3') Sandy SLAG GRAVEL, loose, dark yellowish brown, wet, non plastic, non cohesive	GW	
		-				
	50	27.2				
		0.0		(3-3.5') SILT, hard, gray, dry, cohesive, low plasticity	ML	
		0.0		(3.5-5') CLAY, hard to soft, pale olive to reddish yellow, dry to moist, cohesive, medium plasticity to high plasticity	CL/CH	
5		-		(5-10') CLAY with some SAND, very soft, gray, very moist to wet, cohesive, high plasticity		Wet at 6' bgs
		4.8				
	80	5.1			CH	
		1.9				
		0.6				
10		0.0		(10-20') CLAY, firm, light gray and reddish yellow mottling, moist, cohesive, high plasticity		
		1.6				
	100	2.6				
		0.0				
		0.0				
15		0.0			CH	
		7.2		Becomes soft in areas 15-20'		
	100	0.2				
		0.0				
		0.0				
20		0.0		(20-21.5') CLAY, soft to very soft, pale brown, very moist, cohesive, high plasticity	CH	
		0.0		(21.5-25') Silty CLAY, very firm, gray to dark gray, dry to moist, cohesive, low plasticity to medium plasticity		
	100	0.2			CL	
		0.0				
25		0.0				

Total Borehole Depth: 65' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-007-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/7/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570961.80
Easting (US ft)	: 1461784.57

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(25-30') Clayey SILT, firm dark gray, moist, cohesive, low plasticity	ML	
		0.0				
	100	0.0				
		0.0				
		0.0				
30		0.0		(30-31') Sandy SILT, firm to very virm, dark gray, moist, cohesive, low plasticity	ML	
		0.0		(31-32.5') SAND, dense, dark gray, wet, non plastic, non cohesive	SW	
	100	0.0		(32.5-35') Sandy SILT grading to SILT, firm, dark gray, moist, cohesive, low plasticity	ML	
		0.0				
		0.0				
35		0.0		(35-40') SILT, very firm, dark gray, moist, cohesive, low plasticity	ML	
		0.0				
	100	0.0				
		0.2				
		0.0				
40		0.0		(40-45') Clayey SILT, firm to soft, dark gray, moist to very moist, cohesive, low plasticity	ML	
		0.0				
	100	0.0				
		0.0				
		0.0				
45		0.0		(45-50') CLAY, soft, dark gray, very moist, cohesive, medium plasticity	CL	
		0.0				
	100	0.0				
		0.0				
		0.0				
50						

Total Borehole Depth: 65' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-007-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/7/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570961.80
Easting (US ft)	: 1461784.57

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.0		(50-65') CLAY, very soft and soft, dark gray to greenish gray, very moist, cohesive, high plasticity		
		0.0				
	100	0.0				Small clam shells throughout
		0.0				
		0.0				
55		0.0				
		0.0				
	100	0.0			CH	
		0.0				
		0.0				
60		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
65						
70						
75						

Total Borehole Depth: 65' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-007-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: P. Vogel, P.G.
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 5/18/2016
Weather	: 60s, cloudy
Northing (US ft)	: 570960.51
Easting (US ft)	: 1461781.24

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2') Asphalt and Concrete, gray, moist, loose, non plastic, non cohesive	-	
		-				
	60	0.4	B22-126-SB-1	(2-3.7') Brick, gravel sized, loose, yellowish brown, wet, non plastic, non cohesive	-	Wet at 3' bgs
		1.2				
		0.5		(3.7-4.8') Brick, sand sized, loose, yellowish brown, wet, non plastic, non cohesive	-	
5		0.0	B22-126-SB-6	(4.8-5') Gravelly CLAY, very soft, light olive gray, wet, high plasticity, cohesive	CH	Mild sewage smell
		0.0		(5-6') Sandy CLAY, very soft, light grayish green grading to dark greenish gray, very moist, high plasticity, cohesive	CH	
	100	0.0				
		0.0		(6-10') Sandy CLAY, very soft, light grayish green grading to dark greenish gray, wet, high plasticity, cohesive		
		0.0	B22-126-SB-10			
10		-		(10-23.5') CLAY, soft, light grayish green with yellow-red mottling, moist to very moist, high plasticity, cohesive		
		-				
	60	0.0				
		0.0				
		0.0				
15		0.0				
		0.0			CH	
	100	0.0				
		0.0				
		0.0				
20		0.0				
		0.0				
	100	0.0				
		0.0		(23.5-30') CLAY, soft, dark gray, moist, high plasticity, cohesive		
25		0.0				
		0.0			CH	
	100	0.0				
		0.0				Boring terminated at 30' bgs and installation of piezometer
30		0.0				

Total Borehole Depth: 30' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-008-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/21/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570624.99
Easting (US ft)	: 1462721.88

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2.5') SILT with GRAVEL, soft, pale brown, dry, non plastic, non cohesive	ML	Wood fragments at top
		10.2				
	70	54.9		(2.5-9') SILT with GRAVEL, hard, brown, dry, non plastic, non cohesive	ML	
		3.0				
		36.6				
5		-				
		5.2				
	80	3.0				
		1.3				
		1.0		(9-10') SLAG GRAVEL, loose, brown, wet, non plastic, non cohesive	GP	Wet at 9.5' bgs Liner melted
10		0.4		(10-13.5') CLAY, soft, brownish yellow with trace gray mottling, moist, cohesive, medium plasticity to high plasticity	CL/CH	
		0.5				
	100	4.5				
		1.9				
		0.6		(13.5-16') Sandy CLAY, soft, brownish yellow, very moist, cohesive, low plasticity	CL	
15		-				
		3.8		(16-16.5') SLAG GRAVEL with SILT, loose, brownish gray, wet, non plastic, non cohesive	GP CL	
	87	0.1		(16.5-17.3') CLAY with SILT, soft, brownish gray, moist, cohesive, medium plasticity	CL	
		0.0		17.3-18.5') Silty CLAY with SLAG GRAVEL, soft, brownish gray, moist, cohesive, low plasticity	CL	
		0.0				
20		0.0		(18.5-20') Sandy CLAY, very soft, yellowish red, very moist, cohesive, low plasticity	CL	
		0.0		(20-23') CLAY grading to silty CLAY, soft, pale brown and light gray mottles, moist, cohesive, medium plasticity to low plasticity		
	100	0.0				
		0.0		(23-25') SILT with CLAY grading to sandy SILT, soft, gray, moist to very moist, cohesive, low plasticity	ML	
25		0.0				

Total Borehole Depth: 70' bgs.
Boring terminated at 70' due to installation of intermediate piezometer; drilled new boring next to this and placed piezometer to 30' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-008-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/21/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570624.99
Easting (US ft)	: 1462721.88

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(25-25.3') Sandy SILT, soft, grayish brown, very moist, cohesive, low plasticity	ML	
		0.0		(25.3-29') Silty SAND, medium dense, reddish brown then gray, very moist to wet, non plastic, non cohesive	SM	
	100	0.0				
		0.0				
		0.0		(29-30') CLAY, firm, gray, moist, cohesive, high plasticity	CH	
30		0.0		(30-35') CLAY with trace SAND in top foot, soft, gray, moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
35		0.1		(35-40.5') CLAY, soft, gray with black streaks, very moist, cohesive, high plasticity	CH	
		0.1				
	100	0.4				
		0.6				
		0.1				
40		0.0		(40.5-43') Clayey SILT grading to SILT, soft, gray, moist, cohesive, low plasticity	ML	
		0.0				
	100	0.0				
		0.0		(43-43.3') SAND, fine to medium grained, medium dense, gray, moist, non plastic, non cohesive	SW	
		0.0		(43.3-45') Silty CLAY gradint to CLAY, soft, gray, moist, cohesive, medium plasticity to high plasticity	CL/CH	
45		0.0		(45-70') CLAY, very soft, gray, very moist to wet, cohesive, high plasticity	CH	Bivalves shells imbedded
		0.0				
	100	0.0				
		0.0				
		0.0				
50						

Total Borehole Depth: 70' bgs.
Boring terminated at 70' due to installation of intermediate piezometer; drilled new boring next to this and placed piezometer to 30' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-008-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/21/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570624.99
Easting (US ft)	: 1462721.88

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.0		(45-70') CLAY, very soft, gray, very moist to wet, cohesive, high plasticity		
		0.0				
	100	0.0				Bivalves shells imbedded
		0.0				
		0.0				
55		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
60		0.0			CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
65		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
70						
75						

Total Borehole Depth: 70' bgs.
Boring terminated at 70' due to installation of intermediate piezometer; drilled new boring next to this and placed piezometer to 30' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-008-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: B. Gehman
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/9/2016
Weather	: 80s, Partly Sunny
Northing (US ft)	: 570624.50
Easting (US ft)	: 1462707.78

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	40	-		(0-5') Gravelly SAND, loose, dark brown to black, dry to wet, non plastic, non cohesive	SW/GW	
		-				
		-				
		0.5				
		0.1				Wet at 4' bgs
5		0.1		(5-8') Sandy GRAVEL, loose, black to light gray, very moist, non plastic, non cohesive	GW	
		-				
	50	-				Wet at 7' bgs
		-		(8-9') Sandy GRAVEL, loose, black, wet, non plastic, non cohesive	GW	
		-		(9-10') Sandy GRAVEL, loose, light gray, wet, non plastic, non cohesive	GW	
10		-		(10-14.5') Sandy CLAY, soft, orangish brown, very moist to wet, cohesive, medium plasticity	CL	
		-				
	60	-				
		-				
		-				
15				(14.5-15') Clayey GRAVEL, dark gray to black, wet	GC	
20						

Total Borehole Depth:15' bgs.
Boring terminated at 15' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-009-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/27-28/2016
Weather	: 80s, Sunny
Northing (US ft)	: 569968.89
Easting (US ft)	: 1462819.29

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
	20	-		(0-5') SILT with SLAG GRAVEL, soft, brown, moist, non cohesive, non plastic to low plasticity	ML	Wet at 3.5' bgs
		-				
		-				
		0.1				
5		-		(5-10') Silty GRAVEL grading to GRAVEL, loose, brown and gray, dry to very moist, non plastic, non cohesive	GP/GP	
	30	-				
		20.1				
		1.8				
10		-		(10-15') SILT grading to medium grained sandy SILT, firm, brown, moist to dry, non plastic, non cohesive	ML	
		-				
	50	1.6				
		2.1				
		0.6				
15		-		(15-20') SILT with SAND, firm, grayish brown, moist, non cohesive to cohesive, non plastic to low plasticity	ML	
		-				
	40	-				
		1.8				
		0.9				
20		-		(20-25') CLAY with SAND, firm, very pale brown and reddish yellow mottling, moist, cohesive, high plasticity	CH	
		0.1				
	80	0.0				
		0.1				
		3.4				
25						

Total Borehole Depth: 50' bgs.
Boring terminated at 50' bgs due to refusal. Placed piezometer next to this down to 36' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-009-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/27-28/2016
Weather	: 80s, Sunny
Northing (US ft)	: 569968.89
Easting (US ft)	: 1462819.29

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		-		(25-30') CLAY, soft, very pale brown and brownish yellow streaked grading to gray, very moist, cohesive, medium plasticity	CL	
	80	0.1				
		0.0				
		0.0				
		0.0				
30		0.1		(30-34') Clayey SILT grading to sandy SILT, soft, gray, moist, cohesive, low plasticity	ML	
		0.1				
	100	0.1				
		0.1				
		0.0		(34-34.6') Sandy SILT, soft, gray, very moist, cohesive, low plasticity	ML	
35		0.0		(34.6-35') SAND with SILT, fine to medium grained, medium dense, gray, wet, non plastic, non cohesive	SW	
		0.0		(35-40') Silty CLAY with trace SAND grading to CLAY, soft, greenish gray, cohesive, low plasticity to medium plasticity	CL	
	100	0.0				
		0.0				
		0.0				
40		0.0		(40-44.5') CLAY, soft, greenish gray, moist, cohesive, medium plasticity	CL	
		0.0				
	100	0.0				
		0.0				
		0.0				
45		0.1		(44.5-45') SIlty CLAY, soft, greenish gray, moist, cohesive, medium plasticity	CL	
		0.1		(45-45.8') SAND with SILT, fine grained, loose, greenish gray, wet, non plastic, non cohesive	SP	Bivalves abundant from 43-50' bgs
	100	0.1		(45.8-50') CLAY, soft, greenish gray, moist, cohesive, high plasticity	CH	
		0.1				
		0.1				
50						

Total Borehole Depth: 50' bgs.
Boring terminated at 50' bgs due to refusal. Placed piezometer next to this down to 36' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-009-PZS

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Client	: EnviroAnalytics Group	Date	: 6/10/2016
ARM Project No.	: 150300M-21-3	Weather	: 70s, Sunny
Project Description	: Finishing Mills Ground Water		
Site Location	: Sparrows Point, MD		
ARM Representative	: B. Gehman		
Checked by	: W. Mader, P.G., CPSS	Northing (US ft)	: 569980.51
Drilling Company	: Green Services, Inc	Easting (US ft)	: 1462820.63
Driller	: Kevin Pumphrey		
Drilling Equipment	: Geoprobe 7822DT		

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-3') CONCRETE SAND and GRAVEL, loose, white, dry	-	
	50	2.2				
		0.1		(3-9.5') Sandy GRAVEL, black to gray, dry to slightly moist, non plastic, non cohesive	SW/GW	
		0.1				
5		-				
		-				
	60	0.2				
		0.0				
		0.0				Wet at 9.5' bgs
10				(9.5-10') SLAG GRAVEL, loose, black with some red brick derived sands, wet, non plastic, non cohesive	GW	Liner melted
		-		(10-13') SLAG GRAVEL, black, wet, non plastic, non cohesive		
		-			GW	
	100	-				
		-				
		-				
15						

Total Borehole Depth:13' bgs.
Boring terminated due to refusal at 13' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-010-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/24/2016
Weather	: 80s, Cloudy
Northing (US ft)	: 571826.42
Easting (US ft)	: 1462218.46

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-5') SILT with SAND and few GRAVEL, very firm, brown, dry, non plastic, non cohesive	ML	
	80	2.9				
		1.9				
		3.5				
5		8.1				
		-		(5-8.2') SIlty SAND, very fine grained, weak red, wet, non plastic, non cohesive	SM	
		-				
	40	-				Wet at 8' bgs
		1.3		(8.2-10') Sandy GRAVEL, loose, weak red, wet, non plastic, non cohesive	GP/SP	
10		0.8				
		0.3		(10-12') SIlty SAND with GRAVEL, fine to coarse grained, medium dense, very dark brown, wet, non plastic, non cohesive	SM	
		-				
	100	-		(12-13') Sandy GRAVEL, loose, very dark brown, wet, non plastic, non cohesive	GP	Slight odor
		-		(13-14.5') SILT with SAND, soft, greenish gray and black, very moist to wet, cohesive, low plasticity	ML	
		0.4		(14.5-15') Sandy GRAVEL, loose, very dark brown, wet, non plastic, non cohesive	GP	
15		-		(15-19') SILT with SAND and GRAVEL, very firm, moist, non plastic, non cohesive	ML	
	25	-				Liner melted and compressed to 1-2' section
		-				
		-				
20						

Total Borehole Depth: 19' bgs.
Boring terminated due to refusal at 19' bgs. Placed shallow well to 5-15' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-011-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/24/2016
Weather	: 80s, Cloudy
Northing (US ft)	: 571620.40
Easting (US ft)	: 1463013.18

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2.5') Sandy SILT with GRAVEL, hard, brown, gray and dark brown, dry, non plastic, non cohesive	ML	
	80	3.0				
		0.2		(2.5-4.9') SILT, hard, brown, dry, non plastic, non cohesive	ML	
		0.2				
		0.2				
5		-		(4.9-5') SLAG GRAVEL, loose, gray, dry, non plastic, non cohesive	GP	
		-		(5-7.8') Sandy CLAY with GRAVEL, soft, light brown, very moist, cohesive, medium plasticity	CL	
	50	0.9				
		0.1		(7.8-10') CLAY with trace SAND, very soft, olive and very dark gray mottling, very moist to wet, cohesive, medium plasticity	CL	
		0.2				Wet at 9.5' bgs
10		0.0		(10-13') CLAY with trace SAND, very soft, brownish yellow and light gray, wet, cohesive, medium plasticity	CL	
		0.0				
	100	0.0				
		0.0		(13-14.5') Sandy CLAy, very firm, brownish yellow and reddish yellow, moist to dry, cohesive, medium plasticity	CL	
		0.0		(14.5-16.5') Sandy CLAY, very firm, brownish yellow and reddish yellow, moist to dry, cohesive, medium plasticity	CL	
15		-				
		0.0		(16.5-20') Clayey SILT, soft, gray, moist, cohesive, low plasticity	ML	
	100	0.0				
		0.1				
		0.0				
20		-		(20-22.2') Sandy SILT, very soft, gray, wet, cohesive, low plasticity	ML	
		0.0				
	50	0.0		(22.2-25') SAND with SILT, fine to coarse grained, loose, gray to light gray, non plastic, non cohesive	SP	
		0.0				
		0.0				
25						

Total Borehole Depth: 65' bgs.
Exploratory boring terminated at 65' bgs. Adjacent boring was drilled to 31' with piezometer set.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-011-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/24/2016
Weather	: 80s, Cloudy
Northing (US ft)	: 571620.40
Easting (US ft)	: 1463013.18

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(25-29') SAND, loose, very pale brown, wet, non plastic, non cohesive	SP	
	100	0.0				
		0.0				
		0.0		(29-29.8') Clayey SAND, medium grained, medium dense, very pale brown, very moist, non plastic, non cohesive	SP-SC	
30		0.0		(29.8-30') Sandy CLAY, soft, very pale brown, very moist, cohesive, low plasticity	CL	
		0.0		(30-32') CLAY, firm, dark greenish gray, moist, cohesive, medium plasticity	CL	
	100	0.0		(32-35') CLAY, firm, dark greenish gray, moist, cohesive, high plasticity	CH	
		0.0				
35		0.0		(35-37') CLAY, firm, gray, moist, cohesive, high plasticity	CL	
		0.0				
	100	0.0		(37-41') Clayey SILT, very firm, gray, moist to dry, cohesive, low plasticity	ML	
		0.0				
40		0.0				
		0.0		(41-45') CLAY, firm greenish gray, moist, cohesive, medium plasticity to high plasticity	CL/CH	
	100	0.0				
		0.0				
		0.0				
45		0.0		(45-50') Clay, firm, greenish gray, moist, cohesive, high plasticity	CH	Abundant bivalves from 43-50' bgs
		0.0				
	100	0.0				
		0.0				
50		0.0				

Total Borehole Depth: 65' bgs.
Exploratory boring terminated at 65' bgs. Adjacent boring was drilled to 31' with piezometer set.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-011-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/24/2016
Weather	: 80s, Cloudy
Northing (US ft)	: 571620.40
Easting (US ft)	: 1463013.18

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.0		(50-65') CLAY, soft, greenish gray, moist, cohesive, high plasticity		
		0.0				
	100	0.0				
		0.0				
		0.0				
55		0.0				
		0.0				
	100	0.0			CH	
		0.0				
		0.0				
60		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
65						
70						
75						

Total Borehole Depth: 65' bgs.
Exploratory boring terminated at 65' bgs. Adjacent boring was drilled to 31' with piezometer set.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-011-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: B. Gehman
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/10/2016
Weather	: 80s, Sunny
Northing (US ft)	: 571622.76
Easting (US ft)	: 1463015.69

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2') SILT with GRAVEL, loose, dry,non plastic, non cohesive	ML	
		0.4				
	70	0.2		(2-4') CLAY with some SAND, dark brown to black, slightly moist, cohesive, high plasticity	CL	
		0.0				
		0.0		(4-5') GRAVEL with SAND and some SLAG GRAVEL, loose, black to white, very moist, non plastic, non cohesive	GW	
5		-		(5-10') Sandy CLAY, soft, dark brown, cohesive, medium plasticity		Wet at 6' bgs
		-				
	50	-			CL	
		-				
		-				
10		-		(10-14.5') Sandy CLAY, dense, tan to orangish brown and gray, very moist to wet, cohesive, medium plasticity		
		-				
		-			CL	
	60	-				
		-				
		-				
15		-		(14.5-15') SAND, fine grained, orange, wet, cohesive, non plastic	SP	
		-		(15-18') CLAY with some SAND, very stiff, orangish brown to gray, cohesive, medium plasticity	CL	
	90	-				
		-		(18-20') Sandy CLAY, soft, gray, very moist, cohesive, medium plasticity	CL	
		-				
20						

Total Borehole Depth: 20' bgs.
Boring terminated at 20' bgs with piezometer screen installed from 4-19' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-012-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/27/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570732.06
Easting (US ft)	: 1463341.74

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		24.2		(0-3') SILT with few SLAG GRAVEL, soft, brown, dry, non plastic, non cohesive	ML	Micaceous in spots
	100	1.0				
		1.3				
		0.3		(3-4') SILT, hard, grayish brown, moist, non plastic, non cohesive	ML	
		0.3		(4-4.8') Gravelly SILT, soft, gray dry, non plastic, non cohesive	ML	
5		-		(4.8-5') Silty CLAY, soft, pale brown, moist, cohesive, medium plasticity	CL	
		0.0		(5-10') CLAY, soft to very frim, light gray and reddish yellow mottling, moist to dry, cohesive, medium plasticity	CL	
	100	0.0				
		0.0				
		0.0				
10		0.2		(10-14') CLAY, very firm to firm, pale brown and reddish yellow mottling, dry to moist, cohesive, medium plasticity to high plasticity	CL/CH	
		0.6				
	100	0.0				
		0.1				
		0.0		(14-17') CLAY, soft, light gray, very moist, cohesive, high plasticity	CH	
15		-				
		0.0				
	87	0.0		(17-17.5') CLAY with SAND, soft, strong brown, moist, cohesive, medium plasticity	CL	Wet at 17.5' bgs
		0.0		(17.5-22') SAND, fiine to medium grained, medium dense, reddish yellow, wet, non plastic, non cohesive	SW	
		0.0				
20		0.0				
		0.0				
	100	0.0		(22-23.5') SAND, fine to medium grained, medium dense, very pale brown, wet, non plastic, non cohesive	SW	
		0.0		(23.5-25') SAND, fine grained, dense, gray, wet, non plastic, non cohesive	SP	
		0.0				
25						

Total Borehole Depth: 70' bgs.
Boring terminated at 70'; piezometer placed down to 68' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-012-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/27/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570732.06
Easting (US ft)	: 1463341.74

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(25-29') CLAY, soft, gray, moist, cohesive, high plasticity	CH	
	100	0.0				
		0.0				
		0.0		(29-31.8') Silty CLAY, soft to very soft, gray, moist to wet, cohesive, high plasticity	CH	
30		0.0				
		0.0				
		0.0		(31.8-32.2') Sandy CLAY, soft, gray, very moist, cohesive, low plasticity	CL	
	100	0.0		(32.2-40') CLAY, soft, dark gray, moist, cohesive, high plasticity	CH	
		0.0				
35		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
40		0.0		(40-50') CLAY, soft, greenish gray, very moist, cohesive, high plasticity	CH	Bivalve shells throughout
		0.0				
	100	0.0				
		0.0				
		0.0				
45		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
50						

Total Borehole Depth: 70' bgs.
Boring terminated at 70'; piezometer placed down to 68' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-012-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/27/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570732.06
Easting (US ft)	: 1463341.74

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.3		(50-57.8') CLAY, soft, dark gray, very moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
55		0.0				
		0.1				
	100	0.1				
		0.0		(57.8-60') SAND, fine to coarse grained with some GRAVEL, dense, gray grading to reddish brown, wet, non plastic, non cohesive	SW	
		0.1				
60		-		(60-65') SAND, fine to coarse grained, loose to medium dense, gray, wet, non plastic, non cohesive	SW	
		-				
	43	-				
		0.0				
		0.1				
65		-		(65-69') SAND, fine to medium grained grading to medium and very coarse grained with GRAVEL, dense, brown, wet, non plastic, non cohesive	SW	
		0.0				
	90	0.0				
		0.0				
		0.0		(69-70') SAND, fine and medium grained, dense, strong brown, very moist, non plastic, non cohesive	SW	
70						
75						

Total Borehole Depth: 70' bgs.
Boring terminated at 70'; piezometer placed down to 68' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-012-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: B. Gehman
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/10/2016
Weather	: 70s, Sunny
Northing (US ft)	: 570734.98
Easting (US ft)	: 1463340.86

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-4') Sandy GRAVEL, loose, dark brown, non plastic, non cohesive	GW	
	60	1.9				
		0.3				
		0.3		(4-4.5') Sandy CLAY, gray, moist, cohesive, medium plasticity	CL	Wet at 4.5' bgs
5		-		(4.5-4.7') Sandy CLAY, very soft, gray, wet, cohesive, medium plasticity	CL	
		-		(4.7-5') CLAY with some SAND, slightly dense, orangish brown to gray, cohesive, high plasticity	CH	
	60	0.0		(5-15') CLAY, stiff to very stiff, orangish brown to gray, slightly moist, cohesive, high plasticity		
		0.0				
		0.0				
10		-			CH	
		-				
	100	-				
		-				
		-				
15		-				Wet at 15' bgs
		-		(15-18') CLAY with SAND, soft, gray, very moist, cohesive, high plasticity	CH	Sands heaving in casing, solid point down to 25', could not get core past 12'
	100	-				
		-		(18-20') SAND, fine grained, brown, wet, cohesive, non plastic	SP	
		-				
20		-		(20-25') No return		
		-				
	0	-				
		-				
		-				
25						

Total Borehole Depth: 25' bgs.
Boring terminated at 25' bgs. Piezometer screen set from 10-25' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-013-PZI

(page 1 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/9-10/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570271.36
Easting (US ft)	: 1461726.85

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-4') Sandy GRAVEL, loose, dark brown to black, wet, non plastic, non cohesive	GP	
		-				
	50	0.0				
		0.0				
		0.0		(4-5') SILT, very firm, black and greenish gray mottling, dry, cohesive, low plasticity	ML	
5		0.0		(5-8') CLAY, soft to firm, light greenish gray with black mottling, moist, cohesive, medium plasticity	CL	
		0.0				
	100	0.0				
		0.0		(8-12') CLAY, firm to soft, light brownish gray, moist, cohesive, high plasticity	CH	
		0.0				
10		0.0				
		0.0				
	100	0.0		(12-14') CLAY with trace very coarse SAND, firm to soft, light brownish gray, moist, cohesive, high plasticity	CH	
		0.0				
		0.0		(14-15') CLAY, soft, gray, very moist to wet, cohesive, high plasticity	CH	Wet at 14' bgs
15		0.0		(15-18') CLAY, soft, gray, very moist, cohesive, high plasticity to medium plasticity	CH/CL	
		0.0				
	100	0.0				
		0.0		(18-20') Silty CLAY, dark gray, moist, cohesive, low plasticity	CL	
		0.0				
20		0.0		(20-21.5') SILT, soft, dark gray, moist, cohesive, low plasticity	ML	
		0.0		(21.5-21.8') Sandy SILT, soft, dark gray, moist, cohesive, low plasticity	ML	
	100	0.0		(21.8-22.8') SAND, soft, dark gray, wet, non plastic, non cohesive	SP	
		0.0		(22.8-23.2') Sandy SILT, soft, dark gray, moist, cohesive, low plasticity	ML	
25		0.0			CH	

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs for piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-013-PZI

(page 2 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/9-10/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570271.36
Easting (US ft)	: 1461726.85

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(23.2-30') CLAY, very soft, dark gray, very moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
30		0.0		(30-31.3') CLAY grading to sandy CLAY, very soft, greenish gray, very moist, cohesive, medium plasticity	CL	
		0.0		(31.3-32.1') SAND, fine grained, soft, greenish gray, wet, non plastic, non cohesive	SP	
	100	0.1		(32.1-32.3') Sandy CLAY, very soft, greenish gray, very moist, cohesive, medium plasticity	CL	
		0.0		(32.3-40') CLAY, very soft to firm, greenish gray, very moist to moist, cohesive, medium plasticity		
		0.0				
35		0.0			CL	
		0.0				
	100	0.0				
		0.0				
		0.0				
40		0.0		(40-44.5') CLAY, soft, greenish gray, very moist, cohesive, medium plasticity to high plasticity	CL/CH	
		0.1				
	100	0.1				
		0.1				
		0.0		(44.5-45') SAND, fine to very coarse grained, loose, gray, wet, non plastic, non cohesive	SW	
45		-		(45-50') Small GRAVEL with SAND and SILT grading to medium SAND, loose, light brownish gray, wet, non plastic, non cohesive	SP	
		-				
	30	-				
		-				
50		0.0				

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs for piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-013-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/9-10/2016
Weather	: 80s, Sunny
Northing (US ft)	: 570271.36
Easting (US ft)	: 1461726.85

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50	30	- - - - 0.0		(50-55') SAND with few GRAVEL, fine to coarse grained, loose, pale brown, wet, non plastic, non cohesive	SW	
55						
60						
65						
70						
75						

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs for piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-013-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT

Date	: 5/18/2016
Weather	: 60s, Cloudy
Northing (US ft)	: 570268.11
Easting (US ft)	: 1461727.93

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-1.7') SAND and GRAVEL, medium sand to small gravel sized, loose, dark olive brown, very moist, non plastic, non cohesive	SP/GP	
		1.3				
	80	16.4		(1.7-2.3') BRICK, loose, red, wet, non plastic, non cohesive	-	
		3.2		(2.3-2.5') CONCRETE, loose, light dray, dry, non plastic, non cohesive	GP	
		0.3		(2.5-4.2') SLAG GRAVEL, loose, very dark greenish gray, wet, non plastic, non cohesive	CL	
5		-		(4.2-5') CLAY, very firm, dark greenish gray, dry, cohesive, medium plasticity		
		0.0		(5-15') CLAY, soft, light yellowish brown, very moist, cohesive, high plasticity		
	70	0.0				
		0.1				
		0.0				
10		0.0			CH	
		0.0				Visible water in sleeve
		0.0				
	100	0.0				
		0.0				
		0.0				
15		0.0		(15-21.3') CLAY, very soft, dark gray, very moist, cohesive, high plasticity		
		0.0				
		0.0				
	100	0.0			CH	
		0.0				
		0.0				
20		0.0				
		0.0				Wet at 21.3'' bgs
		0.0		(21.3-22.9') SAND, loose, dark gray, wet, non plastic, non cohesive	SP	
	100	0.0				
		0.0		(22.9-25') CLAY, very soft, dark gray, very moist, cohesive, high plasticity	CH	
25		0.0				

Total Borehole Depth: 25' bgs.
Boring terminated at 25' bgs due to installation of piezometer.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-014-PZI

(page 1 of 2)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/7/2016
Weather	: 80s, Sunny
Northing (US ft)	: 569541.35
Easting (US ft)	: 1462083.52

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-3') SILT with SLAG GRAVEL, soft, brown, dry to very moist, non plastic, non cohesive	ML	
		-				
	70	0.1				
		0.1		(3-4') SILT, hard, brown with yellowish mottling, dry, cohesive, low plasticity	ML	
		0.1		(4-4.5') SAND and SLAG GRAVEL, medium grained, loose, gray, moist, non plastic, non cohesive	GP/SP	
5		-		(4.5-5') SILT, hard, brown with yellowish mottling, dry, cohesive, low plasticity	ML CL	Wet at 6' bgs
		0.0		(5-7') CLAY, soft, light gray, wet, cohesive, medium plasticity	CL	
	80	0.1		(7-8') Sandy CLAY, very soft, light gray, wet, cohesive, medium plasticity	CL	
		0.0		(8-10') CLAY, soft, light gray with pale yellow mottling, wet, cohesive, medium plasticity		
		0.1		(10-10.5') CLAY, very soft, very pale brown and gray, wet, cohesive, high plasticity	CH CL	
10		0.1		(10.5-10.7') Gravelly CLAY, very soft, light gray, wet, cohesive, medium plasticity		
		0.1				
	100	0.0		(10.7-20') CLAY, very soft to soft, gray, wet to very moist, cohesive, high plasticity		
		0.0				
		0.0				
15		0.0			CH	
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
20		0.0		(20-20.7') CLAY, very soft, gray, wet, cohesive, medium plasticity	CL	
		0.0		(20.7-21.7') SANDS, medium grained, medium dense, gray, wet, non plastic, non cohesive	SP	
	100	0.0		(21.7-25') CLAY, very soft, gray, wet, cohesive, medium plasticity	CL	
		0.0				
		0.0				
25						

Total Borehole Depth: 50' bgs.
Boring terminated at 50' bgs for piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-014-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/7/2016
Weather	: 80s, Sunny
Northing (US ft)	: 569541.35
Easting (US ft)	: 1462083.52

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(25-30.5') CLAY, very soft, yellowish brown grading to gray, wet, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0				
30		0.0				
		0.1		(30.5-32') Sandy CLAY, soft, gray, very moist to wet, cohesive, medium plasticity	CL	
	100	0.0		(32-33.5) SAND, fine grained, loose, gray, wet, non plastic, non cohesive	SP	
		0.2		(33.5-40') CLAY, very soft, gray, wet, cohesive, high plasticity	CH	
		0.1				
35		0.2				
		0.3				
	100	0.4				
		0.6				
		0.2				
40		0.0		(40-44.3') CLAY, soft, gray, very moist to wet, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0		(44.3-45') SAND, medium grained, medium dense, gray, wet, non plastic, non cohesive	SP	
45		0.0		(45-49') SAND, fine grained, medium dense, gray, wet, non plastic, non cohesive	SP	Micaceous
		0.0				
	100	0.0				
		0.0				
		0.0		(49-50') SAND, fine to very coarse, medium dense, gray to very pale brown, wet, non plastic, non cohesive	SW	
50						

Total Borehole Depth: 50' bgs.
Boring terminated at 50' bgs for piezometer installation.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-014-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: P. Vogel, P.G.
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT
Date	: 5/18/2016
Weather	: 60s, cloudy
Northing (US ft)	: 569536.31
Easting (US ft)	: 1462083.86

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-	B22-043-SB-1	(0-1.5') Slag GRAVEL and SAND, loose, gray and dark yellowish brown, dry, non plastic, non cohesive	GW/SW	
		6.3		(1.5-2') Silty SAND grading to medium SAND, loose, brown and black, non plastic, non cohesive	SM/SP	
	90	9.8		(2-3.5') Clayey SILT, light brownish gray, moist, cohesive, low plasticity	ML	
		10.9	B22-043-SB-4	(3.5-7') CLAY, greenish gray and yellowish brown, moist, firm, cohesive, highly plastic, with some medium brown SAND between 5.5' and 7'	CH	
5		5.4				
		7.4				
		8.2				
	90	2.8		(7-10') CLAY, brown and light gray, wet, very soft, cohesive, high plasticity	CH	
		3.4				
		2.8	B22-043-SB-10			
10		0.0		(10-14') CLAY, yellowish brown, wet, very soft, cohesive, high plasticity	CH	
		0.0				
	100	0.0				
		0.0				
		0.0		(14-22.5') CLAY, dark gray, wet, soft, cohesive, high plasticity	CH	
15		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
20		0.0				
		0.0				
	100	0.0		(22.5-23.2') SAND, dark gray, wet, medium dense, non plastic, non cohesive	SP	Wet at 22.5' bgs
		0.0		(23.2-25') FAT CLAY, ldark gray, wet, very soft, cohesive, high plasticity	CH	Boring terminated at 25' bgs due to water and installation of piezometer.
25		0.0				

Total Borehole Depth: 25' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-015-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/20/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568440.69
Easting (US ft)	: 1462479.04

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-1.4') Silty GRAVEL, loose, brown, dry, non plastic, non cohesive	GP-GM	
		0.2		(1.4-3') SILT, hard, brown dry, non plastic, non cohesive	ML	
	80	1.1				
		134.4		(3-4.2') Silty GRAVEL, loose, brown, moist to wet, non plastic, non cohesive	GP-GM	
		1.0		(4.2-5') SILT, very firm, light yellowish brown, moist, cohesive, low plasticity	ML	
5		1.1			ML	
		1.5		(5-5.5') Sandy SILT, soft, grayish brown, moist, cohesive, low plasticity		
	100	0.4		(5.5-9') SAND with trace CLAY, fine to medium grained, medium dense to loose, pale brown but reddish yellow at top and bottom, moist then wet, non plastic, non cohesive	SP	
		0.1				Wet at 8.5' bgs
		0.1		(9-12.5') CLAY with SAND, very soft, gray, very moist to wet, cohesive, high plasticity		
10		0.0			CH	
		0.0				
	100	0.0		(12.5-14') Sandy CLAY, very soft, grayish brown, wet, cohesive, low plasticity	CL	
		0.0				
		0.0		(14-20') CLAY, soft, gray, moist, cohesive, high plasticity		
15		0.0				
		0.0			CH	
	100	0.0				
		0.0				
		0.0				
20		0.0		(20-24.5') CLAY, soft, gray, very moist, cohesive, high plasticity		
		0.0			CH	
	100	0.0				
		0.0				
		0.0		(24.5-25.1') Sandy CLAY, soft, gray, very moist, cohesive, low plasticity	CL	
25						

Total Borehole Depth: 69' bgs.
Boring terminated at 69' bgs for installation of piezometer and screened from 64-69' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-015-PZI

(page 2 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/20/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568440.69
Easting (US ft)	: 1462479.04

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.0		(25.1-30') CLAY with trace SAND at top, soft to very soft, gray, moist to veery moist, cohesive, high plasticity	CL	
		0.0				
	100	0.0			CH	
		0.0				
		0.0				
30		0.0		(30-35') CLAY, soft, gray, moist, cohesive, high plasticity		
		0.0				
	100	0.0			CH	
		0.0				
		0.0				
35		0.0		(35-39.3') CLAY with coarse SAND at top, soft, gray, very moist to moist, cohesive, medium plasticity		
		0.0				
	100	0.0			CL	
		0.0				
		0.0				
40		<0.1		(39.3-40') Sandy CLAY grading to SAND, soft to loose, gray, wet, cohesive, low plasticity to non plastic	CL/SP	
		<0.1		(40-45') Silty CLAY, soft to very soft, gray, wet to moist, cohesive, high plasticity		
	100	<0.1			CH	
		<0.2				
		<0.2				
45		<0.2		(45-64') CLAY, very soft, dark gray, wet to very moist, cohesive, high plasticity		
		<0.2				
	100	<0.2			CH	
		<0.2				
		<0.2				
50						

Total Borehole Depth: 69' bgs.
Boring terminated at 69' bgs for installation of piezometer and screened from 64-69' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-015-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/20/2016
Weather	: 80s, Sunny
Northing (US ft)	: 568440.69
Easting (US ft)	: 1462479.04

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		<0.1		(45-64') CLAY, very soft, dark gray, wet to very moist, cohesive, high plasticity		
		<0.1				
	100	<0.1				
		<0.1				
		<0.1				
55		<0.1				
		<0.1				
		<0.1			CH	
	100	<0.1				
		<0.1				
		<0.1				
60		<0.1				
		<0.1				
		<0.1				
	100	<0.1				
		<0.1				
		<0.1				
65		-		(64-67.5') Well graded SAND and GRAVEL, medium coarse sand to coarse gravel, well rounded, loose, light brown, wet, non plastic, non cohesive	SW/GW	
	100	-				
		-		(67.5-69') No recovery		Driller interprets sandy interval
		-				
70						
75						

Total Borehole Depth: 69' bgs.
Boring terminated at 69' bgs for installation of piezometer and screened from 64-69' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-015-PZS

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: B. Gehman
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Kevin Pumphrey
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/9/2016
Weather	: 70s, Mostly Sunny
Northing (US ft)	: 568438.52
Easting (US ft)	: 1462482.27

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-4') Silty SAND with GRAVEL, loose, dark brown to black, moist, non plastic, non cohesive	SM	
		-				
	50	-				
		1.0				
		0.2		(4-4.5') GRAVEL with some SAND, loose, dark gray, wet, non plastic, non cohesive	GW	Wet at 4' bgs (perched)
				(4.5-5') CLAY, very stiff, gray to orangish brown, moist, cohesive, high plasticity	CH	
5		-		(5-8') Clayey SAND, medium dense, orangish brown to gray, very moist, cohesive, low plasticity	SC	
		-				
	60	0.0				
		0.0		(8-10') SAND, fine grained, with some CLAY, medium dense, wet, cohesive, low plasticity	SP	Wet at 8' bgs
		0.0				
10		-		(10-13.5') CLAY with some SAND, very soft, dark gray, cohesive, high plasticity	CH	
		-				
	90	-				
		-		(13.5-15') Clayey SAND, orangish brown, non cohesive, low plasticity	SP	
		-				
15						

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to piezometer installation and screened from 2-15' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-016-PZI

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Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT
Date	: 6/22/2016
Weather	: 80s, Sunny, Windy
Northing (US ft)	: 568827.21
Easting (US ft)	: 1461007.05

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-3.7') Sandy SILT with GRAVEL, very soft, brownish gray, wet, cohesive, low plasticity	ML	
		-				
	30	-				
		1.2				
		0.4		(3.7-4.8') SILT and gravel and sand sized fill, soft, dark brown and yellow, moist, non plastic, non cohesive	ML/GP	
5		-		(4.8-5') SILT, soft, dark brown, dry, non plastic, non cohesive	ML	
		-		(5-8.7') Sandy GRAVEL with SILT, loose, dark brown, wet, non plastic, non cohesive	GP/SP	Trace oxidation
	40	-				Wet at 8' bgs
		0.0				
		0.0		(8.7-10') CLAY with SILT, soft, greenish brown and black mottles, very moist to wet, cohesive, high plasticity	CH	
10		-		(10-15') CLAY, very soft to firm, light gray and brownish yellow mottling, very moist to dry, cohesive, high plasticity	CH	
		0.3				
	77	0.3				
		0.2				
		0.2				
15		0.3		(15-20') CLAY, soft to very soft, light gray with dark gray streaks, very moist, cohesive, high plasticity	CH	
		0.2				
	100	0.3				
		0.3				
		0.2				
20		0.3		(20-23') CLAY, soft to very soft, pale brown with black streaks, very moist to wet, cohesive, high plasticity	CH	Oxidation present
		0.3				
	100	0.3				
		0.3		(23-28') CLAY, very soft, light gray, very moist, cohesive, high plasticity	CH	
		0.5				
25						

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs due to installation of piezometer and screened from 47-52' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-016-PZI

(page 2 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/22/2016
Weather	: 80s, Sunny, Windy
Northing (US ft)	: 568827.21
Easting (US ft)	: 1461007.05

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
25		0.2		(23-28') CLAY, very soft, light gray, very moist, cohesive, high plasticity	CH	
	100	0.3				
		0.3		(28-30') SAND, fine to medium grained, medium dense to loose, reddish yellow, wet to very moist, non plastic, non cohesive	SW	
30		0.3				
		0.2				
		0.1		(30-32') CLAY with SAND, very soft, gray, very moist, cohesive, high plasticity	CH	
		0.0				
	100	0.0		(32-33.2') SAND, fine grained, gray, wet, non plastic, non cohesive	SP	
		0.0		(33.2-48.2') CLAY, soft, greenish gray, moist, cohesive, high plasticity	CH	
		0.0				
35		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
40		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0				
		0.0				
45		0.0				
		0.0				
		0.0				
	100	0.0				
		0.0		(48.2-50.8') SAND, dense, brownish gray, very moist to wet, non plastic, non cohesive	SW	
50		0.0				

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs due to installation of piezometer and screened from 47-52' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-016-PZI

(page 3 of 3)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/22/2016
Weather	: 80s, Sunny, Windy
Northing (US ft)	: 568827.21
Easting (US ft)	: 1461007.05

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
50		0.0		(48.2-50.8') SAND, dense, brownish gray, very moist to wet, non plastic, non cohesive	SW	
		0.0				
	100	0.0		(50.8-55') CLAY, soft, greenish gray, moist, cohesive, high plasticity	CH	
		0.0				
55		0.0				
60						
65						
70						
75						

Total Borehole Depth: 55' bgs.
Boring terminated at 55' bgs due to installation of piezometer and screened from 47-52' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-016-PZS

(page 1 of 1)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/23/2016
Weather	: 70s, Rainy
Northing (US ft)	: 568829.88
Easting (US ft)	: 1461007.58

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0						
		-		(0-3.8') CLAY, soft, pale brown, wet, cohesive, low plasticity	CL	
		-				
	30	-				
		0.4				
		0.1		(3.8-4.8') SILT, soft, very dark brown, dry, non plastic, non cohesive	ML	
5				(4.8-5') BRICK, sand sized, loose, yellow, dry, non plastic, non cohesive	-	
		-		(5-9.2') SILT, soft, pale brown, dry, non plastic, non cohesive	ML	
		-				
	20	-				
		-				Wet at 9' bgs
		0.1		(9.2-10') SLAG GRAVEL, loose, very dark brown, wet, non plastic, non cohesive	GP	
10		-		(10-15') CLAY, very soft to soft, wet to moist, cohesive, low plasticity	CL	
		0.0				
	80	0.1				
		0.1				
		0.3				
15						

Total Borehole Depth: 15' bgs.
Boring terminated at 15' bgs due to water and piezometer screened from 5-15' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-017-PZS

(page 1 of 2)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/23/2016
Weather	: 80s, Cloudy
Northing (US ft)	: 569903.20
Easting (US ft)	: 1461148.43

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
0		-		(0-2.7') Sandy CLAY, soft, pale brown, very moist, cohesive, high plasticity	CH	
		-				
	50	1.8		(2.7-2.8') ASPHALT, loose, dark gray, dry, non plastic, non cohesive	SP	
		0.8		(2.8-3.3') Silty SAND, medium grained, loose, brown and black, dry, non plastic, non cohesive	CL	
		0.3		(3.3-4.8') CLAY, hard, greenish gray, dry, cohesive, medium plasticity		
5				(4.8-4.9') SAND and SLAG GRAVEL, loose, black, dry, non plastic, non cohesive	GP/SP	Wet at 5' bgs
		-		(4.9-5') CLAY, very soft, pale brown, wet, cohesive, high plasticity	CH	
		-		(5-10') CLAY, very soft, greenish gray, wet, cohesive, high plasticity		
	13	-			CH	
		-				
		5.4				
10		-		(10-15') CLAY, very soft, very pale brown and reddish yellow with mottling, very moist to wet, cohesive, high plasticity		
		2.7				
	80	0.3			CH	
		0.4				
		0.4				
15						

Total Borehole Depth: 25' bgs.

ARM Group Inc.
Earth Resource Engineers and Consultants

Boring ID: FM-017-PZS

(page 2 of 2)

Client	: EnviroAnalytics Group
ARM Project No.	: 150300M-21-3
Project Description	: Finishing Mills Ground Water
Site Location	: Sparrows Point, MD
ARM Representative	: L. Perrin
Checked by	: W. Mader, P.G., CPSS
Drilling Company	: Green Services, Inc
Driller	: Don Marchese
Drilling Equipment	: Geoprobe 7822DT

Date	: 6/23/2016
Weather	: 80s, Cloudy
Northing (US ft)	: 569903.20
Easting (US ft)	: 1461148.43

Depth (ft.)	% Recovery	PID Reading (PPM)	Sample No/Interval	DESCRIPTION	USCS	REMARKS
15		0.2		(15-20') CLAY, very soft to soft, brownish gray to gray, wet to very moist, cohesive, high plasticity to medium plasticity	CH/CL	
	100	0.0				
		0.0				
		0.0				
20		0.0		(20-22.5') CLAY, very soft, gray, wet, cohesive, medium plasticity	CL	
		0.0				
	100	0.0		(22.5-23.5) SAND, fine to medium grained, medium dense, gray, wet, non plastic, non cohesive	SW	
		0.0		(23.5-24') CLAY with SAND, soft, gray, cohesive, high plasticity	CH	
		0.0		(24-25') CLAY, soft, gray, very moist, cohesive, high plasticity	CH	
25						
30						

Total Borehole Depth: 25' bgs.

APPENDIX D

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM07-PZM005 Well Permit No.:

Coordinates:

Latitude/Northing 569431.35 ft Longitude/Easting 1459617.84 ft

Condition of pad and/or cover: Good/ fair vegetation Flush Mount or Stick-Up? Stick-up

Well ID Marked? No If yes, where?

Locking cap? Yes Lock? Yes, Cut Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	13.33 TOC/10.32 BGS	
Depth to Bottom (feet BGS/TOC)	19.66 TOC/16.65 BGS	17 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments:

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM07-PZM045 Well Permit No.: _____

Coordinates:

Latitude/Northing 569436.02 ft Longitude/Easting 1459629.92 ft

Condition of pad and/or cover: Good, Some Vegetation Flush Mount or Stick-Up? Stick-up

Well ID Marked? No If yes, where? _____

Locking cap? Yes Lock? Yes. Cut Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	13.85 TOC/10.13 BGS	
Depth to Bottom (feet BGS/TOC)	60.74 TOC/57.02 BGS	57 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM09-PZM007 Well Permit No.: _____

Coordinates:

Latitude/Northing 570396.94 ft Longitude/Easting 1459876.87 ft

Condition of pad and/or cover: No pad; Trees, fair vegetation Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side of casing

Locking cap? Yes Lock? Cut, yes Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	10.76 TOC/8.12 BGS	
Depth to Bottom (feet BGS/TOC)	18.42 TOC/15.77 BGS	16 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM09-PZM047 Well Permit No.: _____

Coordinates:

Latitude/Northing 570397.72 ft Longitude/Easting 1459869.20 ft

Condition of pad and/or cover: No pad, fair vegetation Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side of casing

Locking cap? Yes Lock? Yes, cut Diameter of Well: 0.75 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	11.12 TOC/8.10 BGS	
Depth to Bottom (feet BGS/TOC)	47.81 TOC/44.77 BGS	55 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM09-PZM067 Well Permit No.: _____

Coordinates:

Latitude/Northing 570399.79 Longitude/Easting 1459863.27 ft

Condition of pad and/or cover: No pad, fair vegetation Flush Mount or Stick-Up? Stick-up

Well ID Marked? No If yes, where? _____

Locking cap? Yes Lock? Cut, Yes Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	9.30 TOC/6.96 BGS	
Depth to Bottom (feet BGS/TOC)	78.09 TOC/75.74 BGS	76' BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-23-15

WELL INFORMATION

Well ID: TM10-PZM007 Well Permit No.:

Coordinates:

Latitude/Northing 571262.59 ft Longitude/Easting 145988.21 ft

Condition of pad and/or cover: Fair (Vegetation) Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side Casing

Locking cap? Yes Lock? Cut. Yes Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	10.49 TOC/7.41 BGS	
Depth to Bottom (feet BGS/TOC)	17.50 TOC/14.42 BGS	15 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments:

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM11-PZM007 Well Permit No.: _____

Coordinates:

Latitude/Northing 571191.74 ft Longitude/Easting 1460049.39 ft

Condition of pad and/or cover: No cover, poor (filled with dirt)

Flush Mount or Stick-Up? Flush mount

Well ID Marked? No If yes, where? _____

Locking cap? Yes Lock? No Diameter of Well: 2 in

Structural integrity of well: Good, but outer casing filled with dirt.

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	10.17 TOC/10.47 BGS	
Depth to Bottom (feet BGS/TOC)	17.78 TOC/18.02 BGS	16 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Outer casing filled with dirt.

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM11-PZM034 Well Permit No.: _____

Coordinates:

Latitude/Northing 571186.94 ft Longitude/Easting 1460045.12 ft

Condition of pad and/or cover: Fair, broken lid Flush Mount or Stick-Up? Flush mount

Well ID Marked? No If yes, where? _____

Locking cap? No Lock? No Diameter of Well: 0.75 in

Structural integrity of well: Poor

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		45 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Hole blocked 8 in below TOC.

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-23-15

WELL INFORMATION

Well ID: TM12-PZM006 Well Permit No.: _____

Coordinates:

Latitude/Northing 571646.68 ft Longitude/Easting 1460941.60 ft

Condition of pad and/or cover: Fair cover (vegetation), good pad

Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side casing

Locking cap? Yes Lock? Cut, Yes Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	11.12 TOC/8.32 BGS	
Depth to Bottom (feet BGS/TOC)	18.50 TOC/15.70 BGS	16 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Near bridge

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM13-PZM007 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: Good, little vegetation Flush Mount or Stick-Up? Stick-up

Well ID Marked? No If yes, where? _____

Locking cap? Yes Lock? Cut, Yes Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	11.59 TOC, 8.43 BGS	
Depth to Bottom (feet BGS/TOC)	18.01 TOC, 14.91 BGS	16 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM13-PZM046 Well Permit No.:

Coordinates:

Latitude/Northing Longitude/Easting

Condition of pad and/or cover: Good, little vegetation Flush Mount or Stick-Up? Stick-up

Well ID Marked? No If yes, where?

Locking cap? Yes Lock? Cut. Yes Diameter of Well: 0.75 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	18.58 TOC, 15.51 BGS	
Depth to Bottom (feet BGS/TOC)	23.07 TOC, 19.97 BGS	55 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Well appears to be blocked significantly higher than the historic reported installation depth.

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-23-15

WELL INFORMATION

Well ID: TM14-PZM005 Well Permit No.: _____

Coordinates:

Latitude/Northing 571771.56 ft Longitude/Easting 1461793.23 ft

Condition of pad and/or cover: Good Flush Mount or Stick-Up? Flush-mount

Well ID Marked? No If yes, where? _____

Locking cap? Yes Lock? Bolts to lock Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	8.25 TOC/8.82 BGS	
Depth to Bottom (feet BGS/TOC)	15.90 TOC/16.45 BGS	16 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: In middle of old fenced parking lot.

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM15-PZM007 (Front L) Well Permit No.: _____

Coordinates:

Latitude/Northing _____ Longitude/Easting _____

Condition of pad and/or cover: Good (Vegetation) Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side casing

Locking cap? Yes Lock? Cut, Yes Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	8.49 TOC/5.48 BGS	
Depth to Bottom (feet BGS/TOC)	16.80 TOC/13.64 BGS	14 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM15-PZM011 (Back L) Well Permit No.: _____

Coordinates:

Latitude/Northing _____ Longitude/Easting _____

Condition of pad and/or cover: Good (Vegetation) Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side casing

Locking cap? Yes Lock? Cut, yes Diameter of Well: 2 in

Structural integrity of well: Good

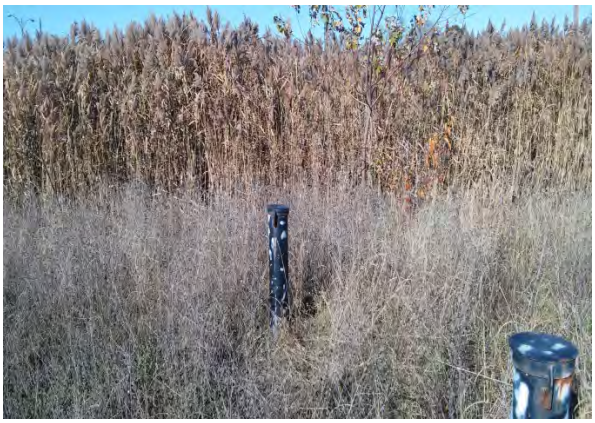
WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	7.97 TOC/5.18 BGS	
Depth to Bottom (feet BGS/TOC)	20.27 TOC/17.48 BGS	18 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION



WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM15-PZM031 (Front R) Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: Good (Vegetation) Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side casing and tag. (First 2 numbers off of casing)

Locking cap? Yes Lock? Cut. Yes Diameter of Well: 0.75 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	8.43 TOC/4.63 BGS	
Depth to Bottom (feet BGS/TOC)	30.15 TOC/26.43 BGS	38 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM15-PZM065 (Back R) Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: Good, (Vegetation) Flush Mount or Stick-Up? Stick-up

Well ID Marked? Yes If yes, where? Side casing, but last 2 numbers off

Locking cap? Yes Lock? Cut, Yes Diameter of Well: 0.75 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	10.92 TOC/6.92 BGS	
Depth to Bottom (feet BGS/TOC)	28.88 TOC/24.90 BGS	72.5 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Well appears to be blocked significantly higher than the historic reported installation depth.

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 M Date: 11-20-15

WELL INFORMATION

Well ID: TM16-PZM007 Well Permit No.: _____

Coordinates:

Latitude/Northing 571849.08 ft. Longitude/Easting 1462554.48 ft.

Condition of pad and/or cover: Slag and concrete Flush Mount or Stick-Up? NA

Well ID Marked? _____ If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		17 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Dug; some concrete visible, no sign of well.

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 m Date: 11-20-15

WELL INFORMATION

Well ID: TM17-PZM005 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: Good (Little vegetation) Flush Mount or Stick-Up? Stick-up

Well ID Marked? No If yes, where? _____

Locking cap? Yes Lock? Yes Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	7.55 TOC/4.52 BGS	
Depth to Bottom (feet BGS/TOC)	16.68 TOC/13.61 BGS	14 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: SPT Location of Well: Tin Mill B16

Project Number: 150300 M Date: 11-20-15

WELL INFORMATION

Well ID: TM18-PZM005 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: Fair (Vegetation) Flush Mount or Stick-Up? Stick-up

Well ID Marked? No If yes, where? _____

Locking cap? Yes Lock? No Diameter of Well: 2 in

Structural integrity of well: _____

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		14 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Well bent in half; no access past 1 ft.

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: W. Shop Road: Next to RR tracks B6

Project Number: 150300M Date: 9/14/2015

WELL INFORMATION

Well ID: FM01-PZM003 Well Permit No.: _____

Coordinates:

Latitude/Northing 568252.054 Longitude/Easting 1460279.365

Condition of Well Pad: Fair Flush Mount or Stick-Up? Flush

Well ID Marked? No If yes, where? _____

Locking cap? Broken Lock? No Diameter of Well: 2 in.

Structural integrity of well: Good; has broken cap (fell in well); good cover

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	3.94 TOC; 4.13 BGS	
Depth to Bottom (feet BGS/TOC)	11.31 TOC; 11.51 BGS	13.5' BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Well cap broke while replacing and a piece fell into well. Placed nitrile glove under cap to seal.

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: W. Shop Road; Next to RR tracks B6

Project Number: 150300M Date: 9/14/2015

WELL INFORMATION

Well ID: FM01-PZM041 Well Permit No.: _____

Coordinates:

Latitude/Northing 568251.833 Longitude/Easting 1460275.595

Condition of Well Pad: Clear; soil area Flush Mount or Stick-Up? Flush

Well ID Marked? No If yes, where? _____

Locking cap? No Lock? No Diameter of Well: ½ in.

Structural integrity of well: Corroded seal

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		51' BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Dug soil to uncover manhole; could not measure due to diameter of PVC. Well cap painted fluorescent orange.

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/17/2015

WELL INFORMATION

Well ID: FM02-PZM002 Well Permit No.:

Coordinates:

Latitude/Northing 569907.01 ft Longitude/Easting 1461163.90 ft

Condition of pad and/or cover: None Flush Mount or Stick-Up? Flush mount

Well ID Marked? No If yes, where?

Locking cap? Yes Lock? No Diameter of Well: 2 in

Structural integrity of well: Good

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	4.69 TOC	
Depth to Bottom (feet BGS/TOC)	12.68 TOC	14 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: 0.11 feet from TOC to ground surface

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 12/9/2015

WELL INFORMATION

Well ID: FM02-PZM033 Well Permit No.: _____

Coordinates:

Latitude/Northing 569922.85 ft Longitude/Easting 1461165.89 ft

Condition of pad and/or cover: None Flush Mount or Stick-Up? Flush

Well ID Marked? No If yes, where? _____

Locking cap? No Lock? No Diameter of Well: 0.75

Structural integrity of well: Poor - filled with silt/sand

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	-	
Depth to Bottom (feet BGS/TOC)	-	45 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not measure due to soil/sand in well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/18/2015

WELL INFORMATION

Well ID: FM03-PZM005 Well Permit No.:

Coordinates:

Latitude/Northing Longitude/Easting

Condition of pad and/or cover: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where?

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		13.2 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/18/2015

WELL INFORMATION

Well ID: FM03-PZM026 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		36 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/18/2015

WELL INFORMATION

Well ID: FM03-PZM082 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		90' BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/18/2015

WELL INFORMATION

Well ID: FM04-PZM009 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		21 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/18/2015

WELL INFORMATION

Well ID: FM04-PZM036 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		48 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/18/2015

WELL INFORMATION

Well ID: FM04-PZM054 Well Permit No.: _____

Coordinates:

Latitude/Northing_____ Longitude/Easting_____

Condition of pad and/or cover: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		66.5 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 11/18/2015

WELL INFORMATION

Well ID: FM05-PZM004 Well Permit No.: _____

Coordinates:

Latitude/Northing _____ Longitude/Easting _____

Condition of pad and/or cover: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		14 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: Open gravel area B6

Project Number: 150300M Date: 9/14/2015

WELL INFORMATION

Well ID: FM05-PZM024 Well Permit No.: _____

Coordinates:

Latitude/Northing 568561.617 Longitude/Easting 1462039.291

Condition of pad and/or cover: Clear with gravel cover Flush Mount or Stick-Up? Stick-up

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Could not locate well

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		32 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B6

Project Number: 150300M Date: 9/15/2015

WELL INFORMATION

Well ID: HI06-PZM002/HI06-PZM058 Well Permit No.: _____

Coordinates:

Latitude/Northing 571980.04 ft Longitude/Easting 1460243.53 ft

Condition of pad and/or cover: Destroyed, see photo Flush Mount or Stick-Up? Stick-up

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: Broken

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		12 BGS & 68 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: _____

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B7

Project Number: 150300M Date: 9/14/2015

WELL INFORMATION

Well ID: SW06-PZM001 Well Permit No.: _____

Coordinates:

Latitude/Northing 569204.398 Longitude/Easting 1463626.61

Condition of Well Pad: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: NA (Could not locate well)

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		15 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Could not locate well; only broken PVC found.

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area B Location of Well: B7

Project Number: 150300M Date: 9/14/2015

WELL INFORMATION

Well ID: SW06-PZM053 Well Permit No.: _____

Coordinates:

Latitude/Northing 569204.261 Longitude/Easting 1643631.605

Condition of Well Pad: NA Flush Mount or Stick-Up? NA

Well ID Marked? NA If yes, where? _____

Locking cap? NA Lock? NA Diameter of Well: NA

Structural integrity of well: NA

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)		
Depth to Bottom (feet BGS/TOC)		67 BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Only found broken PVC in soil

PICTURE OF WELL DURING INSPECTION

ARM Group Inc.

WELL INSPECTION FORM

Site: Sparrows Point: Area A Location of Well: Parcel A10, adjacent to railroad tracks

Project Number: 150298M Date: 12/9/2015

WELL INFORMATION

Well ID: SW05-PZM004 Well Permit No.: _____

Coordinates:

Latitude/Northing 572248.055 Longitude/Easting 1464959.571

Condition of Well Pad: Fair Flush Mount or Stick-Up? Stick-Up

Well ID Marked? Yes If yes, where? Outer casing

Locking cap? No Lock? Broken Diameter of Well: 2 in.

Structural integrity of well: Top 3 feet bent/curved

WELL MEASUREMENTS

	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	10.76 TOC	
Depth to Bottom (feet BGS/TOC)	20.33 TOC	18' BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Top 3 feet bent/curved, submersible pump cannot pass through curved segment of the PVC

PICTURE OF WELL DURING INSPECTION

WELL INSPECTION FORM

Site: Sparrows Point: Area A Location of Well: Parcel A10, adjacent to railroad tracks

Project Number: 150298M Date: 12/9/2015

WELL INFORMATION

Well ID: SW05-PZM039 Well Permit No.: _____

Coordinates:

Latitude/Northing 572255.254 Longitude/Easting 1464952.585

Condition of Well Pad: Destroyed Flush Mount or Stick-Up? Flush Mount

Well ID Marked? No If yes, where? _____

Locking cap? No Lock? No Diameter of Well: 0.75 in.

Structural integrity of well: Top of casing broken at grade

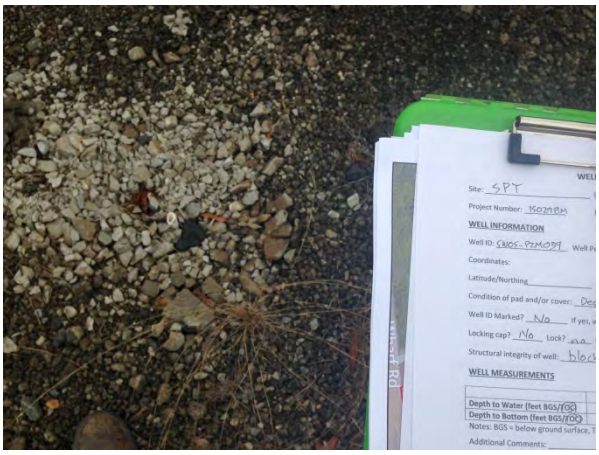
WELL MEASUREMENTS

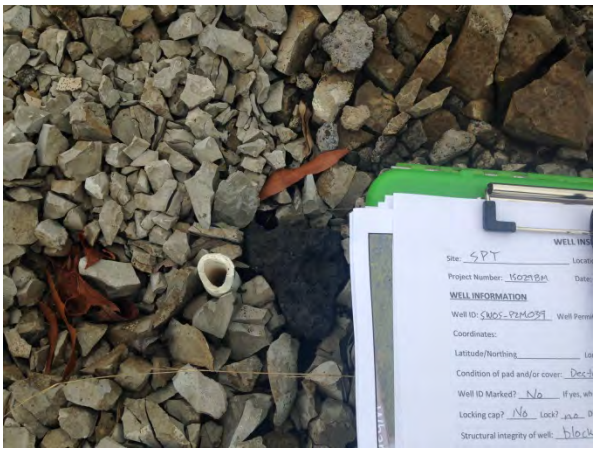
	Measured (Current)	Historic Reported
Depth to Water (feet BGS/TOC)	8.40 TOC	
Depth to Bottom (feet BGS/TOC)	9.69 TOC	53' BGS

Notes: BGS = below ground surface, TOC = top of casing

Additional Comments: Potentially blocked at 9.69 feet from TOC

PICTURE OF WELL DURING INSPECTION





APPENDIX E

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-075-MW1 **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/23/16 / 1137	Developed by: JTY/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1309	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Sunny - 78°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: BGS 42.5 BTOC 45.7 to BGS 52.5 BTOC 55.7
Well riser/screen material: *PVC*	Sandpack Interval: 40.5 43.7 to 52.5 55.7
Difference between Ground Surface and TOC: (+ / -) +3.2	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 52.5 BGS 55.7 BTOC

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 54.9 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 12.48 ~~6.79~~ ft. (C)
Petroleum/Product Present? *Y* or (*N*) Thickness (ft.): —	Height of Water Column: (B - C) 42.42 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0.8 ft.	Wetted Bore Volume: (A x D) 6.91 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / ProActive SuperTwister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	45.7 - ~~48~~.7	10	7	1	High Turb
2	~~48~~.7 - 5~~1~~.7	10	15	2	High Turb → Mod Turb.
3	5~~1~~.7 - 55.7	10	20	2.5	Mod Turb → Slight Turb.
Cumulative Totals: (Minimum of 3 Well Volumes)			42	5.5	

Final Depth to Water (from TOC): 12.55

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 549-GW-6/23/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yaple		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-075-MWS **Well Permit No.:** _____

ARM Project No.: 150300M -21-7	Date/Time Started: 6/23/16 / 1137	Developed by: JTY / NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1219	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Sunny - 78°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (Stick-up) or *Flush-Mount*	PVC Screen Interval:	4.5	6.7	to 16.5	18.7
Well riser/screen material: (PVC)	Sandpack Interval:	3.0	5.2	to 17.0	19.2
Difference between Ground Surface and TOC: (+ / -) +2.2	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)	16.5 ~~BTOC~~ BGS (18.7 BTOC			

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 18.53 ft. (B) Soft
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 6.77 ft. (C)
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 11.76 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 2.20 ft.	Wetted Bore Volume: (A x D) 1.92 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / ProActive Super twister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	6.7 - 10.7	10	5	2.5	muddy → High Turb.
2	10.7 - 14.7	10	5	2.5	muddy → High Turb.
3	14.7 - 18.7	10	~~30~~ 50	~~15~~ 20	muddy → High Turb.
Cumulative Totals: (Minimum of 3 Well Volumes)			~~40~~ 60	~~20~~ 25	

Final Depth to Water (from TOC): 6.79

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 548-GW-6/23/14-FM (Staged At Well)
2. 549-GW-6/23/14-FM (Staged At well)
3. ~~550-GW-6/23/14-FM~~

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yapp		6/23/14

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-016-MW1 **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/21/16 / 0935	Developed by: JTy
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/24/16 / 1014	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: mostly Cloudy ~75°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (Stick-up) or *Flush-Mount*	PVC Screen Interval: BGS 23.6 / BTOC 26.1 to BGS 33.9 / BTOC 36.4
Well riser/screen material: *PVC*	Sandpack Interval: BGS 22.0 / BTOC 24.5 to BGS 35.0 / BTOC 37.5
Difference between Ground Surface and TOC: (+ / -) +2.5	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 33.9 BGS, 36.4 BTOC

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 35.5 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 11.00 ft. (C)
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 24.5 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): ~1.0 ft.	Wetted Bore Volume: (A x D) 4.0 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / Proactive Super Twister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	26.1 - 29.1	10	8	2	Muddy → Slight Turb
2	29.1 - 32.1	10	8	2	High Turb → Slight Turb.
3	32.1 - 36.4	10	20	5	High Turb → Clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		36	9	

Final Depth to Water (from TOC): 11.11

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: SW-076-MW3
Date: 6/24/16

ID Numbers of IDW Drums Generated:
1. 544-GW-6/21/16-FM (Staged At Well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	JASON T. YAPLE		6/24/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-076-MWS **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/24/16 / 0830	Developed by: JTY
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/27/16 / 0935	Company: ARM Group
Well Location: Area B, Parcel FM	Weather/Site Conditions: mostly cloudy - 75°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC		BGS	BTOC
Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval:	4.7	7.1	to	15.0	17.4
Well riser/screen material: *PVC*	Sandpack Interval:	3.0	5.4	to	14.1	18.5
Difference between Ground Surface and TOC: (+ / -) +2.4	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 15.0 BGS					

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 17.4 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 6.02 ft. (C)
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 11.38 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.85 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well riser / Proactive Super Twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	~~17.4~~ - 10.1	10	4	2	muddy → High Turb.
2	10.1 - 13.1	10	4	2	muddy → High Turb.
3	13.1 - 17.4	10	8	4	muddy → Mod Turb. Ran dry
	Cumulative Totals: (Minimum of 3 Well Volumes)		16	8	

Final Depth to Water (from TOC): 6.79

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 554-GW-6/24/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	JASON T. YAPP		6/24/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-077-MW1 **Well Permit No.:** _____

ARM Project No.: 150300M – 21- 7	Date/Time Started: 6/23/16 / 1538	Developed by: JTY / NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1625	Company: ARM Group
Well Location: Area B, Parcel FM	Weather/Site Conditions: mostly Sunny - 80°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: BGS 41.8 BTOC 44.3 to BGS 51.8 BTOC 53.8
Well riser/screen material: *PVC*	Sandpack Interval: 39.5 42.0 to 51.8 53.8
Difference between Ground Surface and TOC: (+ / -) +2.5	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 51.3 BGS 53.8 BTOC

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 53.7 ft. (B) Soft
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 10.25 ft. (C)
Petroleum/Product Present? *Y* or (N.) Thickness (ft.): —	Height of Water Column: (B - C) 43.45 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 10.2 ft.	Wetted Bore Volume: (A x D) 7.08 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well riser / ProActive Super twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	44.3 - 47.3	10	15	2	Muddy → Slight Turb.
2	47.3 - 50.3	10	15	2	High Turb → Clear
3	50.3 - 53.8	10	30	4	High Turb → clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		60	~~60~~ 8	

Final Depth to Water (from TOC): 10.32

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 552-GW-6/23/16-FM (Staged at well)
2. 553-GW-6/23/16-FM
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

_____

_____

_____

_____

_____

_____

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yap		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-07-MWS **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/23/16 / 1510	Developed by: JH/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1537	Company: ARM Group, Inc.
Well Location: Area B, Parcel FM	Weather/Site Conditions: mostly Sunny – 80'F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval:	5.5	7.7 to	15.5	17.7
Well riser/screen material: *PVC*	Sandpack Interval:	4.0	6.2 to	15.5	17.7
Difference between Ground Surface and TOC: (+/-) +2.2	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)	15.5 BGS			
		17.7 BTOC			

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 17.7 ft. (B) 5ft
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 9.48 ft. (C)
Petroleum/Product Present? *Y* or *N.* Thickness (ft.): —	Height of Water Column: (B - C) 8.22 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.34 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / Pro Active Super twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	7.5 - 10.5	10	3	2	muddy → High Turb.
2	10.5 - 13.5	10	3	2	High Turb → Mod Turb.
3	13.5 - 17.5	10	29	9.6	High Turb → Clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		35	13.6	

Final Depth to Water (from TOC): 9.48

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 552-GW-6/23/16-FM (staged at well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

Field Representative(s):	Print Name	Signature	Date
	Jason T. Yap6		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-078-MW1 **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/23/16 / 1416	Developed by: JTY/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1500	Company: ARM Group Inc.
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Cloudy	Checked by:

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval:	43.5	46.0	to 53.5	56.0
Well riser/screen material: *PVC*	Sandpack Interval:	41.5	44.0	to 53.5	56.0
Difference between Ground Surface and TOC: (+/-) +2.5'	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 53.5 BGS / 56.0 BTOC				

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 56.3 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 12.73 ft. (C)
Petroleum/Product Present? Y or (N) Thickness (ft.): —	Height of Water Column: (B - C) 43.57 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 7.10 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / ProActive Super Twister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	46 - 49	10	15	2	High Turb
2	49 - 52	10	15	2	High Turb → Slight Turb
3	52 - 56	10	25	3.5	High Turb → Clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		55	7.5	

Final Depth to Water (from TOC): 12.75

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 550-GW-6/23/16-FM (Staged at well)
2. 551-GW-6/23/16-FM
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yado		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-078 MWS **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/23/16 / 1344	Developed by: JTY/KM
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1415	Company: ARM Group, Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Cloudy - 78°F	Checked by:

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval:	5.2	7.5	to 15.5	17.75
Well riser/screen material: *PVC*	Sandpack Interval:	4.0	6.25	to 15.5	17.75
Difference between Ground Surface and TOC: (+ / -) +2.25	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 15.5 BGS				

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 17.79 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 8.05 ft. (C)
Petroleum/Product Present? *Y* or (*N*) Thickness (ft.): —	Height of Water Column: (B - C) 9.74 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.59 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / ProActive Super Twister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	7.5 - 10.5	10	3.0	2	High Turb → ~~Mod~~ High Turb.
2	10.5 - 13.5	10	3.0	2	High Turb →
3	13.5 - 17.75	10	6.0	4	High Turb → Dry
	Cumulative Totals: (Minimum of 3 Well Volumes)		12.0	8	

Final Depth to Water (from TOC): 12.88

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 550 - GW - 6/23/14 - FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yap		6/23/14

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-079-MW1 **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/20/16 / 1450	Developed by: JTG / NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/20/16 / 1610	Company: ARMGroup
Well Location: Area B, Parcel B22	Weather/Site Conditions: mostly cloudy - 80°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: 46.3 BTOC to 56.6 BTOC
Well riser/screen material: *PVC*	Sandpack Interval: 45.3' to 56.6'
Difference between Ground Surface and TOC: (+ / -) +2.00	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 56.5 BTOC

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 55.0 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 13.94 ft. (C)
Petroleum/Product Present? *Y* or (*N.*) Thickness (ft.): —	Height of Water Column: (B - C) 41.06 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 1.5 ft.	Wetted Bore Volume: (A x D) 6.70 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / ProActive Super-twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	46-49	10	15	2.2	mud → high turb → slight turb.
2	49-52	10	15	2.2	mud → slight turb.
3	52-56	10	47	8	mud → clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		77	12.5	

Final Depth to Water (from TOC): 14.04'

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 543-GW-6/22/16-B21 (Staged Beside well)
2. 545-GW-6/22/16-B21
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yapp		6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-079-MWS **Well Permit No.:** _____

ARM Project No.: 150300M - 21-7	Date/Time Started: 6/22/16/1425	Developed by: NK/JTY
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/30/16/1450	Company: ARM Group
Well Location: Area B, Parcel B22	Weather/Site Conditions: Mostly Sunny - 80°F	Checked by: _____

A. Well Construction Details

Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval: (5.5 BGS / 8.0 TOC) to (20.5 BGS / 23.0 TOC)
Well riser/screen material: *PVC*	Sandpack Interval: 4.0 BGS to 20.5 BGS
Difference between Ground Surface and TOC: (+ / -) +2.5	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 23.1

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 23.20 ft. (B) Soft
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 12.49' ft. (C)
Petroleum/Product Present? Y or (N.) Thickness (ft.): ———	Height of Water Column: (B - C) 10.71 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): ~0 ft.	Wetted Bore Volume: (A x D) 1.75 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / ProActive Super Twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	12.5-18.5	10	7.0	4	mud → high Turb → moderate Turb
2	18.5-18.5	10	7.0	4	mud → high Turb → mod Turb
3	18.5-23.0	10	15.0	8.5	mud → high turb → clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		29.0	16.5	

Final Depth to Water (from TOC): 14.84

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 541-GW-6/22/16-B2A (staged beside well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

Field Representative(s):

Print Name	Signature	Date
[illegible]	[signature]	6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

SW-080-MWI

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-08I-MWI **Well Permit No.:** _____

ARM Project No.: 150300M	Date/Time Started: 6/29/16 / 0831	Developed by: Jason T. Yagle
Client: EnviroAnalytics Group	Date/Time Completed: 6/29/16 / _____	Company: ARM Group Inc
Well Location: Area B, Parcel B6/Em	Weather/Site Conditions: Sunny - 76°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (Stick-up) or *Flush-Mount*	PVC Screen Interval:	23.9	26.4	to 34.1	36.6
Well riser/screen material: (PVC)	Sandpack Interval:	21.5	24.0	to 35	37.5
Difference between Ground Surface and TOC: (+ / -) +2.5	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)				

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 36.6 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 8.64 ft. (C)
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 29.96 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 4.88 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block with 3/4" well Riser / ProActive Supertwister pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	26.4 - 29.4	10	15	3	
2	29.4 - 32.4	10	15	3	
3	32.4 - 36.6	10	27	5	
	Cumulative Totals: (Minimum of 3 Well Volumes)		47	11	

Final Depth to Water (from TOC): 8.78

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 562 - GW - 6/29/16 - FM (Staged at well)
2. 561 - GW - 6/29/16 - FM
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yapp		6/29/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-080-MWS **Well Permit No.:** _____

ARM Project No.: 150300M	Date/Time Started: 6/29/16 / 0746	Developed by: Jason T. Yap
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/29/16 / 0831	Company: ARM Group Inc.
Well Location: Area B, Parcel B6/FM	Weather/Site Conditions: Sunny - 72°F	Checked by: _____

A. Well Construction Details

Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval: BGS 5.3 BTOC 6.8 to BGS 15.4 BTOC 16.9
Well riser/screen material: PVC	Sandpack Interval: 3.8 5.3 to 16.0 17.5
Difference between Ground Surface and TOC: (+ / -) +1.3 (1.5) observed	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 15.4 (BGS

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 16.90 ft. (B) Soft
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 5.74 ft. (C)
Petroleum/Product Present? *Y* or (*N*) Thickness (ft.): —	Height of Water Column: (B - C) 11.16 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): _____ ft.	Wetted Bore Volume: (A x D) 1.82 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well riser / ProActive Supertwister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	6.8 - 9.8	10	3.5	2	Sandy → High Turb.
2	9.8 - 12.8	10	3.5	2	High Turb →
3	12.8 - 16.9	10	19	~6	High Turb → Mod Turb. (dry)
	Cumulative Totals: (Minimum of 3 Well Volumes)		26	10	

Final Depth to Water (from TOC): 6.13

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: SW-080-MWS
Date: 6/29/10

ID Numbers of IDW Drums Generated:
1. 561-GW-6/29/10-FM (staged at well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. York		6/29/10

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: SW-081-MW1 **Well Permit No.:** _____

ARM Project No.: 150300M-21-7	Date/Time Started: 6/23/16 / 0940	Developed by: JTY/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1032	Company: ARM Group Inc.
Well Location: Area B, Parcel FM	Weather/Site Conditions: partly sunny - 78°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: BGS 43.0 / BTOC 45.5 to BGS 53.0 / BTOC 55.5
Well riser/screen material: *PVC*	Sandpack Interval: 42.0 / 44.5 to 54.0 / 56.5
Difference between Ground Surface and TOC: (+ / -) 2.5'	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 56.33 ft. (B) Soft
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 12.16 ft. (C)
Petroleum/Product Present? *Y* or (*N*) Thickness (ft.): —	Height of Water Column: (B - C) 44.17 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): ~0.25 ft.	Wetted Bore Volume: (A x D) 7.20 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: surge block on 3/4" well Riser / Proactive Super Twister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
45-48	↔ 1	10	15	2	muddy - High Turb - Clear
48-51	↔ 2	10	15	2	High Turb → Clear
51-55	↔ 3	10	15	2	High Turb → Clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		45	6	

Final Depth to Water (from TOC): 12.24

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 547-GW-6/23/16-FM (Staged at Well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yapp		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

56.33
12.16

ARM Group Inc.

Earth Resource Engineers and Consultants

SW-081-MWS

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: ~~FM09-PZM007~~ **Well Permit No.:** _____ Page 1 of 2

ARM Project No.: 150300M	Date/Time Started: 6/23/16 0850	Developed by: JTY/NF
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 0840	Company: ARM Group
Well Location: Area B, Parcel FM	Weather/Site Conditions: Cloudy - some Rain ~70°F	Checked by:

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: ~~5.8~~ BGS 8.0 BTOC to 20.7 BGS 23.0 BTOC
Well riser/screen material: (*PVC*)	Sandpack Interval: 4.0 BGS 6.5 BTOC to 20.7 BGS 23.0 BTOC
Difference between Ground Surface and TOC: (+ / -) +2.5'	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 20.7 BGS

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 22.76 ft. (B) Soft
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 11.45 ft. (C)
Petroleum/Product Present? *Y* or (*N*.) Thickness (ft.): —	Height of Water Column: (B - C) 11.31 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): ~0.25 ft.	Wetted Bore Volume: (A x D) 1.84 gal. (E)

C. Surge and Pump Event Summary Data

foot valve and surge block (#1) continuous

Description of Surge Equipment: ~~surge block with 3/4" well riser~~ / Proactive Super twister Pump (#2)

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	8-23	(#1) continuous	6	3.25	muddy → High Turb.
2	—	— (#2)	19	10.5	High Turb → Slight Turb
	Cumulative Totals: (Minimum of 3 Well Volumes)		25	13.75	

Final Depth to Water (from TOC): 23.0

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 547-GW-6/23/16-FM (Stayed beside well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

Field Representative(s):

Print Name	Signature	Date
Jason T. Yapo		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

13:59 M045 60.18

17 10

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM07-PZM005 **Well Permit No.:** _____ Page 1 of 2

ARM Project No.: 150300M – 21-7	Date/Time Started: 6/20/14 / 1620	Developed by: JTY/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/20/14 / 1650	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: mostly sunny - 80°F	Checked by: _____

A. Well Construction Details

Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval: (7BGS) 10 TOC to (17BGS) 20 TOC
Well riser/screen material: PVC	Sandpack Interval: (6 BGS) to (17BGS)
Difference between Ground Surface and TOC: (+ / -) +2.75	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 17 (BGS)

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 19.89 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 13.29 ft. (C)
Petroleum/Product Present? Y or N. Thickness (ft.): —	Height of Water Column: (B - C) 6.6 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.08 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block with

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	10-13	10	1	1	slight turb → Dry
2	13-16	10	1	1	mostly clear → Dry
3	16-20	10	5	5	Clear - Dry
	Cumulative Totals: (Minimum of 3 Well Volumes)		7	7	

Final Depth to Water (from TOC): 13.35

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: _____

Date: _____

ID Numbers of IDW Drums Generated:

1. 546-GW-6/22/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yapp	JTYapp	6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM07-PZM045 **Well Permit No.:** _____

ARM Project No.: 150300M ~ 21-7	Date/Time Started: 06/23/16 / 0757	Developed by: NK/JTY
Client: **EnviroAnalytics Group**	Date/Time Completed: 06/23/16 / 0847	Company: ARM Group
Well Location: Area B, Parcel FM	Weather/Site Conditions: RAIN: 70°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (Stick-up) or *Flush-Mount*	PVC Screen Interval: (BGS) 47 (BTOC) 50 to (BGS) 57 (BTOC) 60
Well riser/screen material: (PVC)	Sandpack Interval: 40 43 to 57 60
Difference between Ground Surface and TOC: (+ / -) +3.0	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 57BGS

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 60.18 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 13.59 ft. (C)
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 46.59 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 7.60 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: surge block on 3/4" wellriser / ProActive Super Twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	50 - 53	10	7.6	2	slight Turb → Clear
2	53 - 56	10	7.6	2	slight Turb → Clear
3	56 - 60	10	15.2	4	slight Turb → clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		30.4	8	

Final Depth to Water (from TOC): 13.57

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TMW-PZM04S
Date: 6/23/16

ID Numbers of IDW Drums Generated:
1. 546-GW-6/20/16-FM (Staged at well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

Field Representative(s): Jason T. Yoho (Print Name) [signature] (Signature) 6/23/16 (Date)

_____ (Print Name) _____ (Signature) _____ (Date)

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM09 - PZM 007 **Well Permit No.:** _____

ARM Project No.: 150300M	Date/Time Started: 6/23/16 / 1057	Developed by: NK/JTY
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1129	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Cloudy ~ 78°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	AGS	BTO
Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval:	6	8.5	to 16	18.5
Well riser/screen material: *PVC*	Sandpack Interval:	4	6.5	to 16	18.5
Difference between Ground Surface and TOC: (+ / -) +2.36	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 16				

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 18.36 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 10.63 ft. (C)
Petroleum/Product Present? *Y or N.* Thickness (ft.): —	Height of Water Column: (B - C) 7.73 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.26 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: surge block on 3/4" well riser / ProActive Super Twister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	8.5 - 11.5	10	2.5	2	High Turb → Slight Turb
2	11.5 - 14.5	10	2.5	2	High Turb → Slight Turb
3	14.5 - 18.5	10	5.0	4	High Turb → Slight Turb
	Cumulative Totals: (Minimum of 3 Well Volumes)		10.0	8	

Final Depth to Water (from TOC): 11.68

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TM09-PZM007
Date: 6/23/16

ID Numbers of IDW Drums Generated:

1. 548-GW-6/23/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yap		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM09-PZ047 **Well Permit No.:** _____

ARM Project No.: 150300M -21-7	Date/Time Started: 6/23/16 / 1054	Developed by: JTY/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/16 / 1130	Company: ARM Group, Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: mostly cloudy - 78°F	Checked by:

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: 45 BGS to 55 BGS
Well riser/screen material: (*PVC*)	Sandpack Interval: 45 to 55
Difference between Ground Surface and TOC: (+ / -) +2.3	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 55 BGS

B. Wetted Bore Volume Determination

Well (PVC) Diameter: ~~2.0 in.~~ ~~0.5~~ 0.75inch 0.01	Well Total Depth (TOC): 48.02 ft. (B) BTOC
Well (PVC) Volume: ~~0.163 gal./ft.~~ (A)	Depth to Static Water Level (TOC): 10.89 ft. (C)
Petroleum/Product Present? *Y* or (*N*.) Thickness (ft.): —	Height of Water Column: (B - C) 37.13 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): ~7 ft.	Wetted Bore Volume: (A x D) 0.4 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: peristaltic pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	—	pump —	1.5	3.25	clear
		Cumulative Totals: (Minimum of 3 Well Volumes)	1.5	3.25	

Final Depth to Water (from TOC): 15.00

Thickness of Any Sediment Remaining in Well: NA

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 548-GW-6/23/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

_____

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F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yado		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM10-PZM007 **Well Permit No.:** _____

ARM Project No.: 150300M -21-7	Date/Time Started: 6/23/14 / 1322	Developed by: JTY/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/23/14 / 1338	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Cloudy - 78°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: BGS 5 / BTOC 7.5 to BGS 15 / BTOC 17.5
Well riser/screen material: *PVC*	Sandpack Interval: 3 / 5.5 to 15 / 17.5
Difference between Ground Surface and TOC: (+ / -) +2.5	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 15 BGS

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 17.57 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 10.50 ft. (C)
Petroleum/Product Present? *Y or* (*N.*) Thickness (ft.): —	Height of Water Column: (B - C) 7.07 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.15 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well riser / ProActive Super twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	7.5-10.5	10	2.5	2	High Turb → Slight Turb.
2	10.5-13.5	10	2.5	2	Mod Turb → Clear
3	13.5-17.5	10	5.0	4	Mod Turb → Clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		10	8	

Final Depth to Water (from TOC): 10.51

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TM10-PZM007
Date: 6/23/16

ID Numbers of IDW Drums Generated:

1. 550-GW-6/23/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yoder		6/23/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM11-PZM007 **Well Permit No.:** _____

ARM Project No.: 150300M -21-7	Date/Time Started: 6/24/16 / 1038	Developed by: JTY
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/24/16 / 1100	Company: ARMGroup
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Sunny	Checked by: _____

A. Well Construction Details

Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval: 8 BGS to 18 BGS
Well riser/screen material: *PVC*	Sandpack Interval: 6 BGS to 18 BGS
Difference between Ground Surface and TOC: (+ / -) -0.2	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 18

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 17.8 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 10.09 ft. (C)
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 7.71 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.26 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: surge block on 3/4" well Riser / Proactive Supertwister pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	~~8-18~~ Unable to ~~fit~~ surge due to offset in Riser at ~2' BGS				
	8&4 to	Purge well with pump	→ Instantly		clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		10	8	

Final Depth to Water (from TOC): 10.09

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TMW-PZM407
Date: 6/24/16

ID Numbers of IDW Drums Generated:
1. 555-GW-6/24/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

Protective Flush Mount - destroyed
must dig Pizer out of soil

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yap6		6/24/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM11-PZM034 **Well Permit No.:** _____ Page 1 of 2

ARM Project No.: 150300M-21-7	Date/Time Started: 7/1/16 / 0904	Developed by: JTG
Client: **EnviroAnalytics Group**	Date/Time Completed: 7/1/16 / 1010	Company: ARM Group, Inc.
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Sunny - 80°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval:	41.8	44.1 to	52.1	54.4
Well riser/screen material: *PVC*	Sandpack Interval:	39.5	41.8 to	52.1	54.4
Difference between Ground Surface and TOC: (+ / -) +2.3	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)	52.1 BGS 54.4 BTOC			

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.		Well Total Depth (TOC): 54.2 ft. (B) Soft	
Well (PVC) Volume: 0.163 gal./ft. (A)		Depth to Static Water Level (TOC): 12.13 ft. (C)	
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —		Height of Water Column: (B - C) 42.07 ft. (D)	
Initial Thickness of Sediment in Bottom of Well (F - B): 0.2 ft.		Wetted Bore Volume: (A x D) 6.86 gal. (E)	

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block with 3/4" well Riser / Pro Active Super twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	44.1 - 47.1	10	15	2	
2	47.1 - 50.1	10	15	2	
3	50.1 - 54.4	10	45	4	
	Cumulative Totals: (Minimum of 3 Well Volumes)		75	10	

Final Depth to Water (from TOC): 12.23

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 569-GW-7/1/16-FM (Staged at well)
2. 570-GW-7/1/16-FM
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

Field Representative(s): Jason T. Yado (Print Name) | J T Yado (Signature) | 6/30/16 (Date)

_____ (Print Name) | _____ (Signature) | _____ (Date)

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM12 - PZM006 **Well Permit No.:** _____ Page 1 of 2

ARM Project No.: 150300M-21-7	Date/Time Started: 6/22/10 / 1330	Developed by: NK/JSG
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/22/10 / _____	Company: ARM Group
Well Location: Area B, Parcel B22	Weather/Site Conditions: Mostly Cloudy - 80°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: (BGS) 6 / BTOC 8.5 to (BGS) 16 / BTOC 18.5
Well riser/screen material: *PVC*	Sandpack Interval: NA to NA
Difference between Ground Surface and TOC: (+ / -) +2.63 ft	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 16 (BGS)

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 18.59 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 10.93 ft. (C)
Petroleum/Product Present? *Y* or (*N*.) Thickness (ft.): —	Height of Water Column: (B - C) 7.66 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.25 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well riser / Proactive Super Twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	8.5 - 11.5	10	2.5	2	High Turb → clear
2	11.5 - 18.5	10	2.5	2	High Turb → clear
3	18.5 - 18.5	10	6	4.5	High Turb → clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		10.5	6.5	

Final Depth to Water (from TOC): 10.94

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: ~~TM12-PZM00~~
Date: 6/22/16

ID Numbers of IDW Drums Generated:

1. 540 - GW - 6/22/16 - B22 (left near well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

Field Representative(s):

Print Name	Signature	Date
Jason T. Yaple		6/22/16
Nick Kurtz		6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM13-PZM007 **Well Permit No.:** _____

ARM Project No.: 150300M -21-7	Date/Time Started: 6/24/16 / 1310	Developed by: Jason T. Yoder
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/24/16 / 1340	Company: ARM Group, Inc
Well Location: Area B, Parcel Fin	Weather/Site Conditions: mostly Cloudy - 85°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval:	6	8.1	to 16	18.1
Well riser/screen material: (*PVC*)	Sandpack Interval:	4	6.1	to 16	18.1
Difference between Ground Surface and TOC: (+ / -) +2.1	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)	16 BGS			

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 18.1 ft. (B)	50/1.J
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 11.38 ft. (C)	
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 6.72 ft. (D)	
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.09 gal. (E)	

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block with 3/4" well Riser / ProActive Supertwister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	8.1-11.1	10	2.25	2	mod turb. → clear
2	11.1-14.1	10	2.25	2	mod turb. → clear
3	14.1-18.1	10	4.50	4	mod turb. → clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		9	8	

Final Depth to Water (from TOC): 11.38

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TM13 - PZ Mod
Date: 6/24/16

ID Numbers of IDW Drums Generated:
1. 555-GW-6/24/16-FM (Staged At well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

	Print Name	Signature	Date
Field Representative(s):	JASON T YATES		6/24/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM13-PZM046 **Well Permit No.:** _____

ARM Project No.: 150300M-01-17	Date/Time Started: 6/24/16 / 1340	Developed by: JTG
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/24/16 / 1455	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Cloudy 85°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval:	51.8	54.2 to	62.0	64.4
Well riser/screen material: *PVC*	Sandpack Interval:	50.0	52.4 to	62.0	64.4
Difference between Ground Surface and TOC: (+ / -) +2.4	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)	62.0 BGS			
		64.4 BTOC			

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 64.4 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 10.98 ft. (C)
Petroleum/Product Present? *Y* or (*N*.) Thickness (ft.): ———	Height of Water Column: (B - C) 53.42 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 8.70 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block with 3/4" well Riser / ProActive Supertwister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	54.2 - 57.2	10	17.5	2	
2	57.2 - 60.2	10	17.5	2	
3	60.2 - 64.4	10	45	6	
	Cumulative Totals: (Minimum of 3 Well Volumes)		80	10	

Final Depth to Water (from TOC): 11.09

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:

1. 555-GW-6/24/16-FM (Staged at well)
2. 556-GW-6/24/16-FM (Staged at well)
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. York		6/24/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM14-PZM005 **Well Permit No.:** _____

ARM Project No.: 150300M	Date/Time Started: 6/22/16 / 1300	Developed by: NK/STG
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/22/16 / 1320	Company: ARM Group
Well Location: Area B, Parcel B27	Weather/Site Conditions: Mostly Sunny - 80°F	Checked by: _____

A. Well Construction Details

Well Cover Type: *Stick-up* or (*Flush-Mount*)	PVC Screen Interval: 6 BTOC to 16 BTOC
Well riser/screen material: *PVC*	Sandpack Interval: NA to NA
Difference between Ground Surface and TOC: (+ / -) -0.55	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 16'

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 15.48 ft. (B) Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 7.99 ft. (C)
Petroleum/Product Present? Y or (N) Thickness (ft.): —	Height of Water Column: (B - C) 7.49 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.22 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: surge block on 3/4" well Riser / Pro Active Super twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	6-9	10	2.5	2	Slight turbidity
2	9-12	10	2.5	2	High Turb → slight Turbid
3	12-16	10	7.5	6	Heavy Turb → clear
	Cumulative Totals: (Minimum of 3 Well Volumes)		12.5	10	

Final Depth to Water (from TOC): 8.01

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TM 14-PZM005
Date: 6/22/16

ID Numbers of IDW Drums Generated:
1. 540 - GW - 6/22/16 - B22 (left near TM 12-PZM006)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yaple		6/22/16
	Nick Kuste		6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM15-PZM007 **Well Permit No.:** _____

ARM Project No.: 150300M	Date/Time Started: 6/22/16 / 1031	Developed by: NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/22/16 / 1151	Company: ARM Group
Well Location: Area B, Parcel 22	Weather/Site Conditions: Sunny; 80°F	Checked by:

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: 4 (7) BTOC to 14 (17) BTOC
Well riser/screen material: (*PVC*)	Sandpack Interval: NA to NA
Difference between Ground Surface and TOC: (+ / -) +3.08' Protective Casing; +2.93' PVC	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 14' (BGS)

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 16.82 ft. (B) (Sol'd)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 8.37 ft. (C)
Petroleum/Product Present? *Y* or (*N*.) Thickness (ft.): —	Height of Water Column: (B - C) 8.45 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.38 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block / ~~Whale Pump~~ ProActive Pump – Supertwister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	7-10	5	5	3.62	Turbid with Odors
2	10-13	5	5	3.62	Less Turbid w/ Odors
3	13-17	5	~~20~~ 10	~~14.50~~ 7.25	Clear with Odors
				14.48	
	Cumulative Totals: (Minimum of 3 Well Volumes)		~~30~~ 20	~~21.75~~	

Final Depth to Water (from TOC): 8.41

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TM15 PZM007
Date: 6/22/16

ID Numbers of IDW Drums Generated:
1. 539 - GW - 6/22/16 - B22 (left near well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram NA
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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_____

F. Signatures

Field Representative(s):

Print Name	Signature	Date
Jason T. Yagla		6/22/16
Nick Kurtz		6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

38'
3' screen

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM 15 ~~DS~~ PZM011 **Well Permit No.:** _____ Page 1 of 2

ARM Project No.: 150300M	Date/Time Started: 6/22/16 / 1025	Developed by: JTY/NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/22/16 / 1218	Company: ARM Group
Well Location: Area B, Parcel B22	Weather/Site Conditions: Sunny - 80°F	Checked by:

A. Well Construction Details

Well Cover Type: (*Stick-up*) or *Flush-Mount*	PVC Screen Interval: 13 (BTOC 15.55) to 18 (BTOC 20.55)
Well riser/screen material: *PVC*	Sandpack Interval: NA to NA
Difference between Ground Surface and TOC: (+ / -) 2.75 Protective Casing 2.55 PVC stick-up	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 18 (BGS)

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 19.98 ft. (B) (Solid)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 7.85 ft. (C)
Petroleum/Product Present? *Y* or *N*. Thickness (ft.): N	Height of Water Column: (B - C) 12.13 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.98 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Foot Valve Pump (1*) with integrated surge block / Pro Active (2*) Pump Supertrister

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	15-17	(1*) 5 minutes	2	1	
2	17-19	(1*) 5 minutes	4	1	
3	19-21	(1*) 5 minutes	6	1	
4	———	(2*)	3.5	1.75	Turbid → Clear → Turbid → Dry
5	———	(2*)	2.0	1	Same as above.
		Cumulative Totals: (Minimum of 3 Well Volumes)	17.5	5.75	

Final Depth to Water (from TOC): 16.22

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

ID Numbers of IDW Drums Generated:
1. 539-GW-6/22/16 -B22 (left near well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

Field Representative(s):

Print Name	Signature	Date
Jason T. Lapp		6/22/16
Nick Kurtz		6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM 15 PZM03I **Well Permit No.:** _____

ARM Project No.: 150300M - 21-7	Date/Time Started: 6/22/16 1040	Developed by: NK
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/22/16 1150	Company: ARM Group
Well Location: Area B, Parcel 22	Weather/Site Conditions: Sunny - 80°F	Checked by:

A. Well Construction Details

Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval: 35 to 38
Well riser/screen material: *PVC*	Sandpack Interval: NA to NA
Difference between Ground Surface and TOC: (+ / -) +2.5 Top of PVC +3.0	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 38'

B. Wetted Bore Volume Determination

Well (PVC) Diameter: ~~2.0 in.~~ 0.5 Inch	Well Total Depth (TOC): 37.84 ft. (B) Solid
Well (PVC) Volume: ~~0.163 gal./ft.~~ (A) 0.01 gal/ft	Depth to Static Water Level (TOC): 8.17 ft. (C)
Petroleum/Product Present? *Y* or *N*. Thickness (ft.): N.C.	Height of Water Column: (B - C) 29.67 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) .30 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Pump w. 4h 1/4" peristaltic ~~tool~~

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	36'	—	0.4	1.3	Clear
2	36'	—	0	dry / Peristaltic limit	
	Cumulative Totals: (Minimum of 3 Well Volumes)		0.4	1.3	

Final Depth to Water (from TOC): 23.25'

Thickness of Any Sediment Remaining in Well: 0'

All depths reported are from reference notch in top of TOC.

Well ID: TM15 PZ MW03
Date: 6/22/16

ID Numbers of IDW Drums Generated:
1. 539-GW-6/22/16 - B22 (left near well)
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

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F. Signatures

Field Representative(s):

Print Name	Signature	Date
Jason T. Yapp		6/22/16
Nick Kurtz		6/22/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM16-PZM007 **Well Permit No.:** _____ Page **1** of **2**

ARM Project No.: 150300M-21-7	Date/Time Started: 7/1/16 / 0740	Developed by: Jason T. Yap6
Client: **EnviroAnalytics Group**	Date/Time Completed: 7/1/16 / 0815	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Sunny ~75°F	Checked by: _____

A. Well Construction Details

Well Cover Type: (Stick-up) or *Flush-Mount*	PVC Screen Interval:	BGS 4.5	BTOC 7.0	to BGS 14.8	BTOC 17.3
Well riser/screen material: *PVC*	Sandpack Interval:	2.7	5.2	to 15.1	17.6
Difference between Ground Surface and TOC: (+ / -) +2.5	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 17.3 BTOC				

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 10 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 9.85 ft. (C)
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 0.15 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 1.3 ft.	Wetted Bore Volume: (A x D) 1.00 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / Proactive Super Twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	7.0 - 10.0	10	2	2	muddy → High Turb (Black)
2	10.0 - 13.0	10	2	2	High Turb (Black)
3	13.0 - 17.3	10	11	~~5.5~~ 11	High Turb (Black)
	Cumulative Totals: (Minimum of 3 Well Volumes)		15	~~9.35~~	

Final Depth to Water (from TOC): 9.99

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: 7/1/16
Date: TM16-PZM007

ID Numbers of IDW Drums Generated:

1. 569-GW-7/1/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

_____

_____

_____

_____

_____

_____

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	JASON T. YAPP		7/1/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM17-PZM005 **Well Permit No.:** _____

ARM Project No.: 150300M -21-7	Date/Time Started: 6/24/16 / 1130	Developed by: JTY
Client: **EnviroAnalytics Group**	Date/Time Completed: 6/24/16 / 1208	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: Mostly Sunny ~85°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: *Stick-up* or *Flush-Mount*	PVC Screen Interval:	4	6.7	to 14	16.7
Well riser/screen material: *PVC*	Sandpack Interval:	3	5.7	to 14	16.7
Difference between Ground Surface and TOC: (+ / -) +2.7	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram) 16.7				

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 16.7 ft. (B)
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 7.04 ft. (C)
Petroleum/Product Present? Y or N Thickness (ft.): —	Height of Water Column: (B - C) 9.66 ft. (D)
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.57 gal. (E)

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block with 3/4" well Riser / ProActive Super Twister Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	6.7 - 9.7	10	3	2	Black → clear
2	9.7 - 12.7	10	2	1.25	Black → clear (dry)
3	12.7 - 16.7	10	3	2	Black → clear (dry)
	Cumulative Totals: (Minimum of 3 Well Volumes)		8	5.25	

Final Depth to Water (from TOC): 15.83

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

TM17-PZM005

Well ID: ~~TM17~~ PZM005

Date: 6/24/16

ID Numbers of IDW Drums Generated:

1. 555-GW-6/24/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

Field Representative(s): Jason T. Apple — Print Name; [signature] — Signature; 6/24/16 — Date

_____ — Print Name; _____ — Signature; _____ — Date

All depths reported are from reference notch in top of TOC.
All measurements made in 10ths of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

ARM Group Inc.

Earth Resource Engineers and Consultants

Sparrows Point Terminal (SPT)

Monitoring Well Development Form – Surge and Pump Method

Well ID: TM18-PZM005 **Well Permit No.:** _____ Page 1 of 2

ARM Project No.: 150300M-21-7	Date/Time Started: 7/1/16 / 0820	Developed by: JASON T. APG
Client: **EnviroAnalytics Group**	Date/Time Completed: 7/1/16 / 0855	Company: ARM Group Inc
Well Location: Area B, Parcel FM	Weather/Site Conditions: mostly sunny - 78°F	Checked by: _____

A. Well Construction Details

		BGS	BTOC	BGS	BTOC
Well Cover Type: (Stick-up) or *Flush-Mount*	PVC Screen Interval:	3.7	6.5	to 14.0	16.8
Well riser/screen material: *PVC*	Sandpack Interval:	2.2	5.0	to 15.1	17.9
Difference between Ground Surface and TOC: (+ / -) +2.8	Measured Total Depth of Well When Installed (TOC) (F): (See Original Well Construction Diagram)	16.8 BTOC			

B. Wetted Bore Volume Determination

Well (PVC) Diameter: 2.0 in.	Well Total Depth (TOC): 16.7 ft. (B)	Solid
Well (PVC) Volume: 0.163 gal./ft. (A)	Depth to Static Water Level (TOC): 7.63 ft. (C)	
Petroleum/Product Present? *Y* or (N) Thickness (ft.): —	Height of Water Column: (B - C) 9.07 ft. (D)	
Initial Thickness of Sediment in Bottom of Well (F - B): 0 ft.	Wetted Bore Volume: (A x D) 1.48 gal. (E)	

C. Surge and Pump Event Summary Data

Description of Surge Equipment: Surge block on 3/4" well Riser / Proactive Super Tusker Pump

Event No.	Screen Interval (ft.)	No. of Surge Strokes	Volume of Water Removed (gal.)	Bore Volumes of Water Removed	Qualitative Description of Color/Turbidity/Odors/Other
1	6.5-9.5	10	3	2	Black High Turb
2	9.5-12.5	10	3	2	"
3	12.5-16.8	10	9	6	"
	Cumulative Totals: (Minimum of 3 Well Volumes)		15	10	

Final Depth to Water (from TOC): 13.89

Thickness of Any Sediment Remaining in Well: 0

All depths reported are from reference notch in top of TOC.

Well ID: TM18 PZM005
Date: 7/1/16

ID Numbers of IDW Drums Generated:
1. 569-GW-7/1/16-FM
2. _____
3. _____

D. Checklists

Equipment Check List:

- ☐ Original Well Construction Diagram
- ☐ Well Development Form
- ☐ Clean Weighted Tape for Determining Total Well Depth and Depth to Any Sediment or Possible Blockages Within the Well
- ☐ Water Level Meter and/or Oil-Water Interface Probe
- ☐ Surge Block and 2-inch ID PVC Casing Extensions
- ☐ Appropriate Pump
- ☐ Disposable Pump Tubing
- ☐ Clean Paper Towels
- ☐ Alconox Detergent
- ☐ Clean Brushes for Decontamination Work
- ☐ Distilled Water for Rinsing Equipment
- ☐ 2 New, Clean Spray Bottles for Spray Distilled Water
- ☐ 2 to 3 Clean Five-gallon Buckets
- ☐ 55-gallon Drum(s) for Development Water; Drum Non-hazardous Waste Labeling Supplies
- ☐ Personal Protective Equipment Per Health and Safety Plan

Quality Control Procedures Include:

- ☐ Decon All Equipment that Goes Down-hole per Appropriate Standard Operating Procedure (SOP)
- ☐ Staging Down-hole Equipment, Tubing, etc. on Clean Plastic Sheeting
- ☐ _____

E. Notes/Comments

F. Signatures

	Print Name	Signature	Date
Field Representative(s):	Jason T. Yde		7/1/16

All depths reported are from reference notch in top of TOC.
All measurements made in 10^{ths} of feet

TOC = from Top of PVC Casing
Grd = Ground Surface
TD = Total Depth

APPENDIX F

April 1, 2016

Mr. James Calenda
EnviroAnalytis Group, LLC
1650 Des Peres Road, Suite 303
St. Louis, MO 63131

Re: Sparrows Point Well Survey
Sparrows Point, MD
Triad Engineering Job No. 03-15-0343

Mr. Calenda:
Below are the specified surveyed wells, date of last field work completed on March 31, 2016. The coordinate values shown were derived from G.P.S. observations based on National Geodetic Surveys stations “GIS 1”, PID AC7684 and “GIS 2”, PID AC7685 which purport to be on NAD83(2011) Maryland Grid coordinate system with NAVD88 (AMSL) elevations.

DESCRIPTION	*NORTHING*	*EASTING*	*TOP CASING ELEVATION*	*GROUND AT WELL ELEVATION*
RW01-PZM020	572285.02	1456497.40	12.72	10.15
RW02-PZM000	572167.62	1456601.84	12.39	10.05
RW02-PZM020	572158.64	1456606.28	13.02	10.27
RW03-PZM003	572259.59	1456590.24	10.87	10.31
RW04-PZM003	572273.38	1456415.50	11.11	10.27
RW05-PZP001	572192.49	1456509.88	13.03	10.76
RW06-PZM001	572173.11	1456427.80	12.17	10.20
RW07-PZM004	572145.46	1456308.46	13.70	10.61
RW07-PZM017	572137.29	1456311.82	12.94	10.71
RW08-PZM003	572100.62	1456449.49	11.38	10.76
RW09-PZM004	572065.65	1456324.72	13.67	10.76
RW10-PZM004	572028.98	1456365.53	10.92	11.22
RW10-PZM020	572016.81	1456385.68	11.86	11.47
RW10-PZM065	572031.12	1456376.20	10.75	10.98
RW11-PZM004	572016.05	1456486.05	13.79	11.11
RW12-PZM004	572051.83	1456593.90	13.88	11.16
RW13-PZM020	571971.43	1456592.59	13.05	11.17
RW14-PZM020	572204.47	1456202.53	13.60	11.24
RW15-PZM020	571989.55	1456088.94	12.17	11.84
RW16-PZM020	571861.44	1456127.25	13.89	11.65
RW17-PZM019	571801.70	1456321.19	13.73	11.43
RW18-PZM047	572418.32	1456080.56	15.69	13.70

RW19-PZM020	571975.38	1455960.61	13.53	11.28
RW19-PZM050	571973.56	1455966.33	12.95	11.17
RW19-PZP003	571981.70	1455964.46	13.49	11.16
RW20-PZM020	571694.60	1456021.05	13.03	11.14
RW20-PZM050	571704.36	1456022.96	11.87	11.09
RW20-PZP000	571705.48	1456018.60	13.54	11.06
RW21-PZM023	571512.69	1456045.20	12.93	10.86
RW-RW89	572109.51	1456513.71	11.35	10.97
RW-RW90	572154.39	1456467.19	11.08	10.55
RW-RW93	NOT INSTALLED			
RW-RW95	572243.17	1456479.97	12.62	10.81
RW-RW97	572070.55	1456523.86	13.08	10.93
RW-RWBW-20	WELL CASING DAMAGED, COULD NOT SURVEY (SEE FIGURE 1.0)			14.04
RW-RWBW-21	572425.20	1456092.04	15.11	14.75
SW03-PZM003	571205.39	1456735.24	14.54	10.93
SW03-PZM060	571201.38	1456738.70	14.93	10.92
TS04-PDM004	571781.18	1456010.86	13.69	11.10
TS04-PPM007	571713.99	1455885.63	10.20	10.24
TS04-PZM023	571723.19	1455884.69	10.05	10.30
SW-061-MWS	567005.21	1457693.91	15.83	13.65
SW-059-MWS	567199.64	1458459.63	15.99	13.64
SW-060-MWS	567889.61	1457693.79	14.12	12.20
SW-051-MWS	565671.75	1462655.02	13.40	10.99
SW-049-MWS	566666.92	1463263.78	11.55	11.89
SW-050-MWS	565719.62	1463489.52	10.62	8.04
SW-066-MWS	564235.89	1458826.45	13.02	10.77
SW-071-MWS	564957.19	1460809.42	16.63	14.25
SW-072-MWS	564563.01	1460661.22	14.60	12.02
SW-073-MWS	564422.72	1461025.48	14.76	12.43
SW-065-MWS	564008.99	1457839.54	12.27	12.57
SW-057-MWS	567666.75	1460456.19	12.31	12.62
SW-058-MWS	568148.01	1459749.57	11.45	11.75
SW-056-MWS	566048.47	1460677.32	11.52	8.72
SW-054-MWS	566520.20	1461893.20	13.35	10.89
SW-055-MWS	565946.68	1461317.07	11.87	9.28
SW-053-MWS	567410.98	1461986.20	13.84	14.06
SW-037-MWS	563571.81	1461007.95	13.28	10.96
SW-035-MWS	563772.91	1460297.91	13.43	11.06
SW-034-MWS	563668.32	1459941.32	12.62	10.16
SW-032-MWS	563537.58	1458639.17	12.64	10.49
SW-027-MWS	564973.53	1456177.11	16.98	14.33
SW-028-MWS	564518.61	1456324.45	15.59	13.20

SW-021-MWS	568534.52	1457422.96	12.83	10.42
SW-022-MWS	568222.29	1457122.05	14.31	12.20
SW-023-MWS	568116.87	1456637.37	14.66	12.79
SW-024-MWS	568021.88	1456157.41	14.03	11.62
SW-025-MWS	566943.92	1456126.02	13.16	11.03
SW-026-MWS	566649.66	1455514.08	11.51	8.61
SW-040-MWS	564306.40	1463005.67	13.01	11.16
SW-041-MWS	564416.60	1463773.99	13.47	11.80
SW-042-MWS	564740.08	1464633.24	7.40	7.78
SW-043-MWS	565729.24	1464430.00	10.26	8.53
SW-044-MWS	566398.36	1464363.35	8.61	8.99
SW-048-MWS	568760.44	1463140.98	16.73	14.27
SW-046-MWS	569504.23	1464948.41	9.80	10.13
SW-047-MWS	570242.63	1464394.66	20.24	20.56
SW-038-MWS	563432.87	1461357.62	16.28	13.76
SW-039-MWS	563507.65	1462484.16	19.91	17.91
SW-031-MWS	563598.44	1458394.82	13.41	10.93
SW-070-MWS	565612.92	1459619.82	11.17	9.10
SW-052-MWS	565095.06	1462682.05	13.88	11.49
SW-045-MWS	568357.88	1463927.89	13.10	11.17
SW-043-MWI	565719.77	1464429.47	10.43	8.56
SW-045-MWI	568344.09	1463932.84	12.86	10.92
SW-074-MWI	567047.75	1464301.55	10.20	8.20
SW-036-MWS	563678.17	1460774.35	13.38	10.82
SW-033-MWS	563597.45	1459274.61	10.28	10.59
SW-030-MWS	563547.95	1458146.61	14.72	12.32
SW-074-MWS	567038.13	1464298.66	11.32	8.79
SW-062-MWS	567420.73	1456909.57	16.81	14.39
SW-063-MWS	565322.90	1456892.20	19.98	17.54
SW-067-MWS	564917.48	1458453.61	14.85	12.66
SW-068-MWS	565823.84	1458036.16	16.87	14.55
SW-069-MWS	566309.02	1458770.00	16.56	14.23
SW-029-MWS	563980.59	1456323.19	15.75	13.15
SW-064-MWS	564322.36	1457393.54	17.39	15.15
FM01-PZM003	568251.65	1460279.28	10.08	10.37
FM01-PZM041	568251.76	1460275.61	9.91	10.24
FM05-PZM004	568565.69	1462040.51	14.48	11.73
FM05-PZM024	568578.67	1462043.77	14.47	12.04
SG07-PZM007	NOT INSTALLED			
SW06-PZM001	569184.69	1463625.88	17.29	14.92
SW06-PZM053	569188.45	1463637.32	16.75	14.59
SW07-PZM004	567658.52	1456050.21	14.52	12.02

SW07-PZM108	567665.11	1456048.67	15.76	11.56
SW08-PZM003	568091.75	1458990.33	11.75	9.37
SW08-PZM053	568090.03	1458982.75	12.02	9.67
SW09-PZM004	566974.91	1460293.50	13.16	10.34
SW09-PZM028	566965.08	1460295.30	12.70	10.48
SW09-PZM068	566970.72	1460290.93	13.31	10.32
NO DESC.	566975.78	1460287.86	13.03	10.17
SW10-PZM012	567312.59	1463288.23	7.91	4.82
SW10-PZM085	567286.63	1463311.33	7.83	4.88
SW11-PZM005	565794.79	1456073.98	13.54	11.35
SW12-PZP001	565989.17	1457438.18	17.66	15.57
SW13-PZM003	563493.91	1456407.34	16.26	14.01
SW13-PZM025	563498.66	1456410.45	15.59	13.56
SW13-PZM111	563502.75	1456409.98	15.37	13.66
SW14-PZM004	563392.23	1457680.38	15.85	13.80
SW15-PZM005	564367.29	1459534.16	14.83	12.17
SW15-PZM031	564371.72	1459531.84	14.90	12.02
SW15-PZM085	564367.22	1459539.25	14.23	12.15
NO DESC.	564374.63	1459537.53	14.50	12.19
SW16-PZM003	564524.42	1462434.76	14.94	12.80
SW16-PZM067	564528.56	1462441.95	15.33	13.06
TM03-PZM004	568852.92	1457628.81	12.66	10.34
TM03-PZM037	568849.30	1457622.17	12.08	10.38
TM05-PZM005	568837.40	1458595.64	12.76	10.62
TM05-PZM040	568830.24	1458596.23	12.83	10.70
TS10-PDM008	567529.89	1464010.26	6.74	3.88
SG07 PD	564025.39	1463980.66	17.93	15.19

Figure 1.0: RW-RWBW-20 Photographs

September 21, 2016

Mr. James Calenda
EnviroAnalytis Group, LLC
1650 Des Peres Road, Suite 303
St. Louis, MO 63131

Re: Sparrows Point Well Survey
Sparrows Point, MD
Triad Engineering Job No. 03-15-0343

Mr. Calenda:
Below are the specified surveyed wells, date of last field work completed on August 25, 2016. The coordinate values shown were derived from G.P.S. observations based on National Geodetic Surveys stations "GIS 1", PID AC7684 and "GIS 2", PID AC7685 which purport to be on NAD83(2011) Maryland Grid coordinate system with NAVD88 (AMSL) elevations.

DESCRIPTION	*NORTHING*	*EASTING*	*TOP CASING ELEVATION*	*GROUND AT WELL ELEVATION*
A10-002-PZ	571161.93	1464918.46	22.13	18.90
A10-010-PZ	571116.39	1464272.67	17.98	14.24
A10-015-PZ	571076.94	1464417.67	20.09	16.32
A10-018-PZ	571514.97	1464077.29	18.65	15.11
A10-020-PZ	571348.36	1464416.91	13.64	12.29
A10-021-PZ	571256.27	1464510.46	13.26	11.76
A10-024-PZ	571659.56	1464636.91	14.36	11.43
A10-025-PZ	571918.14	1464914.72	16.94	14.14
A10-027-PZ	572288.37	1464921.09	16.38	12.59
A10-029-PZ	570731.74	1464689.15	23.11	19.64
A10-034-PZ	571289.59	1464806.40	20.10	17.11
FM-001-PZI	568350.09	1461447.35	14.55	11.75
FM-001-PZS	568352.50	1461443.85	13.40	12.05
FM-002-PZI	568970.89	1461318.92	15.17	12.01
FM-002-PZS	568971.52	1461315.77	14.08	11.89
FM-003-PZI	569527.42	1460670.51	14.50	11.48
FM-003-PZS	569534.00	1460671.22	14.90	11.48
FM-004-PZI	570066.19	1460466.45	14.24	11.38
FM-004-PZS	570071.39	1460466.11	13.97	11.24
FM-005-PZI	570670.96	1460700.24	15.30	11.66
FM-005-PZS	571149.95	1460689.17	12.04	10.92

FM-006-PZI	571251.68	1461510.81	16.03	13.12
FM-006-PZS	571246.35	1461514.90	15.79	13.08
FM-007-PZI	570961.80	1461784.57	14.77	11.38
FM-007-PZS	570960.51	1461781.24	13.40	11.37
FM-008-PZI	570624.99	1462721.88	14.72	11.51
FM-008-PZS	570624.50	1462707.78	14.20	11.35
FM-009-PZI	569968.89	1462819.29	17.98	14.91
FM-009-PZS	569980.51	1462820.63	17.66	14.97
FM-010-PZS	571826.42	1462218.46	9.87	6.81
FM-011-PZI	571620.40	1463013.18	12.39	9.30
FM-011-PZS	571622.76	1463015.69	12.00	9.28
FM-012-PZI	570732.06	1463341.74	14.64	11.56
FM-012-PZS	570734.98	1463340.86	13.97	11.42
FM-013-PZI	570271.36	1461726.85	14.90	11.71
FM-013-PZS	570268.11	1461727.93	14.26	11.76
FM-014-PZI	569541.35	1462083.52	13.97	11.61
FM-014-PZS	569536.31	1462083.86	15.00	11.63
FM-015-PZI	568440.69	1462479.04	16.89	13.22
FM-015-PZS	568438.52	1462482.27	15.80	13.64
FM-016-PZI	568827.21	1461007.05	15.26	11.95
FM-016-PZS	568829.88	1461007.58	14.69	11.95
FM-017-PZS	569903.20	1461148.43	13.44	11.66
FM02-PZM002	569903.68	1461163.61	11.37	11.32
HI02-PZM0006	569966.88	1457454.45	10.11	10.42
HIO7-PZM005	570206.14	1458428.32	12.66	9.64
SG06-PDM001	572030.13	1464372.48	12.04	12.42
SW-075 MWI	571472.28	1459393.74	13.09	10.00
SW-075-MWS	571466.89	1459390.63	12.53	10.27
SW-076-MWI	571138.83	1463610.23	16.45	13.93
SW-076-MWS	571145.33	1463609.59	16.36	13.79
SW-077-MWI	572224.85	1463610.87	12.34	9.97
SW-077-MWS	572228.44	1463614.02	12.14	9.80
SW-078 MWI	572112.30	1460690.77	13.47	11.00
SW-078 MWS	572115.04	1460695.61	13.44	11.13
SW 079-MWI	569137.43	1460072.19	14.19	11.91
SW-079 MWS	569137.88	1460079.67	14.21	11.85
SW-080-MWI	570166.41	1463672.56	13.85	12.01
SW-080-MWS	570161.03	1463670.60	14.07	11.96
SW-081 MWI	569928.64	1459928.00	12.49	10.02
SW-081 MWS	569933.18	1459925.44	12.53	10.03

SW-082-MWI	572474.23	1457891.67	15.07	12.63
SW-082-MWS	572476.95	1457898.99	15.02	12.64
TM07-PZM005	569431.15	1459618.10	13.67	10.86
TM07-PZM045	569436.02	1459630.08	13.77	10.90
TM09-PZM007	570392.29	1459871.53	11.28	8.44
TM09-PZM047	570392.35	1459878.19	11.19	8.81
TM10-PZM007	571262.48	1459888.20	11.21	8.25
TM11-PZM034	571172.04	1460045.01	12.81	10.61
TM12-PZM006	571646.49	1460941.70	12.26	9.64
TM13-PZM007	571540.52	1460920.92	12.24	9.28
TM13-PZM046	571536.04	1460925.99	11.70	9.29
TM14-PZM005	571771.23	1461793.30	10.18	10.75
TM15-PZM007	571623.86	1461800.43	10.53	7.52
TM15-PZM011	571632.21	1461796.67	10.02	7.31
TM15-PZM031	571627.81	1461814.80	11.04	7.54
TM16-PZM007	571856.99	1462548.95	12.29	9.78
TM17-PZM005	571752.86	1462658.08	11.19	8.39
TM18-PZM005	571885.60	1463340.92	10.64	8.54

APPENDIX G

Low Flow Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: FM Intermediate PZ	Project Number: 150300M-21-3
Well Number: FM-001-PZI	Date: 6/14/16 1000
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft):	~~QED~~ Controller Settings: Alexis Peristaltic : 6.89
Depth to Water (ft) 14.50	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 42

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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
1003	0.9	14.61	20.61	7.54	0.837	6.74	-62	52.4	
1006	1.8	14.64	20.36	6.34	1.08	5.36	41	93.5	
1009	2.7	14.61	20.45	6.24	1.06	4.27	33	115	
1012	3.6	14.61	20.42	6.34	1.05	3.38	23	97.2	
1015	4.5	14.61	20.26	6.38	1.06	3.17	18	91.9	
1018	5.4	14.61	20.42	6.38	1.05	2.75	10	95.3	
1021	6.3	14.61	20.41	6.43	1.05	2.06	1	62.9	
1024	7.2	14.61	20.62	6.47	1.06	1.67	-15	35.9	
1027	8.1	14.61	20.67	6.47	1.06	1.36	-25	31.7	
1030	9.0	14.61	20.86	6.51	1.06	0.89	-39	25.8	
1033	9.9	14.61	20.80	6.53	1.05	0.77	-51	23.7	* SNS
1036	10.8	14.61	20.77	6.54	1.06	0.74	(-64)	20.1	
1039	11.7	14.61	20.90	6.56	1.06	0.74	-73	18.5	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-001-PZI	1045	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	yes
		TPH-DRO	2 - 1 L Amber	none	yes
		TCL-SVOCs	2- 1 L Amber	none	yes
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	NO
		Hexavalent Chromium	1 - 250 mL Plastic	None	yes
		Cyanide	1 - 250 mL Plastic	NaOH	yes
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	yes
Matrix Spike					
Duplicate					

Sampled By: JTY

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: FM Intermediate PZ	Project Number: 150300M-21-3
Well Number: FM-001-PZI	Date: 6/14/16
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft):	~~QED Controller~~ Settings: Alexis Peristaltic : 6.89
Depth to Water (ft) 14.50	Flow Rate (mL/min) : 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min)

WELL 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
1042	12.6	14.61	20.78	6.56	1.07	0.70	-80	19.5	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-001-PZI	1045	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	Yes
		TPH-DRO	2 - 1 L Amber	none	Yes
		TCL-SVOCs	2- 1 L Amber	none	Yes
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	NO
		Hexavalent Chromium	1 - 250 mL Plastic	None	Yes
		Cyanide	1 - 250 mL Plastic	NaOH	Yes
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	Yes
Matrix Spike					
Duplicate					

Sampled By: JTY

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GWI	Project Number: 150350M-21
Well Number: FM-0010P75	Date: 5/24/16
Well Diameter (in): ~~1.5~~ 1"	One Well Volume (gal): 0.62
Total Depth (ft): ~~7.42~~ 15	Purge Rate (mL/min) 400mL/min
Depth to Water (ft) 7.42	Length of time Purged (min)
Condition of Casing: none	Condition of Pad: none

WELL PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (µs/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1135	1.75	7.45	14.8	9.25	957	0.73	21.4	6.41	
1140	2.25	7.43	14.8	11.18	961	0.39	35.4	4.67	
1145	3.0	7.45	14.7	10.86	958	0.34	48.2	4.31	
1150	3.5	7.45	14.8	10.65	958	0.32	53.9	2.15	
1155	4.0	7.45	14.7	10.56	961	0.29	56.0	2.32	
1200	4.5	7.44	14.8	10.89	956	0.31	32.7	2.17	
1205	5.0	7.44	14.8	11.49	958	0.32	-7.5	1.77	
1210	5.5	7.44	14.8	11.37	959	0.30	-6.9	1.45	
1215	6.0	7.45	14.7	11.32	961	0.29	-6.4	1.33	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-001-P75	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
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	No
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	Y (dup)
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
Begin Devel @ 1119, purge @ 1135

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

15 ft x 0.041 gal/ft = 0.615 (gal) x 3 = 1.85

Low Flow Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW - PZI's	Project Number: 150300M - 21
Well Number: FM - 002 - PZI	Date: 6/14/16 1310
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	~~QED Controller~~ Settings: Alexis Peristaltic
Depth to Water (ft) ~~15~~ 15.08	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 45

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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	5.7	15.30	22.66	6.36	1.83	2.09	-127	3504	
~~1340~~	~~6.6~~ 9.5	15.27	21.75	6.45	1.92	1.99	-95	(631)	
1343	10.4	15.26	21.69	6.41	1.92	1.34	-106	(87)	
1346	11.3	15.27	21.52	6.38	1.92	1.20	-102	(330)	
1349	12.2	15.27	21.38	6.33	1.92	1.17	-102	(97)	
1352	13.1	15.27	21.29	6.28	1.92	1.13	-102	89.5	
1355	14.0	15.27	21.37	6.26	1.93	1.11	-102	84.7	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-002-PZI	1400	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	yes
		TPH-DRO	2 - 1 L Amber	none	yes
		TCL-SVOCs	2- 1 L Amber	none	yes
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	NO
		Hexavalent Chromium	1 - 250 mL Plastic	None	yes
		Cyanide	1 - 250 mL Plastic	NaOH	yes
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	yes
Matrix Spike					
Duplicate					

Sampled By: JTY

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21
Well Number: FM-002-PZS	Date: 5/24/16
Well Diameter (in): 1"	One Well Volume (gal): 0.162
Total Depth (ft): 15	Purge Rate (mL/min) 400 mL/min
Depth to Water (ft) 6.64	Length of time Purged (min)
Condition of Casing: none	Condition of Pad: none

WELL PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (µs/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
1326	1.75	6.65	16.2	—	1171	1.50	827.8	3.95	
1331	2.4	6.65	16.2	—	1168	1.11	86.8	7.30	
1336	2.7	6.66	16.3	7.11	1162	1.10	101.3	3.44	
1341	3.25	6.67	16.2	7.54	1157	1.10	59.3	2.40	
1346	3.75	6.65	16.0	7.15	1153	1.09	86.9	1.69	
1351	4.25	6.65	16.1	7.43	1146	1.12	65.4	1.77	
1356	4.75	6.65	16.1	7.33	1144	1.08	68.1	1.72	
1401	5.25	6.65	16.3	7.15	1141	1.07	76.3	1.54	
~~1406~~									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-002-PZS	1406	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	Yes
		TPH-DRO	2 - 1 L Amber	none	Yes
		TCL-SVOCs	2- 1 L Amber	none	Yes
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	No
		Hexavalent Chromium	1 - 250 mL Plastic	None	Yes
		Cyanide	1 - 250 mL Plastic	NaOH	Yes
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	Yes
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered** pH inoperable
Odor
1307 begin devel; 1326 begin purge "pH under range"

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

15 ft x 0.041 gal/ft = 0.615 (gal)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: FM-003-PZ1	Date: 6/16/16
Well Diameter (in): 1	One Well Volume (gal): 2.3
Total Depth (ft): 56	Purge Rate (mL/min) 300 mL/min
Depth to Water (ft) 14.23	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
0851	5	14.33	19.80	4.03	0.003	13.31	287	195	
0856	5.3	14.34	19.57	4.08	0.003	10.67	286	198	
0901	5.7	14.36	19.47	4.08	0.003	10.35	286	197	
0906	6.0	14.35	19.33	4.08	0.003	9.98	285	201	
0911	6.3	14.37	19.21	4.09	0.003	9.66	285	203	
0916	6.55	14.35	19.14	4.09	0.003	9.52	285	198	
0921	6.8	14.35	18.88	4.09	0.002	9.73	283	193	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-003-PZ1	0926	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: LML

Comments: **Dissolved metals are Field Filtered**
0819 deet
0824 purge

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300 M-21-3
Well Number: FM-003-PZS	Date: 6/16/16
Well Diameter (in): 1	One Well Volume (gal): 0.94
Total Depth (ft): 23	Purge Rate (mL/min)
Depth to Water (ft) 6.81	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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

Leave for recharge

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-003-PZS	NO SAMPLE Sample on 6-17-16 @ 0801	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
0802 devel @ 300 ml/min 0817 - DRY purge

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Fairshore Mills GW	Project Number: 150360M-21-3
Well Number: FM-004-PZ1	Date: 6/16/16
Well Diameter (in): 1	One Well Volume (gal): 2.3
Total Depth (ft): 55	Purge Rate (mL/min) 300 mL/min
Depth to Water (ft) 13.91	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
1027	5.0	14.00	20.23	4.13	0.003	12.00	288	193	
1032	5.3	14.00	20.22	4.14	0.003	9.87	288	191	
1037	5.5	14.01	20.36	4.14	0.003	9.42	288	192	
1042	5.75	14.03	19.97	4.16	0.003	9.49	288	192	
1047	6.1	14.04	20.04	4.12	0.003	9.41	288	192	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-004-PZ1	1052	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: LML

Comments: **Dissolved metals are Field Filtered**
1005 devel
1027 Purge

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishings Mills GW	Project Number: 150300M-21.3
Well Number: FM-004-PZS	Date: 6/16/16
Well Diameter (in): 1	One Well Volume (gal): 0.78
Total Depth (ft): 19	Purge Rate (mL/min) 350 mL/min
Depth to Water (ft) 12.18	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
1126	2.0	12.21	20.41	4.25	0.005	11.17	288	196	
1131	2.25	12.23	19.35	4.23	0.006	10.24	290	194	
1136	2.5	12.23	19.23	4.20	0.005	9.98	291	194	
1141	2.9	12.24	19.48	4.22	0.005	9.70	292	191	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-004-PZS	1146	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
1109 dtw
1126 purge

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: FM-005 PZ1	Date: 6/16/16
Well Diameter (in): 1	One Well Volume (gal): 2.5
Total Depth (ft): 20.2	Purge Rate (mL/min) 250
Depth to Water (ft) 15.02	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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	7.5	15.10	23.03	4.30	0.001	10.15	295	2816 AV	Sediment
1334	7.65	15.08	22.49	4.27	0.001	9.24	295	1954 AV	very turbid
1339	7.75	15.08	22.26	4.26	0.001	9.02	295	1652 AV	
1344	7.9	15.09	22.14	4.25	0.001	8.95	295	1346 AV	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-005-PZ1	1349	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: UMG

Comments: **Dissolved metals are Field Filtered**
1230 devel
devel 7.5 gallons due to sediment

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21
Well Number: FM-005-P2S	Date: 5/25/16
Well Diameter (in): 1"	One Well Volume (gal): 0.62
Total Depth (ft): 15	Purge Rate (mL/min) ~~400 mL/min~~ 500mL/min
Depth to Water (ft) 10.72	Length of time Purged (min)
Condition of Casing: none	Condition of Pad: none

WELL PURGING RECORD

Time	Volume Purged (gallons)	DTW (feet)	Temp (°C)	pH (s.u.) ± 0.1	Specific Conductance (µs/cm) ± 3%	Dissolved Oxygen (mg/L) ± 0.3	ORP (mV) ± 10	Turbidity (NTU) ± 10% or < 5	Comments
0839	1.85	10.73	15.5	4.10	756	1.08	412.7	1.46	
0844	2.5	10.73	14.7	6.82	751	0.31	158.5	1.80	
0849	3.1	10.73	14.7	7.21	751	0.28	124.8	1.35	
0854	3.7	10.73	14.8	7.33	750	0.26	106.1	1.29	
0859	4.3	10.73	14.8	7.48	750	0.26	-1.0	1.46	
0904	5.0	10.73	14.8	7.50	749	0.24	-11.5	1.28	
0909	5.6	10.73	14.8	~~7.47~~	747	0.25	-22.1	1.15	pH 9.32
0914	6.1	10.74	14.8	9.33	747	0.25	-29.5	1.20	
0919	6.75	10.74	14.8	9.33	747	0.26	-35.8	1.32	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-005-P2S	0924	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
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	No
		Hexavalent Chromium	1 - 250 mL Plastic	None	y
		Cyanide	1 - 250 mL Plastic	NaOH	y
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	y
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
begin devel @0826, begin purge @0839

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Mon	Project Number: 150300M-21
Well Number: FM-006-PZ1	Date: 6/15/16
Well Diameter (in): 1	One Well Volume (gal): 1.72
Total Depth (ft): 42	Purge Rate (mL/min) ~~500 mL/min~~ 400 mL/min
Depth to Water (ft) 13.63	Length of time Purged (min)
Condition of Casing: —	Condition of Pad: —

WELL 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
1015	4.0	29.75	20.97	4.07	0.002	12.15	272	196	
1020	4.5	30.19	21.05	4.19	0.001	9.46	272	195	Flow to 250
1025	4.75	30.06	21.12	4.27	0.001	9.05	269	195	
1030	5.1	30.00	21.17	4.25	0.001	8.87	270	195	
1035	5.4	29.8	21.19	4.32	0.001	8.73	268	195	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-006-PZ1	1040	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	NO
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
devel @ 0946
purge @ 1015

Casing Volume: 1" I.D. = 0.04 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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Area B - Finishing Mills	Project Number: 150300M - 21
Well Number: FM-006-PZS	Date: 6/10/16 1333
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft): ~~14.14~~ 28	~~QED~~ Controller Settings: Alexis: 6.89
Depth to Water (ft) 14.14	Flow Rate (mL/min): 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 24

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ L.T.S	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
1339	1.8	14.55	21.91	7.82	4.39	8.01	-156	49.5	
1342	2.7	14.56	20.99	7.84	4.33	7.38	-157	30.2	
1345	3.6	14.56	20.62	7.86	4.29	7.07	-158	19.9	
1348	4.5	14.57	20.45	7.85	4.22	6.80	-156	15.0	
1351	5.4	14.57	20.26	7.84	4.17	6.62	-154	9.26	
1354	6.3	14.58	20.08	7.85	4.11	6.47	-154	7.50	
1357	7.2	14.59	19.89	7.86	4.00	6.28	-153	8.94	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-006-PZS	1400	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	yes
		TPH-DRO	2 - 1 L Amber	none	yes
		TCL-SVOCs	2- 1 L Amber	none	yes
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	yes
		Cyanide	1 - 250 mL Plastic	NaOH	yes
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	yes
Matrix Spike					
Duplicate					

Sampled By: JTY

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21
Well Number: FM-007-PZI	Date: 6/15/16
Well Diameter (in): 1	One Well Volume (gal): ~~0.52~~ 1.52
Total Depth (ft): 37	Purge Rate (mL/min) 300 mL/min
Depth to Water (ft) 10.09	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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	3.5	29.60	20.84	4.44	0.002	11.05	265	194	
1209	3.9	31.09	20.84	4.43	0.002	8.20	251	194	Δflow to 250
1214	4.25	30.88	20.84	4.44	0.002	7.92	248	194	
1219	4.55	30.70	20.84	4.46	0.002	7.44	245	194	
1224	4.8	30.68	20.85	4.47	0.002	7.23	244	194	
1229	5.1	30.83	20.87	4.47	0.002	7.13	243	194	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-007-PZI	1234	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
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	Y
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
devel @1135
purge @1204

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300 M-21
Well Number: FM-007-PZS	Date: 5/25/16
Well Diameter (in): 1"	One Well Volume (gal): 0.62
Total Depth (ft): 15	Purge Rate (mL/min) ~~500 mL/min~~ 300mL/min to 150 mL/min
Depth to Water (ft) 4.10	Length of time Purged (min)
Condition of Casing: none	Condition of Pad: none

WELL 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
1032	1.5	12.29	17.1	6.61	1827	8.30	24.6	73.9	flow 300mL/min
1037	1.75	13.35	16.6	6.63	1839	7.29	37.5	108	cloudy
1042	1.75	5.60	24.8	6.35	1894	6.33	22.6	69.5	
1047	2.0	9.1	18.3	6.91	1679	6.31	35.5	56.9	flow 150mL/min
1052	2.5	10.1	18.7	6.97	1698	6.10	26.2	31.0	
1117	~~3.0~~ 2.75	10.94	18.6	6.97	1695	5.92	18.9	33.3	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-007-PZS	1122	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
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	No
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	Y
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
1018 begin devel; 1032 begin purge
1027 purge dry

Sample flow rate: ~~500 mL/min~~

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW-Sample	Project Number: 150300m-21-3
Well Number: FM-008-PZI	Date: 6/30/16 1118
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 10.51	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / NA	Length of time Purged (min) 38

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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	1.5	13.86	17.66	8.61	3.699	0.41	-160.1	AU	
1147	9.5	15.04	18.08	7.63	3.603	0.23	-141.6	1916AU	
1150	10.4	15.34	18.03	7.61	3.669	0.20	-139.9	2826AU	
1153	11.3	15.93	18.15	7.65	3.470	0.16	-156.1	AU	
1158	12.2	15.51	18.19	7.59	3.569	0.11	-154.9	AU	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-008-PZI	1200	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	↓
		TPH-DRO	2 - 1 L Amber	none	↓
		TCL-SVOCs	2- 1 L Amber	none	↓
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	No
		Hexavalent Chromium	1 - 250 mL Plastic	None	yes
		Cyanide	1 - 250 mL Plastic	NaOH	↓
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	↓
Matrix Spike					
Duplicate					

Sampled By: JASON TULYAPOLI

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: FM-008-PZS	Date: 10/17/14
Well Diameter (in): 1	One Well Volume (gal): 0.7
Total Depth (ft): 17	Purge Rate (mL/min) 400 mL/min
Depth to Water (ft) 9.71	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
1105	1.2	9.78	23.72	4.30	0.000	14.47	247	192	
1110	2.05	9.75	23.61	5.73	0.000	12.55	229	193	
1115	2.5	9.75	23.35	7.20	0.000	11.90	197	186	
1120	3.0	9.75	23.14	7.50	0.000	11.65	181	198	
1125	3.4	9.75	22.97	7.59	0.000	11.50	168	199	
1130	3.75	9.75	22.84	7.66	0.000	11.87	160	197	
1135	3.2	9.75	22.81	7.73	0.000	12.00	155	190	
1140	3.6	9.75	22.87	7.80	0.000	11.87	152	195	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-008-PZS	1150	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		~~Matrix Spike~~			
		Duplicate			

Sampled By: LMH

Comments: **Dissolved metals are Field Filtered**
1050 devel
1105 purge

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~~ temporary Piezometers

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Area B Finishing Mills GW	Project Number: 152300m-21-3
Well Number: FM-008-PZS	Date: 7-15-16 1057
Well Diameter (in): 1	One Well Volume (gal): —
Depth to Product (ft): NA	QED Controller Settings: —
Depth to Water (ft): 9.28 TOC	Flow Rate (mL/min) 300
Product Thickness (ft): NA	Length of time Purged (min) 33
Depth to Bottom (ft): 17.06 TOC	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
1100	0.40	9.28	20.97	10.61	1.607	0.69	-170.7	55.3	
1105	0.80	9.28	20.37	10.04	1.420	0.95	-130.9	59.4	
1110	1.20	9.27	20.10	9.74	1.332	1.11	-115.2	20.3	Clear
1115	1.60	9.27	19.98	9.53	1.286	1.23	-106.2	19.2	
1118	2.00	9.28	19.97	9.51	1.283	1.24	-106.1	13.5	
1121	2.40	9.28	20.07	9.46	1.270	1.20	-109.8	12.6	
1124	2.8	9.28	19.96	9.44	~~1.254~~	1.30	-102.3	22.2	
1127	3.1	9.27	19.93	9.44	1.262	1.36	-98.9	21.6	
1130	3.5	9.28	19.94	9.43	1.261	1.26	-105.6	23.0	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-008-PZS	1135	TCL-VOCs	3 - 40 mL VOA	HCl	N
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		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	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					N
Duplicate					Y

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mill GW Inv.	Project Number: 150300M-21-3
Well Number: FM-008-PZS	Date: 7/5/16
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 9.41	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
1231	0.2	9.41	19.49	11.83	2.267	1.40	73.0	11.6	
1236	0.7	9.41	19.48	11.82	1.950	1.91	-84.6	5.76	Clear
1241	1.1	9.41	19.46	11.75	1.808	2.32	-90.7	4.81	
1246	1.6	9.41	19.43	11.72	1.750	2.45	-94.7	3.92	
1251	2.0	9.41	19.40	11.71	1.740	2.53	-97.4	4.12	
1256									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-008-PZS	1256	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	Yes - only
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMC

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300M-21-3
Well Number: FM-009-PZI	Date: 6/30/14 1754
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: 500→300
Depth to Water (ft) 13.98	Flow Rate (mL/min) ←
Condition of Casing / Pad: OK / NA	Length of time Purged (min)

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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
1301	3.7	18.38	19.01	7.38	0.554	0.68	-91.7	2924AU	
1306	4.6	~~19.72~~	19.72	7.24	0.555	0.18	-103.7	3422AU	
1311	5.5	17.23	19.72	7.23	0.551	0.12	-108.0	3152AU	
1316	6.4	17.40	19.16	7.17	0.549	0.07	-111.3	3490AU	
1321	7.3	18.21	19.34	7.17	0.545	0.06	-120	3820AU	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-009-PZI	1330	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	↓
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	↓
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	NO
		Hexavalent Chromium	1 - 250 mL Plastic	None	yes
		Cyanide	1 - 250 mL Plastic	NaOH	↓
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	↓
Matrix Spike					
Duplicate					

Sampled By: Jason Tyndall

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21
Well Number: FM-009-PZS	Date: 6/15/16
Well Diameter (in): 1	One Well Volume (gal): 0.64
Total Depth (ft): 15.5	Purge Rate (mL/min) 300 mL/min
Depth to Water (ft) 14.01	Length of time Purged (min)
Condition of Casing: —	Condition of Pad: —

WELL 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
1409	1.50	14.01	22.78	4.66	0.001	7.74	247	196	
1414	1.9	14.01	22.78	4.59	0.001	6.02	248	198	
1419	2.25	14.01	22.84	4.60	0.001	5.51	248	196	
1424	2.6	14.01	22.95	4.62	0.001	5.19	248	195	
1429	3.0	14.01	23.21	4.65	0.001	5.11	248	194	
1434			23.55	4.63	0.011	5.04	247	194	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-009-PZS	1439	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LML

Comments: **Dissolved metals are Field Filtered**
1349 dtw
1409 purge

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Inv.	Project Number: 150300M-21-3
Well Number: FM-010-PZS	Date: 6-30-16
Well Diameter (in): 1	One Well Volume (gal): 0.74
Total Depth (ft): 18	Purge Rate (mL/min) 300
Depth to Water (ft) 7.52	Length of time Purged (min)
Condition of Casing: —	Condition of Pad: —

WELL 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
1105	1.0	7.52	20.08	11.67	1.655	0.59	-31.6	20.0	clear
1110	1.5	7.52	19.98	12.29	1.721	0.36	-76.7	11.57	
1115	2.0	7.52	19.81	12.54	1.732	0.32	-96.7	7.06	
1120	2.5	7.52	19.71	12.66	1.745	0.30	-115.7	4.52	
1125	3.0	7.52	19.80	12.59	1.753	0.28	-125.7	3.61	
1130	3.5	7.52	19.71	12.62	1.761	0.26	-131.8	3.87	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-010-PZS	1135	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMB

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: FM-011-PZ1	Date: 6/30/16
Well Diameter (in): 1	One Well Volume (gal): 1.4
Total Depth (ft): 33	Purge Rate (mL/min) 300
Depth to Water (ft) 7.41	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
0912	1.4	7.47	17.93	7.71	0.921	1.32	25.8	42	
0917	1.8	7.45	17.76	6.59	0.907	1.54	-17.5	50.4	
0922	2.25	7.44	17.54	6.47	0.894	0.79	-27.6	17.7	
0927	2.75	7.44	17.59	6.40	0.887	0.65	-30.2	11.46	
0932	3.2	7.43	17.61	6.34	0.879	0.54	-31.0	5.27	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-011-PZ1	0937	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	|
		TPH-DRO	2 - 1 L Amber	none	|
		TCL-SVOCs	2- 1 L Amber	none	|
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	No
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	|
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	|
					|
		Matrix Spike			|
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 50390-21-3
Well Number: FM-011-PZS	Date: 6/17/16
Well Diameter (in): 1	One Well Volume (gal): 0.9
Total Depth (ft): 22	Purge Rate (mL/min) 150 mL/min
Depth to Water (ft) 7.55	Length of time Purged (min)
Condition of Casing: —	Condition of Pad: —

WELL 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
0924	2.75	20.30	20.94	4.48	0.000	15.37	248	193	
0929	2.9	19.22	21.00	4.33	0.000	13.93	238	191	
0934	3.05	18.62	21.07	4.30	0.000	13.15	228	191	
0939	3.2	18.11	21.16	4.28	0.000	12.43	221	190	
0944	3.4	17.73	21.28	4.28	0.000	12.28	219	187	
0949	3.55	17.42	21.41	4.29	0.000	12.28	228	186	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-011-PZS	0954	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: MMb

Comments: **Dissolved metals are Field Filtered**
0857 devel @ 500mL/min Δ0911 ~300mL/min
0924 purge Δ0913 ~200mL/min

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)

Sample @ 300ml/min - 150 ml/min

Low Flow Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300m-21-3
Well Number: FM-012-PZI	Date: 6/30/16 0939
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 13.69	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 49

WELL 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
0944	1.5	13.74	18.96	12.94	4,200	2.55	-130.1	53.7	
0949	3.0	13.74	17.12	11.90	0.472	1.66	-215.9	46.0	
0954	4.5	13.74	16.96	10.97	0.372	0.86	-227.4	90.5	
0959	6.0	13.74	16.91	10.57	0.348	0.48	-231.0	43.3	
1004	7.5	13.74	16.89	10.22	0.336	0.28	-235	25.2	
1007	~~8.4~~	13.74	16.96	10.06	0.332	0.19	-238.0	24.2	
1010	9.3	13.74	16.90	9.90	0.328	0.11	-250.0	19.8	
1013	10.2	13.74	17.10	9.78	0.322	0.08	-263.9	20.1	
1016	11.1	13.74	17.05	9.65	0.318	0.06	-260.4	11.8	
19	12.0	13.74	17.22	9.51	0.314	0.06	-260.6	11.9	
1022	12.9	13.74	16.99	9.37	0.314	0.06	-254.5	12.3	
1025	13.8	13.74	17.23	9.23	0.309	0.06	-247.7	9.77	
1028	14.7	13.74	17.20	9.12	0.306	0.06	-242.3	6.61	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-012-PZI	1030	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	yes
		TPH-DRO	2 - 1 L Amber	none	yes
		TCL-SVOCs	2- 1 L Amber	none	yes
		~~TAL-Metals & Mercury (Total)~~ Dissolved	1 - 250 mL Plastic	HNO3	no
		Hexavalent Chromium	1 - 250 mL Plastic	None	yes
		Cyanide	1 - 250 mL Plastic	NaOH	yes
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	yes
Matrix Spike					
Duplicate					

Sampled By: Jason T. 6/30/16

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300A-21-3
Well Number: FM-012-PZS	Date: 6/30/16 0815
Well Diameter (in): 1"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 8.61	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 38

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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
0800	1.5	8.93	19.45	12.98	6.775	2.23	28.1	3.54	
0805	3.0	8.93	18.73	12.53	6.997	0.81	-8.5	5.86	
0810	4.5	8.94	18.36	12.69	7.049	0.65	-19.4	1.52	
0835	6.0	8.93	18.27	12.85	7.060	0.63	-31.9	0.56	
0838	6.9	8.93	18.19	12.90	7.058	0.54	-38.1	0.54	
0841	7.8	8.93	18.15	12.95	7.057	0.57	-44.7	0.29	
0844	8.7	8.93	18.15	12.97	7.051	0.54	-48.5	0.61	
0847	9.6	8.93	17.88	12.96	7.065	0.53	-54.1	0.36	
0850	10.5	8.93	17.88	12.96	7.057	0.51	-57.0	0.50	
0853	11.4	8.93	17.78	12.94	7.065	0.51	-58.9	0.42	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-012-PZS	0900	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
		~~TAL-Metals & Mercury (Total)~~ Dissolved Metals (FF)	~~1 - 250 mL Plastic~~	~~HNO3~~	Y
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	Y
Matrix Spike					
Duplicate					

Sampled By: Jason T. Yade

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills	Project Number: 150300M-21-3
Well Number: FM-013-PZ1	Date: 6-27-16
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft): 58	Purge Rate (mL/min) 350
Depth to Water (ft) 14.83	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
1243	3.0	14.83	17.83	6.97	1.506	0.40	-100.6	29	cloudy
1248	3.5	14.83	17.98	7.00	1.448	0.19	-122.5	25	
1253	3.9	14.83	17.90	7.04	1.459	0.22	-114.1	69.4	
1258	4.3	14.84	17.92	7.016	1.470	0.25	-109.1	63.4	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-013-PZ1	1308	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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~~ temporary Piezometers

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Area B finishing Mills GW	Project Number: 150300m-21
Well Number: FM-013-PZI	Date: 7-15-16 0920
Well Diameter (in): 1	One Well Volume (gal): —
Depth to Product (ft): NA	QED Controller Settings: —
Depth to Water (ft): 14.60 TOC	Flow Rate (mL/min) 300 mL/min
Product Thickness (ft): NA	Length of time Purged (min) 41
Depth to Bottom (ft):	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
0927	0.40	14.64	18.72	7.26	1.477	0.36	-170.1	39	cloudy
0932	0.80	14.64	18.52	7.33	1.536	0.28	-171.3	47	
0937	1.20	14.64	18.60	7.29	1.577	0.27	-144.3	43	
0940	1.60	14.65	18.64	7.28	1.595	0.23	-163.7	51.8	
0943	2.0	14.65	18.54	7.26	1.607	0.21	-131.8	43.5	
946	2.4	14.65	18.87	7.24	1.622	0.20	-124.3	38.9	clear
949	2.8	14.65	18.75	7.22	1.638	0.20	-131.8	34.3	
~~0952~~ 952	3.2	14.64	18.70	7.20	1645	0.20	-137.4	30.1	
955	3.6	14.64	18.64	7.18	1.670	0.19	-147.0	15.5	
~~958~~ ~~1000~~	4.0	14.64	18.66	7.17	1672	0.18	-141.5	16.0	
1001	4.4	14.65	18.53	7.15	1.675	0.18	-135.4	15.1	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-013-PZI	1010	TCL-VOCs	3 - 40 mL VOA	HCl	N
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	
		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	Y
		PCB	2 - 1 L Amber	None	N
Matrix Spike					Y
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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Area B - Finishing Mills	Project Number: 150300M-21-3
Well Number: FM-013-PZS	Date: 6/10/16
Well Diameter (in): 1"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: 6.50
Depth to Water (ft) 5.98	Flow Rate (mL/min) 400
Condition of Casing / Pad: good / good	Length of time Purged (min) 30

WELL 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
1337	0.4	6.94	18.04	9.73	2.800	0.17	44.6	—	water black
1342	0.75	6.94	17.90	9.26	2.740	0.26	70.3	1254	
1347	1.1	6.05	17.87	8.14	2.689	0.91	84.7	1250	
1352	1.4	6.81	17.98	8.41	2.650	0.91	85.4	1000	
1357	1.75	6.92	17.77	8.13	2.631	0.65	87.3	21.2	
1402	2.2	6.99	17.88	8.03	2.598	0.47	88.8	22.3	
1407	2.5	7.09	18.02	7.98	2.578	0.39	89.4	23.1	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-013-PZS	1410	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					No
Duplicate					1

Sampled By: N. Kurtz

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Investiga.	Project Number: 150300M-21
Well Number: FM-014-PZ1	Date: 6/15/16
Well Diameter (in): 1"	One Well Volume (gal): 2.05
Total Depth (ft): 50	Purge Rate (mL/min) 500mL/min
Depth to Water (ft) 13.83	Length of time Purged (min)
Condition of Casing: —	Condition of Pad: —

WELL 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
0855	6.15	14.02	19.50	4.16	0.002	10.77	272	202	
0900	6.75	14.02	19.36	4.20	0.002	10.04	271	205	
0905	6.4	14.03	19.31	4.29	0.002	9.83	268	222	
0910	7.0	14.03	19.30	4.29	0.002	9.60	268	223	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-014-PZ1	0915	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
dev1 0834
purge 0855

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150305M-21
Well Number: FM-014-PZS	Date: 5/24/16
Well Diameter (in): 1"	One Well Volume (gal): 1.025 gal
Total Depth (ft): 21.45 (25' field book)	Purge Rate (mL/min) 400 mL/min
Depth to Water (ft) 8.65	Length of time Purged (min)
Condition of Casing: none	Condition of Pad: none

WELL 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
1003	2.4	10.14	16.16	7.52	561.0	1.08	170.1	22.4	
1008	2.7	10.14	16.1	6.44	464.8	0.55	99.9	18.8	
1013	3.1	10.26	16.1	6.516	459.16	0.516	69.8	20.1	
1018	3.16	10.18	16.2	6.68	461.16	0.516	54.2	24.2	
1023	4.2	10.18	16.3	6.79	463.9	0.52	41.8	14.3	
1028	4.75	10.21	16.3	6.81	466.8	0.46	34.3	23.8	
1033	5.25	10.20	16.3	6.84	469.1	0.46	28.7	18.2	
1038	5.8	10.15	16.2	6.83	471.0	0.43	23.3	17.7	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-014-PZS	1043	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
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	NO
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	Y
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	Y
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
Begin devel. @ 0942, no SCI @ 1003

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

25 ft x 0.041 gal/ft = 1.025 (gal) x 3 = 3.075

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Invt	Project Number: 150300M-21-3
Well Number: FM-015-PZI	Date: 6-30-16
Well Diameter (in): 1	One Well Volume (gal): 3.0
Total Depth (ft): 73	Purge Rate (mL/min) 300
Depth to Water (ft) 16.70	Length of time Purged (min)
Condition of Casing: —	Condition of Pad: —

WELL 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
1248	3.0	16.76	17.69	10.72	0.885	0.27	-85.2	31.2	clear
1253	3.5	16.74	17.95	10.41	0.876	0.16	-86.7	23.5	
1258	4.0	16.73	9.87	10.04	0.873	0.10	-86.7	17.1	
1303	4.5	16.71	17.88	9.70	0.874	0.15	-114.9	14.8	
1308	5.0	16.70	17.97	9.42	0.880	0.12	-214.1	12.2	
1313	5.5	16.70	17.85	9.06	0.886	0.14	-219.3	11.7	
1318	6.0	16.70	17.90	8.81	0.896	0.19	-198.2	7.3	
1323	6.5	16.70	17.88	8.61	0.897	0.15	-189.7	8.9	
1328	7.0	16.70	17.86	8.45	0.901	0.16	-184.9	8.6	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-015-PZI	1333	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	|
		TPH-DRO	2 - 1 L Amber	none	|
		TCL-SVOCs	2- 1 L Amber	none	|
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y
		Cyanide	1 - 250 mL Plastic	NaOH	|
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	|
					|
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**
pH did not stabalize

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: FM-015-PZS	Date: 6/17/16
Well Diameter (in): 1	One Well Volume (gal):
Total Depth (ft): 11	Purge Rate (mL/min) 400 mL/min
Depth to Water (ft) ~~5.94~~ 5.94	Length of time Purged (min)
Condition of Casing:	Condition of Pad:

WELL 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
1327	1.5	5.94	28.81	7.23	0.001	12.62	144	194	
1332	1.9	5.94	28.09	6.54	0.001	11.34	147	269	
1337	2.4	5.94	27.49	6.52	0.001	11.05	150	267	
1342	2.9	5.95	26.94	6.60	0.001	10.91	147	272	
1347	3.2	5.95	26.56	6.62	0.000	10.90	149	274	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-015-PZS	1353	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMK

Comments: **Dissolved metals are Field Filtered**
1311 drive
1327 purge

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
Temporary Piezometers

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Area B finishing mills GW	Project Number: 150300m-21-3
Piezometer Number: FM-015-PZS	Date: 7-15-16 1157
Piezometer Diameter (in): 1	One Well Volume (gal): —
Depth to Product (ft): NA	QED Controller Settings: —
Depth to Water (ft): 8.93 TOC	Flow Rate (mL/min) 300
Product Thickness (ft): NA	Length of time Purged (min) 19
Depth to Bottom (ft): 16.64 TOC	

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
1202	0.40	8.93	18.25	11.34	2.103	1.46	-72.7	14.8	Clear
1207	0.80	9.00	18.78	11.28	2.191	1.35	-68.0	12.1	
1210	1.20	9.00	18.86	11.30	2.261	1.24	-66.7	9.63	
1213	1.40	9.00	18.84	11.31	2.301	1.14	-65.2	8.80	reduced to 150 mL/min
1216	1.60	9.02	18.73	11.32	2.366	1.04	-65.3	9.23	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-015-PZS	1220	TCL-VOCs	3 - 40 mL VOA	HCl	N
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		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	Y
Matrix Spike					N
Duplicate					N

Sampled By: ZLP

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: FM-016-PZ1	Date: 6/27/16
Well Diameter (in): 1	One Well Volume (gal): 2.17
Total Depth (ft): 53	Purge Rate (mL/min) 350
Depth to Water (ft) 14.97	Length of time Purged (min)
Condition of Casing:	Condition of Pad: —

WELL 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
1020	4.0	15.36	19.02	7.33	1.916	7.41	-74.7	42	cloudy/brown
1025	4.4	15.25	18.79	6.67	1.903	2.53	-90.6	33	
1030	4.8	15.26	18.81	6.71	1.909	1.91	-94.0	68.3	
1035	5.2	15.26	19.09	6.74	1.929	1.56	-97.7	45.4	Clear
1040	5.6	15.24	18.66	6.73	1.916	1.53	-94.3	31.7	
1045	6.0	15.25	18.82	6.72	1.927	1.28	-98.4	24.7	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-016-PZ1	1050	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 190300M-21-3
Well Number: FM-016-PZS	Date: 6/27/16
Well Diameter (in): 1"	One Well Volume (gal): ~~0.7~~ 0.169
Total Depth (ft): 16.8	Purge Rate (mL/min) 400
Depth to Water (ft) 9.22	Length of time Purged (min)
Condition of Casing: ———	Condition of Pad: ———

WELL 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	2.0	9.23	18.23	7.60	1.752	~~5~~2.92	81.3	19.40	very clear
0910	2.5	9.23	17.92	6.72	1.718	1.16	38.9	12.99	
0915	3.0	9.23	17.79	6.62	1.701	1.33	35.4	17.4	
0920	3.5	9.23	17.84	6.66	1.696	1.37	25.4	5.89	
0925									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-016-PZS	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	N
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150 300-21-3
Well Number: FM-017-PZS	Date: 6/27/16 1247
Well Diameter (in): 1-inch	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: —
Depth to Water (ft) 6.33	Flow Rate (mL/min) 500 → 300
Condition of Casing / Pad: Ok / Ok	Length of time Purged (min) 57

WELL 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
1258	5.1	6.50	19.90	7.27	0.495	0.33	-76.9	696 AU	
1303	7.8	6.50	20.07	7.41	0.481	0.22	-94.4	58	
1308	9.6	6.50	20.22	7.81	0.474	0.17	-122.2	50	
1313	11.5	6.50	20.23	7.96	0.470	0.13	-136.6	35	
1318	13.3	6.50	20.22	8.03	0.469	0.12	-142.9	68.6	
1323	15.1	6.50	20.25	8.12	0.468	0.12	-164.6	46.7	
1328	16.0	6.50	20.29	8.16	0.468	0.10	-174.6	54.6	
1333	18.9	6.50	20.27	8.22	0.468	0.09	-169.4	32.1	
1338	20.8	6.50	20.23	8.26	0.467	0.07	-156.9	29.2	
1341	22.18	6.50	20.22	8.28	0.467	0.07	-158.9	33.9	
1344	23.80	6.50	20.21	8.30	0.467	0.07	-166.4	28.2	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
FM-017-PZS	1350	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	X
		TPH-DRO	2 - 1 L Amber	none	X
		TCL-SVOCs	2- 1 L Amber	none	X
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	X
		Hexavalent Chromium	1 - 250 mL Plastic	None	X
		Cyanide	1 - 250 mL Plastic	NaOH	X
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	X
Matrix Spike					
Duplicate					

Sampled By: JTY

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300m-21-3
Well Number: SW-075-MWI	Date: 6/28/16 1303
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 12.29	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / NA	Length of time Purged (min) 27

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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
1308	1.5	12.30	17.36	8.13	1.275	0.35	-142.5	12.0	
1313	3.0	12.30	17.61	7.57	1.937	0.17	-133.1	7.86	
1318	4.5	12.30	17.68	7.43	2.125	0.17	-130.1	7.17	
1321	6.0	12.30	17.86	7.34	2.239	0.17	-127.4	6.54	
1324	7.5	12.30	17.75	7.24	2.339	0.14	-116.3	4.45	
1327	9.0	12.30	17.90	7.22	2.354	0.13	-115.4	4.58	
1330	10.5	12.30	17.83	7.23	2.538	0.12	-115.7	4.22	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-075-MWI	1340	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: Jason T. Yapp

Comments: **Dissolved metals are Field Filtered**

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:	Area B Finishing mills GW	Project Number:	150300m-21-5
Well Number:	SW-075-MWI	Date:	7-15-16 1355
Well Diameter (in):	2	One Well Volume (gal):	—
Depth to Product (ft):	NA	QED Controller Settings:	—
Depth to Water (ft):	12.40 TOC	Flow Rate (mL/min)	300 mL/min
Product Thickness (ft):	NA	Length of time Purged (min)	31
Depth to Bottom (ft):	57.02 TOC	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
1400	0.40	12.41	17.17	7.31	3.001	0.20	-107.6	20.8	
1405	0.80	12.41	16.84	7.25	3.011	0.17	-80.4	98.6	pale yellow
1408	1.20	12.41	16.96	7.23	3.029	0.16	-84.5	97.5	
1411	1.60	12.40	16.74	7.21	3.204	0.13	-79.6	94.3	lightly cloudy
1414	2.00	12.40	16.55	7.18	3.358	0.10	-78.5	89.3	
1417	2.40	12.39	16.54	7.17	3.393	0.07	-69.7	89.0	
1420	2.80	12.40	16.65	7.16	3.403	0.08	-65.2	61.1	
1423	3.10	12.40	16.64	7.14	3.429	0.08	-65.6	58.7	
1426	3.50	12.41	16.67	7.13	3.439	0.08	-64.9	63.5	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-075-MWI	1430	TCL-VOCs	3 - 40 mL VOA	HCl	N
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	Y
		Cyanide	1 - 250 mL Plastic	NaOH	N
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	N
		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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300m-21-3
Well Number: SW-075-MW5	Date: 6/28/16 1215
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 6.84	Flow Rate (mL/min) 500-300
Condition of Casing / Pad: OK / NA	Length of time Purged (min) 16

WELL 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
1220	2.5	6.85	16.49	9.67	0.669	0.25	-119.0	30.4	
1225	5.5	6.85	17.86	10.05	0.631	0.15	-144.8	8.67	
1230	7.1	6.85	18.04	10.16	0.635	0.16	-151.0	7.47	
1233	8.1	6.85	18.17	10.15	0.634	0.13	-152.0	6.80	
1236	9.0	6.85	18.02	10.15	0.636	0.12	-152.7	7.77	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-075-MW-5	1245	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: Jason T. Yapel

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Invest.	Project Number: 150300M-21-3
Well Number: SW-076-MW1	Date: 6-29-16
Well Diameter (in):	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 11.05	Length of time Purged (min)
Condition of Casing: new	Condition of Pad: not sloping & bgs

WELL 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
0950	0.5	11.1	17.62	6.51	1.255	11.89	64.9	20.1	
0955	0.8	11.06	16.95	5.81	1.218	1.18	23.9	19.7	
1000	1.2	11.06	16.97	5.74	1.205	1.45	12.5	13.81	
1005	1.6	11.05	17.01	5.74	1.204	0.94	15.0	10.81	
1010	2.0	11.05	16.98	5.76	1.208	0.72	13.9	6.69	
1015	2.4	11.05	16.80	5.79	1.209	0.60	11.9	7.71	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-076-MW1	1020	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Inv	Project Number: 150300 M-21-3
Well Number: SW-076-MWS	Date: 6-29-16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 6.29	Length of time Purged (min)
Condition of Casing: new	Condition of Pad: not sloping @ gs

WELL 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
10.46	0.5	6.29	16.81	5.48	0.543	2.62	50.9	11.46	
1051	1.0	7.20	17.43	5.37	0.539	2.02	57.5	14.48	Flow 250
1056	1.4	7.15	17.54	5.42	0.533	1.73	57.4	11.9	
1101	1.8	7.13	17.53	5.46	0.529	1.60	57.5	16.9	
1106									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-076-MWS	1106	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: MMS

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Invest.	Project Number: 150300 M-21-3
Well Number: SW-077-MW1	Date: 6/29/16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 3.95	Length of time Purged (min) 35
Condition of Casing: new	Condition of Pad: not sloping @ ground level

WELL 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
0819	0.25	3.95	15.72	6.85	0.876	1.12	117.1	14.4	
0824	0.7	10.26	15.49	6.44	0.925	0.46	108.4	6.90	↓ flow 200 mL/min
0829	0.9	10.29	15.82	6.44	0.978	0.83	99.9	5.18	
0834	1.1	10.29	15.90	6.46	0.993	0.98	96.6	6.04	
0839	1.3	10.29	16.12	6.49	1.015	1.03	89.6	4.71	
0844	1.55	10.26	16.21	6.48	1.027	0.68	87.4	4.29	
0849	1.7	10.27	16.18	6.48	1.037	0.50	84.1	7.64	
0854	1.8	10.27	16.23	6.47	1.045	0.45	81.5	5.10	
0859									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-077-MW1	0859	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	↓
Matrix Spike					
Duplicate					

Sampled By: LMB

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Inv	Project Number: 150300M-21-3
Well Number: SW-077-MWS	Date: 6-28-16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft): 28	Purge Rate (mL/min) 300
Depth to Water (ft) 9.53	Length of time Purged (min)
Condition of Casing: new	Condition of Pad: not sloping @ ground level

WELL 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
1401	0	9.53	16.61	11.98	2.938	0.37	-69.6	16.3	clear
1406	0.4	9.53	16.99	12.34	2.979	0.20	-90.7	14.28	
1411	0.9	9.53	17.00	12.48	2.979	0.16	-113.5	12.69	
1416	1.4	9.53	16.98	12.54	2.957	0.15	-126.3	10.73	
1421	1.75	9.53	17.09	12.60	2.968	0.15	-140.4	8.75	
1426	2.25	9.53	16.95	12.64	2.962	0.15	-149.6	6.77	
1431	2.75	9.53	17.16	12.67	2.954	0.16	-162.3	5.67	
1436	3.25	9.53	17.02	12.72	2.931	0.13	-171.6	3.88	
1441	3.75	9.53	17.28	12.74	2.998	0.14	-177.1	2.70	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-077-MWS	1446	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: MH

Comments: **Dissolved metals are Field Filtered**

ORP d/n stabalize @ 40 mins

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills	Project Number: 150300M-21-3
Well Number: SW-078-MWI	Date: 6/29/16 1218
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 12.62	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 24

WELL 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
1223	0.5	12.64	20.24	6.89	0.580	2.66	8.2	11.43	
1228	3.0	12.64	17.61	7.05	0.545	2.89	4.7	7.02	
1233	4.5	12.64	17.44	7.05	0.544	2.83	5.6	5.56	
1238	6.0	12.64	17.18	7.06	0.540	2.75	7.8	4.23	
1243	7.5	12.64	17.16	7.05	0.537	2.70	13.0	3.15	
1246	9.0	12.64	17.05	7.08	0.535	2.54	12.2	2.65	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-078-MWI	1250	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: Jason Lapp

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sampling	Project Number: 150300m-21-3
Well Number: SW-078-MWS	Date: 6/29/16 1036
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 8.21	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 39

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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
1041	1.5	8.55	17.46	6.74	3.054	12.5	-24.2	123	
1046	3.0	8.58	17.90	5.97	3.034	0.42	-1.2	48	
1051	4.5	8.60	17.66	5.85	3.029	0.26	13.4	99.2	
1056	6.0	8.71	17.75	5.84	3.035	0.24	18.9	76.1	
1101	7.5	8.84	17.68	5.91	3.040	0.23	15.3	56.2	
1106	9.0	8.96	17.76	5.95	3.017	0.21	12.4	53.5	
1111	11.5	9.00	18.07	5.99	2.988	0.19	8.5	59.4	
1114	12.4	9.03	17.89	6.02	2.962	0.19	8.1	62.5	
1117	13.3	9.05	17.98	6.02	2.943	0.20	7.8	63.6	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-078-MWS	1130	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: Jason T. Yapple

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Inv.	Project Number: 150300M-21-3
Well Number: SW-079-MW8	Date: 6-28-16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 13.85	Length of time Purged (min)
Condition of Casing: missing	Condition of Pad: missing

WELL 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
0826	0	13.85	18.50	7.41	1.735	1.57	79.2	15.76	clear
0831	0.3	13.88	18.37	6.94	1.729	0.41	15.1	12.12	
0836	0.6	13.90	18.30	6.85	1.781	0.30	-46.5	9.78	
0841	1.0	13.90	18.34	6.87	1.872	0.35	-79.7	13.1	
0846	1.35	13.90	18.38	6.89	1.918	0.50	-89.2	10.98	
0851	1.7	13.90	18.43	6.94	1.963	0.79	-103.9	9.57	
0856	2.0	13.90	18.41	6.98	2.010	0.91	-109.4	8.65	
0901	2.3	13.90	18.45	7.00	2.078	0.90	-108.4	7.49	
0906	2.6	13.91	18.56	7.01	2.154	0.75	-112.4	5.94	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-079-MW8	0911	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	green
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: LHG

Comments: **Dissolved metals are Field Filtered**

conductivity d/n stabalize @ 40 mins.

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: SW-079-MW5	Date: 6-27-16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 12.64	Length of time Purged (min)
Condition of Casing: missing	Condition of Pad: missing

WELL 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
1428	0	12.64	19.10	7.74	1.562	1.45	-163.3	83.4	clear
1433	0.3	12.62	18.86	8.40	1.456	0.44	-174.1	59.7	
1438	0.5	12.62	18.66	9.22	1.368	0.32	-132.8	25.7	
1443	0.8	12.6	18.58	9.63	1.339	0.30	-124.3	19.2	
1448	1.0	12.6	18.62	9.85	1.333	0.25	-114.0	11.22	
1453	1.3	12.58	18.57	10.01	1.330	0.24	-111.3	6.75	
1458	1.7	12.58	18.56	10.16	1.329	0.19	-111.1	4.28	
1503	2.1	12.58	18.54	10.28	1.330	0.20	-105.6	3.33	
1508	2.55	12.58	18.30	10.35	1.328	0.19	-102.2	2.83	
1513	2.9	12.58	18.50	10.35	1.328	0.19	-102.9	2.81	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-079-MW5	1518	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		Matrix Spike			
		Duplicate			

Sampled By: LWh

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sampl	Project Number: 150300m-21-3
Well Number: SW-080-MW1	Date: 7/1/16 950
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 8.78 TOC	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 21

WELL 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
955	0.40	8.91	17.69	5.75	0.669	1.34	90.0	12.4	Clear
1000	0.80	8.92	17.55	5.79	0.669	1.18	73.5	15.6	
1005	1.20	8.92	17.56	5.88	0.673	1.04	59.5	11.8	
1008	1.60	8.93	17.36	5.94	0.679	0.89	50.5	12.3	
1011	2.00	8.93	17.37	6.01	0.681	0.70	42.4	11.3	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-080-MW1	1020	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: ~~JTG~~ LCP

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300M-21-3
Well Number: SW-080-MW5	Date: 7/1/16 830
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 5.97 TOC	Flow Rate (mL/min) 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 36

WELL 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
835	0.40	6.02	18.26	5.53	0.303	3.23	129.5	109	off-white-cloudy
840	0.80	6.19	18.24	5.48	0.299	3.02	127.0	82.5	
845	1.20	6.20	18.50	5.48	0.300	2.64	122.8	68.6	
848	1.600	6.20	18.83	5.49	0.300	2.38	119.4	36.4	
851	2.00	6.22	18.81	5.48	0.301	2.16	119.1	31.8	
854	2.40	6.22	18.79	5.47	0.302	1.91	121.7	17.7	
857	2.80	6.22	18.81	5.46	0.301	1.82	123.2	15.9	
900	3.20	6.23	18.92	5.45	0.300	1.74	124.2	13.5	
903	3.600	6.23	18.93	5.45	0.300	1.67	125.4	11.8	
906	4.00	6.23	18.95	5.44	0.301	1.56	127.4	11.69	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-080-MW5	910	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
Matrix Spike					
Duplicate					

Sampled By: JLP

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300m-21-3
Well Number: SW-081-MWI	Date: 6/20/16 1025
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 12.09	Flow Rate (mL/min) 500 → 300
Condition of Casing / Pad: OK / NA	Length of time Purged (min)

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ L	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
1030	1.75	12.10	18.27	8.59	1.447	0.15	-215.3	9.06	
1035	5.00	12.10	18.42	8.00	1.611	0.11	-189.1	4.14	
1040	7.50	12.10	18.56	7.71	1.649	0.08	-174.0	8.08	
1043	8.40	12.10	18.96	7.52	1.986	0.08	-153.9	11.20	
1046	10.0	12.10	18.98	7.42	2.122	0.09	-144.6	13.40	
1049	11.2	12.10	18.92	7.33	2.208	0.08	-132.9	20.2	
1052	12.1	12.10	19.39	7.27	2.288	0.08	-126.4	21.0	
1055	13.0	12.10	19.44	7.24	2.295	0.08	-127.3	17.7	
1058	13.9	12.10	19.33	7.21	2.310	0.08	-123.3	16.9	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-081-MWI	1110	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	2 - 1 Liter Amber	None	
Matrix Spike					
Duplicate					

Sampled By: Jason T. Yapp

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300m-21-3
Well Number: SW-081-MWS	Date: 6/28/16 0926
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 12.47	Flow Rate (mL/min) 500 → 300
Condition of Casing / Pad: ok / ok	Length of time Purged (min) 26

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ L	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
0931	2.5	12.49	17.77	11.10	1.249	0.36	-264.9	28.7	
0936	5.0	12.49	17.56	11.32	1.262	0.18	-261.9	7.77	
0941	7.5	12.49	17.50	11.47	1.263	0.13	-255.1	4.60	
0946	10.0	12.49	18.28	11.69	1.260	0.10	-252.5	3.49	
0949	10.9	12.49	18.53	11.74	1.259	0.09	-245.9	2.69	
0952	11.8	12.49	18.45	11.75	1.261	0.09	-237.3	2.36	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
SW-081-MWS	1000	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	2-Amber Liter	None	
Matrix Spike					
Duplicate					

Sampled By: Jason T. Yapp

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sampl	Project Number: 150300M - 21-3
Well Number: TM07 - PZM005	Date: 6/27/16 1433
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 13.55	Flow Rate (mL/min) 500 → 300
Condition of Casing / Pad: OK / OK	Length of time Purged (min) 26

WELL PURGING RECORD

Time	Volume Purged (~~gallons~~ Liters)	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
1438	2	13.73	17.20	9.93	0.465	2.31	-57.2	2.03	
1443	3.5	13.73	17.29	10.35	0.490	1.40	-87.9	1.46	
1448	5.0	13.73	17.09	10.54	0.500	1.15	-102.8	1.26	
1453	10.0	13.73	17.25	10.66	0.507	0.92	-111.5	1.15	
1456	11.5	13.73	17.45	10.72	0.509	0.79	-116.9	1.10	
1459	13.0	13.73	17.50	10.74	0.511	0.73	-119.2	1.08	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM07 - PZM005	1510	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	X
		TPH-DRO	2 - 1 L Amber	none	X
		TCL-SVOCs	2- 1 L Amber	none	X
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	X
		Hexavalent Chromium	1 - 250 mL Plastic	None	X
		Cyanide	1 - 250 mL Plastic	NaOH	X
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	X
		PCBs	2 - 1L Amber	None	X
Matrix Spike					
Duplicate					

Sampled By: JTJ

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300m - 21-3
Well Number: TM07-PZM045	Date: 6/28/16 0818
Well Diameter (in): 2"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: —
Depth to Water (ft) 13.46	Flow Rate (mL/min) 500 → 300
Condition of Casing / Pad: OK OK	Length of time Purged (min) 28

WELL PURGING RECORD

Time	Volume Purged (gallons) Liter	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
0828	4	13.48	18.15	6.92	3.317	0.26	-100.8	21.7	
0833	6.75	13.48	18.18	6.83	3.278	0.19	-96.3	21.2	
0838	8.90	13.48	18.51	6.78	3.273	0.17	-90.8	19.1	
0843	10.50	13.48	18.51	6.77	3.264	0.16	-86.4	18.7	
0846	11.50	13.48	18.45	6.76	3.258	0.14	-80.3	17.8	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM07-PZM045	0900	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	2-1L Amber	None	
Matrix Spike					
Duplicate					

Sampled By: Jason T. Yapp

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills Chlorine	Project Number: 150300M-21-3
Well Number: TM09-PZM007	Date: 6-28-16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 10.82	Length of time Purged (min)
Condition of Casing: rust	Condition of Pad: none

WELL 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	0.1	10.82	17.74	11.15	1.741	9.11	-38.8	22.4	clear
1005	0.4	10.82	17.22	11.87	1.749	0.45	-167.5	12.2	
1010	0.75	10.82	17.19	12.02	1.743	0.30	-90.3	12.03	
1015	1.10	10.82	17.21	12.14	1.734	0.24	-116.6	6.26	
1020	1.5	10.82	17.14	12.18	1.728	0.22	-128.8	5.18	
1025	1.8	10.82	17.15	12.22	1.730	0.18	-142.9	3.16	
1030	2.15	10.82	17.17	12.24	1.727	0.18	-152.1	2.49	
1035	2.5	10.82	17.30	12.26	1.724	0.16	-159.7	3.38	
1040									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM09-PZM007	1040 ~~TM09~~	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCB	2-1LAG	—	Y
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Inv.	Project Number: 150300M-21-3
Well Number: TM09-PZM047	Date: 6-28-16
Well Diameter (in): 1/2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 10.80	Length of time Purged (min)
Condition of Casing: rust	Condition of Pad: none

WELL 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
1137	0	10.80	18.55	10.31	5.488	4.26	-42.4	18.3	clear / odor
1142	0.25	19.62	18.13	8.42	6.228	0.36	-183.4	15.19	Δflow~100 mL/min
1147	0.35	15.45	18.60	7.71	6.427	1.59	-154.8	12.48	
1152	0.5	15.42	18.74	7.30	6.577	1.61	-138.9	6.55	
1157	0.6	15.50	18.79	7.08	6.600	1.42	-128.7	5.67	
1202	0.75	15.47	18.78	6.94	6.601	1.22	-123.5	6.50	
1207	0.9	15.43	19.06	6.86	6.630	1.09	-119.2	4.33	
1212	1.0	15.46	19.07	6.80	6.619	1.06	-119.1	4.16	
1217									
1222									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM09-PZM047	1217	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	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	slight green
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCB	2-1 L AG	—	
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW	Project Number: 150300M-21-3
Well Number: TM10-PZM007	Date: 6-29-16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 10.65	Length of time Purged (min)
Condition of Casing: good	Condition of Pad: none

WELL 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
1343	0.75	10.65	17.48	10.98	0.818	0.22	-64.7	61.7	gray/brown
1348	1.1	10.65	17.63	11.33	0.849	0.26	-86.6	43.8	
1353	1.6	10.65	17.77	11.57	0.729	0.24	-96.3	14.3	clear
1358	2.0	10.65	17.69	11.62	0.728	0.23	-106.3	8.99	
~~13~~ 1403	2.4	10.65	11.70	11.67	0.730	0.23	-111.6	9.54	
1408									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM10-PZM007	1408	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	✓
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	✓
		Hexavalent Chromium	1 - 250 mL Plastic	None	✓
		Cyanide	1 - 250 mL Plastic	NaOH	✓
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	✓
		PCB			✓
Matrix Spike					
Duplicate					

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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

roject Name: Area B Finishing Mills GW	Project Number: 150300M-24
Well Number: TM10-PZM007	Date: 7-15-16 1252
Well Diameter (in): 2	One Well Volume (gal): —
Depth to Product (ft): NA	QED Controller Settings: —
Depth to Water (ft): 10.58 TOC	Flow Rate (mL/min) 300
Product Thickness (ft): NA	Length of time Purged (min) ~~20~~ 21
Depth to Bottom (ft): 17.80 TOC	Condition of Pad/Cover: 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
1257	0.40	10.58	19.77	10.40	0.760	0.43	-0.8	6.22	
~~1256~~ 1300	0.80	10.58	19.71	10.38	0.767	0.34	-7.6	3.49	
1303	1.20	10.57	19.64	10.41	0.771	0.26	-13.9	2.78	
1306	1.60	~~0~~ 10.57	19.04	10.43	0.775	0.23	-24.3	2.49	
1309	2.00	10.58	18.77	10.43	0.773	0.21	-24.2	2.13	
1312	2.40	10.58	18.79	10.44	0.774	0.20	-20.2	1.87	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM10-PZM007	1313	TCL-VOCs	3 - 40 mL VOA	HCl	N
		TPH-GRO	3 - 40 mL VOA	HCl	|
		TPH-DRO	2 - 1 L Amber	none	|
		TCL-SVOCs	2- 1 L Amber	none	|
		TAL-Metals & Mercury (total)	1 - 250 mL Plastic	HNO3	|
		Hexavalent Chromium (total)	1 - 250 mL Plastic	none	Y
		Cyanide	1 - 250 mL Plastic	NaOH	N
		TAL-Metals & Mercury (Dissolved) **Field Filtered**	1 - 250 mL Plastic	HNO3	N
		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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300M - 21-3
Well Number: TM11-PZM007	Date: 6/29/16 1344
Well Diameter (in): 2"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 10.20	Flow Rate (mL/min) 300
Condition of Casing / Pad: BAD / BAD	Length of time Purged (min) 30

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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
1349	1.5	10.20	18.53	8.63	2.166	0.34	-76.6	3.56	
1354	3.0	10.20	18.53	8.87	2.166	0.22	-23.2	2.95	
1359	4.5	10.20	18.44	9.02	2.182	0.21	-38.1	2.45	
1404	6.0	10.20	18.41	9.12	2.182	0.09	-52.1	1.33	
1409	7.5	10.20	18.47	9.12	2.193	0.11	-61.5	1.97	
1414	9.0	10.20	18.51	9.21	2.178	0.09	-68.4	1.50	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM11-PZM007	1420	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	a - 1 Liter Amber	None	
		Matrix Spike			
		Duplicate @ DUP-JTY			

Sampled By: Jason T. Yaple

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW In.	Project Number: 150300M-21-3
Well Number: TM11-PZM034	Date: 7/5/16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 12.1	Length of time Purged (min)
Condition of Casing: missing	Condition of Pad: missing

WELL 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
0842	0.4	12.1	18.58	7.13	4.681	0.66	-47.8	5.19	
0847	0.9	12.1	18.53	7.00	5.070	0.54	-49.9	4.09	
0852	1.3	12.1	18.61	6.96	5.284	0.55	-50.1	4.56	
0857	1.8	12.1	18.55	6.93	5.488	0.46	-49.7	5.34	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM11-PZM-034	0902	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCB			
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills	Project Number: 150300M-21-3
Well Number: TM12-P2M006	Date: 6/24/16
Well Diameter (in): 2"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: 6.51
Depth to Water (ft) 10.95	Flow Rate (mL/min) 500
Condition of Casing / Pad: good/ good	Length of time Purged (min) 15

WELL 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
1339	0.1	10.96	18.98	11.08	2.212	0.41	-6.1	11.0	
1342	0.3	10.95	18.72	11.14	2.192	0.49	-30.7	4.92	
1345	0.5	10.95	19.52	11.24	2.171	0.30	-59.6	4.65	
1348	0.75	10.95	19.43	11.33	2.183	0.33	-88.5	4.43	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM12-P2M006	1355	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	1 - 1 L Amber	none	
Matrix Spike					
Duplicate					

Sampled By: N. Kurtz

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300-21-3
Well Number: TM13-PZM007	Date: 6/27/16 0917
Well Diameter (in): 2inch	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: ——
Depth to Water (ft) 11.44	Flow Rate (mL/min) 500 → 350
Condition of Casing / Pad: OK/OK	Length of time Purged (min) 35

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liters	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
0922	2.5	11.47	17.02	10.63	2.008	0.53	116.9	3.79	
0927	5.0	11.47	16.93	11.10	2.054	0.40	-176.3	3.67	
0932	7.0	11.47	17.13	11.26	2.074	0.35	-193.3	2.86	
0937	8.5	11.47	17.22	11.33	2.075	0.33	-203.3	2.78	
0942	10.0	11.47	17.26	11.42	2.085	0.27	-210.1	2.76	
0947	11.5	11.47	17.33	11.48	2.086	0.26	-219.3	2.74	
0952	13.0	11.47	17.39	11.54	2.085	0.21	-227.5	2.68	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM13-PZM007	1000	TCL-VOCs	3 - 40 mL VOA	HCl	X
		TPH-GRO	3 - 40 mL VOA	HCl	X
		TPH-DRO	2 - 1 L Amber	none	X
		TCL-SVOCs	2- 1 L Amber	none	X
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	X
		Hexavalent Chromium	1 - 250 mL Plastic	None	X
		Cyanide	1 - 250 mL Plastic	NaOH	X
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	X
		PCBs	2-1L Amber	None	X
Matrix Spike					
Duplicate					

Sampled By: Jty

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Sample	Project Number: 150300-21-3
Well Number: TM13-PZM046	Date: 6/27/16 1027
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: ——
Depth to Water (ft) 10.98	Flow Rate (mL/min) 500 →
Condition of Casing / Pad: Ok / Ok	Length of time Purged (min) ~~44~~ 49

WELL PURGING RECORD

Time	Volume Purged ~~(gallons)~~ Liter	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
1032	2.5	11.00	17.79	9.02	1.560	0.18	-129.2	7.13	
1037	5.0	10.99	18.12	8.50	1.730	0.14	-162.3	6.36	
1042	6.75	10.98	18.41	7.95	2.162	0.12	-206.9	4.89	
1047	8.50	10.99	18.71	7.74	2.276	0.11	-190.3	4.33	
1052	10.10	10.99	18.96	7.61	2.351	0.09	-178.1	4.28	
1057	12.0	10.99	18.76	7.56	2.371	0.09	-159.1	4.24	
1102	13.5	10.99	19.02	7.56	2418	0.08	-155.2	4.18	
1107	15.0	10.99	18.97	7.88	2.553	0.07	-189.8	4.16	
1110	15.9	10.99	18.86	7.94	2.586	0.06	-200.8	4.15	
1113	16.8	10.99	18.81	7.96	2.597	0.05	-208.7	4.24	
1116	17.7	10.99	18.85	7.95	2.620	0.05	-211.1	4.10	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM13-PZM046	1120	TCL-VOCs	3 - 40 mL VOA	HCl	yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	2-1L Amber	None	X
		Matrix Spike			
DUP-JTY		Duplicate			yes

Sampled By: JTY

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills	Project Number: 150300M-21-3
Well Number: TM14-P2M005	Date: 6/24/16
Well Diameter (in): 2"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings:
Depth to Water (ft) 8.08	Flow Rate (mL/min) 300
Condition of Casing / Pad: good / good	Length of time Purged (min)

WELL 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
1510	0.1	8.08	19.08	10.96	2.206	0.35	5.0	22.6	
1515	0.3	8.08	18.31	11.01	2.142	0.18	-20.5	~~20.5~~ 19.6	
1520	0.5	8.08	18.10	11.10	2.107	0.15	-47.1	13.3	
1525	0.75	8.08	18.02	11.16	2.097	0.15	-57.0	~~8.79~~ 5.80	
1530	1.0	8.08	18.17	11.18	2.089	0.14	-65.3	4.91	
1535	1.3	8.08	18.29	11.22	2.100	0.12	-70.3	4.40	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM14-P2M005	1550	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	1 - 1L Amber	none	
Matrix Spike					
Duplicate					

Sampled By: N. Kurtz

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finish Mills	Project Number: 160360M-21-3
Well Number: TM15-P2M007	Date: 6/24/16
Well Diameter (in): 2"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: 7-38
Depth to Water (ft) 8.49	Flow Rate (mL/min) 500
Condition of Casing / Pad: good / good	Length of time Purged (min) 20

WELL 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
854	0.1	8.51	16.62	10.62	4.283	1.03	-135.0	24.8	
859	0.5	8.50	17.06	11.08	2.326	0.33	-148.2	4.92	
904	0.8	8.50	17.14	11.16	2.159	0.31	-150.5	3.74	
909	1.2	8.50	17.15	11.18	2.121	0.33	-154.9	2.65	
914	1.6	8.50	17.20	11.19	2.088	0.25	-164.7	1.79	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM15-P2M007	920	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	1 - 1L Amber	none	
Matrix Spike					
Duplicate					

Sampled By: N. Kurtz

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finish Mills	Project Number: 150800M-21-3
Well Number: TMIS-PZMO11	Date: 6/24/16
Well Diameter (in): 2"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: 6.82
Depth to Water (ft) 8.73	Flow Rate (mL/min) 400
Condition of Casing / Pad: good / good	Length of time Purged (min) 20

WELL 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
1022	0.2	8.76	17.04	10.59	4.800	0.57	-129.6	56.2	
1027	0.5	9.01	16.68	10.88	4.461	0.26	-171.2	8.24	
1032	0.75	9.09	16.80	10.97	4.379	0.20	-180.1	3.79	
1037	1.0	9.10	16.96	11.00	4.250	0.19	-189.3	2.71	
1042	1.25	9.12	17.04	11.08	4.171	0.16	-198.6	2.32	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TMIS-PZMO11	1050	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCBs	1 - 1L Amber	none	
Matrix Spike					
Duplicate					

Sampled By: N. Kurtz

Comments: **Dissolved metals are Field Filtered**

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

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finish Mills	Project Number: 150300M-21-3
Well Number: TM15-PZM031	Date: 6/24/16
Well Diameter (in): 0.5"	One Well Volume (gal):
Total Depth (ft):	QED Controller Settings: 5.12
Depth to Water (ft) 8.49	Flow Rate (mL/min) 300
Condition of Casing / Pad: good / good	Length of time Purged (min)

WELL 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
1215	0.0	10.65	19.41	7.57	9.395	1.50	-166.8	49.5	
1218	0.3	32.20	20.51	7.36	9.232	0.93	-140.9	40.7	
Well run dry									

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM15-PZM031	1235	TCL-VOCs	3 - 40 mL VOA	HCl	Yes
		TPH-GRO	3 - 40 mL VOA	HCl	No
		TPH-DRO	2 - 1 L Amber	none	|
		TCL-SVOCs	2- 1 L Amber	none	|
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	|
		Hexavalent Chromium	1 - 250 mL Plastic	None	|
		Cyanide	1 - 250 mL Plastic	NaOH	Yes
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	No
		PCBs	1 - 1 L Amber	none	1
Matrix Spike					
Duplicate					

Sampled By: N. Kurtz

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Mon	Project Number: 150300M-21-3
Well Number: TM16-PZM007	Date: 7/5/16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 9.57	Length of time Purged (min)
Condition of Casing: missing	Condition of Pad: missing

WELL 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
1101	0.5	9.62	19.39	11.93	1.653	0.39	-125.3	43.5	
1106	0.9	9.64	19.55	12.27	1.614	0.19	-160.1	18.1	
1111	1.4	9.60	19.38	12.51	1.558	0.18	-163.1	11.38	
1116	1.9	9.61	19.39	12.46	1.523	0.12	-154.8	6.48	
1121	2.4	9.59	19.40	12.56	1.505	0.10	-155.1	4.21	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM16-PZM007	1126	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCB			N
Matrix Spike					
Duplicate					

Sampled By: LMH

Comments: **Dissolved metals are Field Filtered**

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills GW Invest.	Project Number: 150300M-21-3
Well Number: TM17-PZM005	Date: 6/29/16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft): 16	Purge Rate (mL/min) 100
Depth to Water (ft) 12.62	Length of time Purged (min)
Condition of Casing: rust	Condition of Pad: none

WELL 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 (clear tube)
1210	0.2	13.21	17.28	6.90	3.278	1.81	-59.0	19.5	Δflow 200
1215	0.35	13.7	17.88	6.85	3.314	1.09	-77.9	17.6	Δflow 100
1220	0.45	14.1	18.08	6.93	3.393	0.60	-95.1	15.6	
1225			+						Dry; check devel
1230	0.7	14.2	19.96	6.81	3.594	0.66	-101.5	25.6	
1235	0.8	14.27	18.41	6.85	3.707	0.61	-109.9	24.1	
1240	0.85	14.41	18.36	6.95	3.649	0.46	-119.8	42.5	
1245	1.0	14.87	18.52	7.01	3.652	0.33	-122.0	34.2	

Returned to finish sampling on 6/30/16 @ 0808

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
	6/29 1245 + 6/30 0808	TCL-VOCs	3 - 40 mL VOA	HCl	Y 6/29
		TPH-GRO	3 - 40 mL VOA	HCl	Y 6/29
		TPH-DRO	~~2~~ - 1 L Amber	none	6-30-16
		TCL-SVOCs	2- 1 L Amber	none	~~6-30-16~~ Y 6/29
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	Y 6/29
		Hexavalent Chromium	1 - 250 mL Plastic	None	Y 6/29
		Cyanide	1 - 250 mL Plastic	NaOH	Y 6/29
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	6-30-16
		PCB			6-30-16
Matrix Spike					
Duplicate					

Sampled By: MH

Comments: **Dissolved metals are Field Filtered**
well went dry @1222, adjusted flow, tubing; checked devel log; called J.T.Y. to discuss devel

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)

Groundwater Sampling

ARM Group Inc.
Earth Resource Engineers and Consultants

Project Name: Finishing Mills Gildan	Project Number: 150300M-21-3
Well Number: TM18-PZMOOS	Date: 7/5/16
Well Diameter (in): 2	One Well Volume (gal):
Total Depth (ft):	Purge Rate (mL/min) 300
Depth to Water (ft) 6.20	Length of time Purged (min)
Condition of Casing: missing	Condition of Pad: missing

WELL 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
0945	0.5	7.56	18.10	6.81	0.842	0.44	-6.6	11.9	Δ Flow 200
0950	0.75	7.56	18.75	6.99	0.824	0.31	-13.5	11.00	
0955	1.1	7.56	18.96	7.02	0.824	0.21	-25.9	10.27	
1000	1.4	7.56	18.98	7.04	0.821	0.18	-30.6	8.30	
1005	1.7	7.56	19.00	7.06	0.815	0.14	-35.4	6.21	

MONITORING SAMPLE RECORD

Sample ID	Time Collected	Parameter/Order	Container	Perservative	Collected?
TM18-PZMOOS	1010	TCL-VOCs	3 - 40 mL VOA	HCl	Y
		TPH-GRO	3 - 40 mL VOA	HCl	
		TPH-DRO	2 - 1 L Amber	none	
		TCL-SVOCs	2- 1 L Amber	none	
		TAL-Metals & Mercury (Total)	1 - 250 mL Plastic	HNO3	
		Hexavalent Chromium	1 - 250 mL Plastic	None	
		Cyanide	1 - 250 mL Plastic	NaOH	
		TAL-Metals & Mercury (Dissolved)	1 - 250 mL Plastic	HNO3	
		PCB			
		Matrix Spike			
		Duplicate			

Sampled By: LMG

Comments: **Dissolved metals are Field Filtered**

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)

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21 Finishing Mills GW Date 5/24/16
Weather 60s, Cloudy
Calibrated by LMG Instrument YSI/turb
Serial Number YSI 25771
Turb-5135-5014

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1413 uS/cm)	1413	61 °F	1536¥	78 °F
Specific Conductance Standard #2	--		--	
pH (7)	7.02		6.77	
pH (4)	4.00		4.28	
pH(10)	10.05		10.84	
ORP Zobel Solution (240.0 mV)	240.0		454.5¥	
Dissolved Oxygen 100% water saturated air mg/L	9.18		8.23¥	
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--		--	
Barometric Pressure mm Hg	760.98 mm 29.96 in Hg		--¥	
Turbidity #1 (0.00 NTU)	0.0		0.46¥	
Turbidity #2 (1.00 NTU)	1.03		2.60¥	
Turbidity Standard #3 (10.00 NTU)	9.90¥		9.94	

¥ ORP and specific conductance is outside of the post-calibration acceptance criteria. Barometric pressure was not recorded for post calibration. Turbidity is outside of the morning and post-calibration acceptance criteria. Values displayed on field purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21 Finishing Mills GW Date 5/25/16
Weather Sunny, 60s
Calibrated by LMG Instrument YSI/turb
Serial Number YSI-25771
turb-5135-5014

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1413 uS/cm)	1413	63 °F	1673¥	84 °F
Specific Conductance Standard #2	--	63 °F	--	84 °F
pH (7)	7.00	63 °F	6.99	84 °F
pH (4)	4.00	63 °F	4.04	84 °F
pH(10)	10.03	63 °F	10.17	84 °F
ORP Zobel Solution (240.0 mV)	240	63 °F	240.7	84 °F
Dissolved Oxygen 100% water saturated air mg/L	9.55	63 °F	8.67¥	84 °F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	63 °F	--	84 °F
Barometric Pressure mm Hg	765.3 30.13 in	NA	765.56 30.14 in	NA
Turbidity #1 (0.00 NTU)	0	63 °F	0.55¥	84 °F
Turbidity #2 (1.00 NTU)	1.1¥	63 °F	1.53¥	84 °F
Turbidity Standard #3 (10.00 NTU)	9.9¥	63 °F	10.77¥	84 °F

¥ Specific conductance and DO are outside of the post-calibration acceptance criteria. Turbidity is outside of the morning and post-calibration acceptance criteria. Values displayed on the purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Parcel A3/ Finishing Mills Date 6/10/16
Weather Sunny, 70s
Calibrated by N. Kurtz Instrument YSI 556
Serial Number 16695

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1413 uS/cm)	1413	65° (estimate)	1436	81° (estimate)
Specific Conductance Standard #2	--	65° (estimate)	--	81° (estimate)
pH (7)	7.01	65° (estimate)		81° (estimate)
pH (4)	4.00	65° (estimate)		81° (estimate)
pH(10)	10.02	65° (estimate)	10.02	81° (estimate)
ORP Zobel Solution (240.0 mV)	240	65° (estimate)	236.3	81° (estimate)
Dissolved Oxygen 100% water saturated air mg/L	100.4%	65° (estimate)	99.0%	81° (estimate)
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	65° (estimate)		81° (estimate)
Barometric Pressure mm Hg	764	NA		NA
Turbidity #1 (0.00 NTU)	0.0		-2.0¥	
Turbidity #2 (1.00 NTU)	1.06			
Turbidity Standard #3 (10.00 NTU)	10.10			

¥ Turbidity is outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Parcel A3/ Finishing Mills Date 6/10/16
Weather Sunny, 70 ^{o}F
Calibrated by Jason T. Yaple Instrument Horiba 05000
Serial Number DHDJ7T05

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (4.47 mS/cm)	4.48	65° (estimate)	3.70¥	81° (estimate)
Specific Conductance Standard #2 (1.413 mS/cm)	1.59	65° (estimate)		81° (estimate)
pH (7)	6.98	65° (estimate)		81° (estimate)
pH (4)	4.00	65° (estimate)	4.88¥	81° (estimate)
pH(10)	10.00	65° (estimate)		81° (estimate)
ORP Zobel Solution (240.0 mV)	240	65° (estimate)	222¥	81° (estimate)
Dissolved Oxygen 100% water saturated air mg/L	10.1¥	65° (estimate)	9.64¥	81° (estimate)
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	65° (estimate)	--	81° (estimate)
Barometric Pressure mm Hg	764	NA		NA
Turbidity #1 (0.00 NTU)	0.0			
Turbidity #2 (1.00 NTU)	0.93			
Turbidity Standard #3 (10.00 NTU)	10.03		2.02¥	

¥ Specific conductance, ORP, and Turbidity are outside of the post-calibration acceptance criteria. DO is outside of the morning and post-calibration acceptance criteria. Values displayed on the purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Finishing Mills GW Sample Date 6/14/16
Weather Mostly Sunny 75-80 ^{o}F
Calibrated by Jason T. Yaple Instrument H05000-Horiba SN: DHDJ7T05
Serial Number Lamotte 2020WE SN: 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (4.47 mS/cm)	4.49	20.23 ^{o}C (Calibration Solution)	3.85¥	23.62
Specific Conductance Standard #2 (1413 uS/cm)	--		--	
pH (7)	7.00	66 ^{o}F/ 19 ^{o}C		79 ^{o}F/ 26 ^{o}C
pH (4)	4.00	66 ^{o}F/ 19 ^{o}C	3.53¥	
pH(10)	10.00	66 ^{o}F/ 19 ^{o}C	--	
ORP (multi Cal Sol.) (240.0 mV)	302¥	66 ^{o}F/ 19 ^{o}C	195¥	
Dissolved Oxygen 100% water saturated air mg/L	9.51	66 ^{o}F/ 19 ^{o}C	8.79¥	
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	66 ^{o}F/ 19 ^{o}C	--	
Barometric Pressure mm Hg	30 in Hg 762 mm Hg	NA	29.98 in Hg 761mm Hg	NA
Turbidity #1 (0.00 NTU)	0.0	66 ^{o}F/ 19 ^{o}C	0.61¥	
Turbidity #2 (1.00 NTU)	1.00	66 ^{o}F/ 19 ^{o}C	1.61¥	
Turbidity Standard #3 (10.00 NTU)	9.99	66 ^{o}F/ 19 ^{o}C	10.64¥	

¥ Specific conductance, pH, and Turbidity are outside of the post-calibration acceptance criteria. DO is slightly outside of the post-calibration acceptance criteria. ORP is outside of the morning and post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Finishing Mills GW Investigation Date 6/15/16
Weather 60s, overcast, rain
Calibrated by LMG Instrument Horiba/turb
Serial Number Horiba- SN: DHDJ7T05
2020WE Lamotte- SN: 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (4.47 mS/cm)	4.53 mS/cm	64 °F	1.65 mS/cm¥	73 °F
Specific Conductance Standard #2 (1413 uS/cm)	--	64 °F	1.45 mS/cm	73 °F
pH (7)	--	64 °F	7.52	73 °F
pH (4)	4.01	64 °F	4.29	73 °F
pH(10)	--	64 °F	10.35	73 °F
ORP Zobel Solution (240.0 mV)	--	64 °F	--	73 °F
Dissolved Oxygen 100% water saturated air mg/L	9.65	64 °F	8.10	73 °F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	64 °F	--	73 °F
Barometric Pressure mm Hg	762.508 mm Hg 30.02 in Hg	64 °F	29.93 in Hg	73 °F
Turbidity #1 (0.00 NTU)	0.0	64 °F	0.0	73 °F
Turbidity #2 (1.00 NTU)	--	64 °F	--	73 °F
Turbidity Standard #3 (10.00 NTU)	--	64 °F	--	73 °F

¥ One Specific conductance calibration standard is outside of the post-calibration acceptance criteria. Turbidity was only calibrated for 0.00 NTU standard. Values on purge log may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Finishing Mills GW Investigation Date 6/16/16
Weather Rainy, 60s
Calibrated by LMG Instrument Horiba/turbidity
Serial Number H05000-Horiba SN: DHDJ7T05
Lamotte 2020WE SN: 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (4.47 mS/cm)	4.54 mS/cm	68 ^{o}F	4.45	75 ^{o}F
Specific Conductance Standard #2 (1413 uS/cm)	--	68 ^{o}F	1.44 mS/cm	75 ^{o}F
pH (7)	--	68 ^{o}F	7.41	75 ^{o}F
pH (4)	4.0	68 ^{o}F	4.01	75 ^{o}F
pH(10)	--	68 ^{o}F	10.40	75 ^{o}F
ORP Zobel Solution (240.0 mV)	--	68 ^{o}F	--	75 ^{o}F
Dissolved Oxygen 100% water saturated air mg/L	9.68	68 ^{o}F	6.75¥	75 ^{o}F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	68 ^{o}F	--	75 ^{o}F
Barometric Pressure mm Hg	29.77 in Hg	NA	29.6 in Hg	NA
Turbidity #1 (0.00 NTU)	0	68 ^{o}F	0.41¥	75 ^{o}F
Turbidity #2 (1.00 NTU)	0.1	68 ^{o}F	1.29¥	75 ^{o}F
Turbidity Standard #3 (10.00 NTU)	10	68 ^{o}F	10.57¥	75 ^{o}F

¥ DO and Turbidity are outside of the post-calibration acceptance criteria. Specific conductance and DO/Turbidity values on purge log may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/17/16
Weather Rainy, 60s
Calibrated by LMG Instrument Horiba/Lamotte
Serial Number Horiba: DHDT7T05
Lamotte 2020we 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (4.47 mS/cm)	4.54	64° F	4.18¥	81° F
Specific Conductance Standard #2 (1413 mS/cm)	--	64° F	1.49 mS/cm¥	81° F
pH (7)	--	64° F	7.45	81° F
pH (4)	4.00	64° F	4.24	81° F
pH(10)	--	64° F	10.39	81° F
ORP Zobel Solution	--	64° F	--	81° F
Dissolved Oxygen 100% water saturated air mg/L	9.26	64° F	7.68	81° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	64° F	--	81° F
Barometric Pressure mm Hg	29.81 in Hg		29.96 in Hg	
Turbidity #1 (0.00 NTU)	-0.10¥		0.58¥	
Turbidity #2 (1.00 NTU)	0.98		1.58¥	
Turbidity #3 (10.00 NTU)	10.29		10.58¥	

¥ Specific conductance and Turbidity are outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21 Finishing Mills GW Date 6/24/16
Weather Cloudy/rain, 70s
Calibrated by N. Kurtz Instrument YSI 556
Serial Number 33551

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1413 uS/cm)	1413	74° (estimate)	1548¥	78° (estimate)
Specific Conductance Standard #2	--	74° (estimate)	--	78° (estimate)
pH (7)	7	74° (estimate)	--	78° (estimate)
pH (4)	4	74° (estimate)	4.76¥	78° (estimate)
pH(10)	10	74° (estimate)	--	78° (estimate)
ORP Zobel Solution (240.0 mV)	240	74° (estimate)	238.7	78° (estimate)
Dissolved Oxygen 100% water saturated air mg/L	100.2%	74° (estimate)	91.9%	78° (estimate)
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	74° (estimate)	--	78° (estimate)
Barometric Pressure mm Hg	761.2	NA	--¥	NA
Turbidity #1 (0.00 NTU)	0.0		0.39¥	
Turbidity #2 (1.00 NTU)	1.0		1.47¥	
Turbidity Standard #3 (10.00 NTU)	10		10.57	

¥ Specific conductance, pH, and Turbidity is outside of the post-calibration acceptance criteria. Barometric Pressure was not recorded for post-calibration check. DO is displayed as a percent saturation. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/27/16
Weather Sunny, 70s
Calibrated by LMG Instrument YSI/Lamotte
Serial Number YSI: 19883
Lamotte: 2296

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.413	70° F	1.393¥	82° F
Specific Conductance Standard #2	--	70° F	--	82° F
pH (7)	7.01	70° F	6.74	82° F
pH (4)	4.00	70° F	4.21	82° F
pH(10)	10.00	70° F	9.86	82° F
ORP Zobel Solution	240	70° F	235.7	82° F
Dissolved Oxygen 100% water saturated air mg/L	9.41¥	70° F	9.35¥	82° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	70° F	--	82° F
Barometric Pressure mm Hg	764.79		29.99 in Hg	
Turbidity #1 (0.00 NTU)	0.00		0.09	
Turbidity #2 (1.00 NTU)	1.00		1.03	
Turbidity #3 (10.00 NTU)	9.54		9.71	

¥ DO is outside of the morning and post-calibration acceptance criteria. Specific conductance is outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/27/16
Weather Sunny, 70s
Calibrated by JTY Instrument YSI/Lamotte
Serial Number YSI: 11E101551
Lamotte: 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.413	70° F	1.451	82° F
Specific Conductance Standard #2	--	70° F	--	82° F
pH (7)	7.00	70° F	7.35	82° F
pH (4)	4.00	70° F	--	82° F
pH(10)	10.06	70° F	--	82° F
ORP Zobel Solution	240	70° F	236.4	82° F
Dissolved Oxygen 100% water saturated air mg/L	8.59	70° F	6.93¥	82° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	70° F	--	82° F
Barometric Pressure mm Hg	764.79		29.99 in Hg	
Turbidity #1 (0.00 NTU)	0.10¥		0.82¥	
Turbidity #2 (1.00 NTU)	1.00		1.82¥	
Turbidity #3 (10.00 NTU)	10.00		10.46¥	

¥ DO and Turbidity are outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/28/16
Weather Overcast, 70s
Calibrated by LMG Instrument YSI/Lamotte
Serial Number YSI: 19883
Lamotte: 2296

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.413	74° F	1.430	82° F
Specific Conductance Standard #2	--	74° F	--	82° F
pH (7)	7.00	74° F	7.41	82° F
pH (4)	4.00	74° F	--	82° F
pH(10)	10.07	74° F	--	82° F
ORP Zobel Solution	240	74° F	245.5	82° F
Dissolved Oxygen 100% water saturated air mg/L	8.69	74° F	7.12¥	82° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	74° F	--	82° F
Barometric Pressure mm Hg	760.48		29.90 in Hg	
Turbidity #1 (0.00 NTU)	0.00		-0.06¥	
Turbidity #2 (1.00 NTU)	0.96		1.00	
Turbidity #3 (10.00 NTU)	9.75		10.26	

¥ DO, and blank turbidity standard are outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/28/16
Weather Cloudy, 70s
Calibrated by JTY Instrument YSI/Lamotte
Serial Number YSI: 11E101551
Lamotte: 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.413	72° F	1.447	82° F
Specific Conductance Standard #2	--	72° F	--	82° F
pH (7)	7.00	72° F	--	82° F
pH (4)	4.00	72° F	4.10	82° F
pH(10)	10.01	72° F	--	82° F
ORP Zobel Solution	240	72° F	230.8	82° F
Dissolved Oxygen 100% water saturated air mg/L	6.56¥	72° F	7.21	82° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	72° F	--	82° F
Barometric Pressure mm Hg	760.48		29.90 in Hg	
Turbidity #1 (0.00 NTU)	-0.01¥		0.65¥	
Turbidity #2 (1.00 NTU)	1.00		1.59¥	
Turbidity #3 (10.00 NTU)	10.00		10.38	

¥ Turbidity is outside of the morning and post-calibration acceptance criteria. Do is outside of the morning calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/29/16
Weather Sunny, 70s
Calibrated by LMG Instrument YSI/Lamotte
Serial Number YSI: 19883
Lamotte: 2296

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.413	70° F	1.082¥	84° F
Specific Conductance Standard #2	--	70° F	--	84° F
pH (7)	7.00	70° F	7.31	84° F
pH (4)	4.00	70° F	--	84° F
pH(10)	10.07	70° F	--	84° F
ORP Zobel Solution	240	70° F	228.9¥	84° F
Dissolved Oxygen 100% water saturated air mg/L	8.72	70° F	6.44¥	84° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	68° F	--	82° F
Barometric Pressure mm Hg	759.46		29.94 in Hg	
Turbidity #1 (0.00 NTU)	0.00		0.54¥	
Turbidity #2 (1.00 NTU)	1.00		1.66¥	
Turbidity #3 (10.00 NTU)	10.00		9.76	

¥ DO, ORP, Turbidity, and specific conductance are outside of the post-calibration acceptance criteria.Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/29/16
Weather Sunny, 70s
Calibrated by JTY Instrument YSI/Lamotte
Serial Number YSI: 11E101551
Lamotte: 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.413	66° F	1.487	82° F
Specific Conductance Standard #2	--	66° F	--	82° F
pH (7)	7.00	66° F	6.85	82° F
pH (4)	4.00	66° F	3.92	82° F
pH(10)	10.02	66° F	10.63	82° F
ORP Zobel Solution	240	66° F	233.6	82° F
Dissolved Oxygen 100% water saturated air mg/L	6.36¥	66° F	7.63	82° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	66° F	--	82° F
Barometric Pressure mm Hg	759.46		760.47	
Turbidity #1 (0.00 NTU)	0.00		0.53¥	
Turbidity #2 (1.00 NTU)	1.02		1.58¥	
Turbidity #3 (10.00 NTU)	9.95		10.32	

¥ DO is outside of the morning calibration acceptance criteria. Turbidity is outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/30/16
Weather Sunny, 70s
Calibrated by LMG Instrument YSI/Lamotte
Serial Number YSI: 19883
Lamotte: 2296

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.413	68° F	1.905¥	82° F
Specific Conductance Standard #2	--	68° F	--	82° F
pH (7)	7.02	68° F	--	82° F
pH (4)	4.00	68° F	3.91	82° F
pH(10)	10.16	68° F	--	82° F
ORP Zobel Solution	240	68° F	218.2¥	82° F
Dissolved Oxygen 100% water saturated air mg/L	8.91	68° F	9.82¥	82° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	68° F	--	82° F
Barometric Pressure mm Hg	764.79		29.99 in Hg	
Turbidity #1 (0.00 NTU)	0.00		0.09¥	
Turbidity #2 (1.00 NTU)	1.00		1.03	
Turbidity #3 (10.00 NTU)	9.54		9.71	

¥ DO, ORP, Turbidity, and specific conductance are outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 FM GW Investigation Date 6/30/16
Weather Sunny, 70s
Calibrated by JTY Instrument YSI/Lamotte
Serial Number YSI: 11E101551
Lamotte: 1848-0412

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1.413 mS/cm)	1.418	64° F	1.355¥	82° F
Specific Conductance Standard #2	--	64° F	--	82° F
pH (7)	7.00	64° F	7.43	82° F
pH (4)	4.00	64° F	--	82° F
pH(10)	10.00	64° F	--	82° F
ORP Zobel Solution	240	64° F	230.5	82° F
Dissolved Oxygen 100% water saturated air mg/L	8.59¥	64° F	6.93¥	82° F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	64° F	--	82° F
Barometric Pressure mm Hg	763.27		29.99 in Hg	
Turbidity #1 (0.00 NTU)	0.00		0.84¥	
Turbidity #2 (1.00 NTU)	0.97		1.86¥	
Turbidity #3 (10.00 NTU)	10.00		10.67¥	

¥ Specific conductance and Turbidity are outside of the post-calibration acceptance criteria. Do is outside of the morning and post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name Area B Finishing Mills Date 7/1/16
Weather Sunny, 80s
Calibrated by L. Perrin Instrument YSI 556 mps
Serial Number _____

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1413 uS/cm)	1413	78 °F	1413	80 °F
Specific Conductance Standard #2	--	78 °F	--	80 °F
pH (7)	7.01	78 °F	6.79	80 °F
pH (4)	4.00	78 °F	--	80 °F
pH(10)		78 °F	--	80 °F
ORP Zobel Solution (240.0 mV)	240.0	78 °F	237.1	80 °F
Dissolved Oxygen 100% water saturated air mg/L	--	78 °F	--	80 °F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	6.35¥	78 °F	6.40¥	80 °F
Barometric Pressure mm Hg	760.4	NA	760.5	NA
Turbidity #1 (0.00 NTU)	0.0	78 °F	0.85¥	80 °F
Turbidity #2 (1.00 NTU)	1.00	78 °F	1.80¥	80 °F
Turbidity Standard #3 (10.00 NTU)	10.01	78 °F	10.78¥	80 °F

¥ DO and Turbidity are outside of the post-calibration acceptance criteria. Values on purge logs may be inaccurate.

TABLE 1
MULTIPARAMETER CALIBRATION LOG

Project Name 150300M-21-3 Finishing Mills GW Investigation Date 7/5/16
Weather Overcast, 70s
Calibrated by LMG Instrument YSI/Lamotte
Serial Number 11E101551
Lamotte: 1848

Parameters	Morning Calibration	Morning Temperature	End of Day Calibration Check	End of Day Temperature
Specific Conductance Standard #1 (1413 uS/cm)	1610¥	75 °F	1648¥	87 °F
Specific Conductance Standard #2	--	--	--	--
pH (7)	7.02	75 °F	7.55	87 °F
pH (4)	4.00	75 °F		87 °F
pH(10)	10.00	75 °F		87 °F
ORP Zobel Solution (240.0 mV)	240.1	75 °F	214.3¥	87 °F
Dissolved Oxygen 100% water saturated air mg/L	7.78¥	75 °F	6.82¥	87 °F
Dissolved Oxygen Zero Dissolved Oxygen Solution mg/L	--	75 °F	--	87 °F
Barometric Pressure mm Hg	757 mm Hg	NA	29.84 in Hg	NA
Turbidity #1 (0.00 NTU)	0.00	75 °F	0.36¥	87 °F
Turbidity #2 (1.00 NTU)	1.00	75 °F	1.47¥	87 °F
Turbidity Standard #3 (10.00 NTU)	10.00	75 °F	10.99¥	87 °F

¥ ORP and Turbidity are outside of the post-calibration acceptance criteria. Specific conductance and DO are outside of the morning and post-calibration acceptance criteria. Values on purge logs may be inaccurate.

APPENDIX H

EnviroAnalytics Group

FMGW - IDW Drum Log
Phase II Investigation

Drum ID	Designation	Activity/Phase	Contents	Open Date
264-GW-2/10/16-B6	Non-haz.	Parcel B6	Purge water	2/10/2016
362-GW-3/2/16-B6	Non-haz.	Parcel B6	Purge water	3/2/2016
363-GW-3/2/16-B6	Non-haz.	Parcel B6	Purge water	3/2/2016
431-S-2/5/16-B6	Non-haz.	Parcel B6	Soil	2/5/2016
467-S-2/23/16-B6	Non-haz.	Parcel B6	Soil	2/23/2016
468-S-2/23/16-B6	Non-haz.	Parcel B6	Soil	2/23/2016
493-Soil-5/16/16-B22	Non-haz.	Parcel B22	Soil	5/16/2016
494-Liners-5/16/16-B22	Non-haz.	Parcel B22	Liners	5/16/2016
495-PPE-5/16/16-B22	Non-haz.	Parcel B22	PPE	5/16/2016
496-Nitric Acid-5/16/16-B22	Non-haz.	Parcel B22	Nitric Acid	5/16/2016
497-Decon Water-5/16/16-B22	Non-haz.	Parcel B22	Decon Water	5/16/2016
498-PPE-5/18/16-B22	Non-haz.	Parcel B22	PPE	5/18/2016
499-Soil-5/18/16-B22	Non-haz.	Parcel B22	Soil	5/18/2016
500-Soil-5/20/16-B22	Non-haz.	Parcel B22	Soil	5/20/2016
501-Soil-5/19/16-B22	Non-haz.	Parcel B22	Soil	5/19/2016
502-Liners-5/19/16-B22	Non-haz.	Parcel B22	Liners	5/19/2016
505-PPE-5/24/16-B22	Non-haz.	Parcel B22	PPE	5/24/2016
506-Liners-5/26/16-B22	Non-haz.	Parcel B22	Liners	5/26/2016
507-Liners-5/26/16-B22	Non-haz.	Parcel B22	Liners	5/26/2016
508-Soil-5/26/16-B22	Non-haz.	Parcel B22	Soil	5/26/2016
509-Soil-5/26/16-B22	Non-haz.	Parcel B22	Soil	5/26/2016
510-Soil-5/31/16-B22	Non-haz.	Parcel B22	Soil	5/31/2016
511-Soil-5/31/16-B22	Non-haz.	Parcel B22	Soil	5/31/2016
512-Soil-5/31/16-B22	Non-haz.	Parcel B22	Soil	5/31/2016

Drum ID	Designation	Activity/Phase	Contents	Open Date
513-PPE-5/31/16-B22	Non-haz.	Parcel B22	PPE	5/31/2016
514-Soil-6/1/16-B22	Non-haz.	Parcel B22	Soil	6/1/2016
515-Soil-6/2/16-B22	Non-haz.	Parcel B22	Soil	6/2/2016
516-PPE-6/2/16-B22	Non-haz.	Parcel B22	PPE	6/2/2016
517-Liners-6/2/16-B22	Non-haz.	Parcel B22	Liners	6/2/2016
518-Liners-6/2/16-B22	Non-haz.	Parcel B22	Liners	6/2/2016
519-Liners-6/2/16-B22	Non-haz.	Parcel B22	Liners	6/2/2016
520-Soil-6/6/16-B22	Non-haz.	Parcel B22	Soil	6/6/2016
524-Soil-6/13/16-B6	Non-haz.	Parcel B6	Soil	6/13/2016
525-Liners-6/13/16-B6	Non-haz.	Parcel B6	Liners	6/13/2016
526-PPE-6/13/16-B6	Non-haz.	Parcel B6	PPE	6/13/2016
527-Decon Water-6/13/16-B6	Non-haz.	Parcel B6	Decon Water	6/13/2016
528-Nitric Acid-6/13/16-B6	Non-haz.	Parcel B6	Nitric Acid	6/13/2016
532-Soil-6/13/16-B6	Non-haz.	Parcel B6	Soil	6/13/2016
533-Soil-6/15/16-B6	Non-haz.	Parcel B6	Soil	6/15/2016
534-Liners-6/15/16-B6	Non-haz.	Parcel B6	Liners	6/15/2016
536-Soil-6/16/16-B6	Non-haz.	Parcel B6	Soil	6/16/2016
537-PPE-6/16/16-B6	Non-haz.	Parcel B6	PPE	6/16/2016
538-Soil-6/17/16-B6	Non-haz.	Parcel B6	Soil	6/17/2016
600-S-6/6/16-B21		FMGW-Phase II	Drill Cuttings	6/6/2016
601-S-6/8/16-B21		FMGW-Phase II	Drill Cuttings	6/8/2016
602-S-6/10/16-B6		FMGW-Phase II	Drill Cuttings	6/10/2016
603-S-6/13/16-B6		FMGW-Phase II	Drill Cuttings	6/13/2016
604-S-6/15/16-B6		FMGW-Phase II	Drill Cuttings	6/15/2016
605-S-6/16/16-B6		FMGW-Phase II	Drill Cuttings	6/16/2016
606-S-6/16/16-B6		FMGW-Phase II	Drill Cuttings	6/16/2016
607-S-6/17/16-B6		FMGW-Phase II	Drill Cuttings	6/17/2016
608-S-6/21/16-B6		FMGW-Phase II	Drill Cuttings	6/21/2016

Drum ID	Designation	Activity/Phase	Contents	Open Date
609-S-6/22/16-B6		FMGW-Phase II	Drill Cuttings	6/22/2016
610-S-6/22/16-B22		FMGW-Phase II	Drill Cuttings	6/22/2016
611-S-6/23/16-B22		FMGW-Phase II	Drill Cuttings	6/23/2016
612-S-6/24-16-B6		FMGW-Phase II	Drill Cuttings	6/24/2016
613-S-6/27/16-B6		FMGW-Phase II	Drill Cuttings	6/27/2016
614-S-6/27/16-B6		FMGW-Phase II	Drill Cuttings	6/27/2016
615-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
616-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
617-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
618-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
619-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
620-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
621-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
622-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
623-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
624-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
625-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
626-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
627-W-6/28/16-B6/21/22		FMGW-Phase II	Decon Water	6/28/2016
628-S-6/29/16-B6		FMGW-Phase II	Drill Cuttings	6/29/2016
629-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
630-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
631-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
632-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
633-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
634-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
635-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
636-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016

Drum ID	Designation	Activity/Phase	Contents	Open Date
637-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
638-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
639-W-6/29/16-B6/21/22		FMGW-Phase II	Decon Water	6/29/2016
640-S-6/29/16-B6/16		FMGW-Phase II	Drill Cuttings	6/29/2016

APPENDIX I

QA/QC Tracking Log

Trip Blank:	Date:	Sample IDs		
LMG	5/24/2016	1)	FM-014-PZS	
		2)	FM-001-PZS	
		3)	FM-002-PZS	
LMG	5/25/2016	4)	FM-005-PZS	
		5)	FM-007-PZS	
NK	6/10/2016	6)	FM-006-PZS	
		7)	FM-013-PZS	Duplicate: FM-001-PZS
JTY	6/14/2016	8)	FM-001-PZI	Date: 5/24/2016
		9)	FM-002-PZI	MS/MSD: FM-002-PZS
		10)		Date: 5/24/2016
		11)		Field Blank:
		12)		Date: 5/24/2016
		13)		
		14)		
		15)		
		16)		
		17)		
		18)		
		19)		
		20)		

Trip Blank:	Date:	Sample IDs		
Trip Blank LMG	6/27/2016	1)	FM-013-PZI	
		2)	SW-079-MWS	
Trip Blank JTY		3)	TM13-PZM046	
		4)	FM-017-PZS	
		5)	TM07-PZM005	
Trip Blank LMG	6/28/2016	6)	SW-079-MWI	
		7)	TM09-PZM007	Duplicate: TM13-PZM046
		8)	TM09-PZM047	Date: 6/27/2016
		9)	SW-077-MWS	MS/MSD: FM-013-PZI
Trip Blank JTY		10)	TM07-PZM045	Date: 6/27/2016
		11)	SW-081-MWS	Field Blank:
		12)	SW-081-MWI	Date: 6/27/2016
		13)	SW-075-MWS	
		14)	SW-075-MWI	
Trip Blank LMG	6/29/2016	15)	SW-077-MWI	
		16)	SW-076-MWS	
		17)	SW-076-MWI	
		18)	TM17-PZM005	
		19)	TM10-PZM007	
Trip Blank JTY		20)	SW-078-MWS	

TB - LG	6/15/2016	1)	FM-014-PZI	
		2)	FM-006-PZI	
		3)	FM-007-PZI	
		4)	FM-009-PZS	
Trip Blank LMG	6/16/2016	5)	FM-003-PZI	
		6)	FM-004-PZI	
		7)	FM-004-PZS	Duplicate: FM-009-PZS
		8)	FM-005-PZI	Date: 6/15/2016
Trip Blank LMG	6/17/2016	9)	FM-003-PZS	MS/MSD: FM-008-PZS
		10)	FM-011-PZS	Date: 6/17/2016
		11)	FM-008-PZS	Field Blank:
		12)	FM-015-PZS	Date: 6/16/2016
NK	6/24/2016	13)	TM15-PZM007	
		14)	TM15-PZM011	
		15)	TM15-PZM031	
		16)	TM12-PZM006	
		17)	TM14-PZM005	
Trip Blank LMG	6/27/2016	18)	FM-016-PZS	
		19)	FM-016-PZI	
Trip Blank JTY		20)	TM13-PZM007	

Trip Blank JTY	6/29/2016	1)	SW-078-MWI	
		2)	TM11-PZM007	
Trip Blank LMG	6/30/2016	3)	FM011-PZI	
		4)	FM-010-PZS	
		5)	FM-015-PZI	
		6)	FM-012-PZS	
Trip Blank JTY		7)	FM-012-PZI	Duplicate: TM11-PZM007
		8)	FM-008-PZI	Date: 6/29/2016
		9)	FM-009-PZI	MS/MSD: FM-011-PZI
Trip Blank LLP	7/1/2016	10)	SW-080-MWS	Date: 6/30/2016
		11)	SW-080-MWI	Field Blank:
Trip Blank LMG	7/5/2016	12)	TM11-PZM034	Date: 6/30/2016
		13)	TM18-PZM005	
		14)	TM16-PZM007	
		15)	FM-008-PZS	Hexavalent Chromium resample
		16)		
		17)		
		18)		
		19)		
		20)		

QA/QC Tracking Log

Date:	Sample IDs	
7/15/2016	1) FM-013-PZI	Hexavalent chromium resample
	2) FM-008-PZS	
	3) FM-015-PZS	
	4) TM10-PZM007	
	5) SW-075-MWI	
	6)	
	7)	Duplicate: FM-008-PZS
	8)	Date: 7/15/2016
	9)	MS/MSD: FM-013-PZI
	10)	Date: 7/15/2016
	11)	Field Blank:
	12)	Date: 7/15/2016
	13)	
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Date:	Sample IDs	
	1)	
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	5)	
	6)	
	7)	Duplicate:
	8)	Date:
	9)	MS/MSD:
	10)	Date:
	11)	Field Blank:
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	7)	Duplicate:
	8)	Date:
	9)	MS/MSD:
	10)	Date:
	11)	Field Blank:
	12)	Date:
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	5)	
	6)	
	7)	Duplicate:
	8)	Date:
	9)	MS/MSD:
	10)	Date:
	11)	Field Blank:
	12)	Date:
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	19)	
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APPENDIX J

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
1,1,1-Trichloroethane	VOC	Water	ug/L	71	1	0	71	100.00%
1,1,2,2-Tetrachloroethane	VOC	Water	ug/L	71	0	0	71	100.00%
1,1,2-Trichloro-1,2,2-Trifluoroethane	VOC	Water	ug/L	71	0	0	71	100.00%
1,1,2-Trichloroethane	VOC	Water	ug/L	71	0	0	71	100.00%
1,1-Biphenyl	SVOC	Water	ug/L	70	2	0	70	100.00%
1,1-Dichloroethane	VOC	Water	ug/L	71	18	0	71	100.00%
1,1-Dichloroethene	VOC	Water	ug/L	71	7	0	71	100.00%
1,2,3-Trichlorobenzene	VOC	Water	ug/L	71	0	0	71	100.00%
1,2,4,5-Tetrachlorobenzene	SVOC	Water	ug/L	70	0	0	70	100.00%
1,2,4-Trichlorobenzene	VOC	Water	ug/L	71	0	0	71	100.00%
1,2-Dibromo-3-chloropropane	VOC	Water	ug/L	71	0	0	71	100.00%
1,2-Dibromoethane	VOC	Water	ug/L	71	0	0	71	100.00%
1,2-Dichlorobenzene	VOC	Water	ug/L	71	0	0	71	100.00%
1,2-Dichloroethane	VOC	Water	ug/L	71	1	0	71	100.00%
1,2-Dichloroethene (Total)	VOC	Water	ug/L	71	3	0	71	100.00%
1,2-Dichloropropane	VOC	Water	ug/L	71	0	0	71	100.00%
1,3-Dichlorobenzene	VOC	Water	ug/L	71	0	0	71	100.00%
1,4-Dichlorobenzene	VOC	Water	ug/L	71	0	0	71	100.00%
1,4-Dioxane	VOC/SVOC	Water	ug/L	70	39	0	70	100.00%
2,3,4,6-Tetrachlorophenol	SVOC	Water	ug/L	70	1	0	70	100.00%
2,4,5-Trichlorophenol	SVOC	Water	ug/L	70	0	0	70	100.00%
2,4,6-Trichlorophenol	SVOC	Water	ug/L	70	0	0	70	100.00%
2,4-Dichlorophenol	SVOC	Water	ug/L	70	0	0	70	100.00%
2,4-Dimethylphenol	SVOC	Water	ug/L	70	13	0	70	100.00%
2,4-Dinitrophenol	SVOC	Water	ug/L	70	0	0	70	100.00%
2,4-Dinitrotoluene	SVOC	Water	ug/L	70	0	0	70	100.00%
2,6-Dinitrotoluene	SVOC	Water	ug/L	70	0	0	70	100.00%
2-Butanone (MEK)	VOC	Water	ug/L	71	4	0	71	100.00%
2-Chloronaphthalene	SVOC	Water	ug/L	70	0	0	70	100.00%
2-Chlorophenol	SVOC	Water	ug/L	70	1	0	70	100.00%
2-Hexanone	VOC	Water	ug/L	71	0	0	71	100.00%
2-Methylnaphthalene	SVOC	Water	ug/L	70	37	0	70	100.00%
2-Methylphenol	SVOC	Water	ug/L	70	5	0	70	100.00%
2-Nitroaniline	SVOC	Water	ug/L	70	0	0	70	100.00%
3&4-Methylphenol(m&p Cresol)	SVOC	Water	ug/L	70	12	0	70	100.00%
3,3'-Dichlorobenzidine	SVOC	Water	ug/L	70	0	2	68	97.14%
4-Chloroaniline	SVOC	Water	ug/L	70	0	0	70	100.00%
4-Methyl-2-pentanone (MIBK)	VOC	Water	ug/L	71	2	0	71	100.00%
4-Nitroaniline	SVOC	Water	ug/L	70	0	0	70	100.00%
Acenaphthene	SVOC	Water	ug/L	70	35	0	70	100.00%
Acenaphthylene	SVOC	Water	ug/L	70	24	0	70	100.00%
Acetone	VOC	Water	ug/L	71	19	5	66	92.96%
Acetophenone	SVOC	Water	ug/L	70	5	0	70	100.00%
Aluminum	Metal	Water	ug/L	109	87	0	109	100.00%
Anthracene	SVOC	Water	ug/L	70	41	0	70	100.00%
Antimony	Metal	Water	ug/L	109	13	0	109	100.00%
Arsenic	Metal	Water	ug/L	109	51	0	109	100.00%
Barium	Metal	Water	ug/L	109	109	0	109	100.00%
Benzaldehyde	SVOC	Water	ug/L	70	0	0	70	100.00%
Benzene	VOC	Water	ug/L	71	14	0	71	100.00%
Benzo[a]anthracene	SVOC	Water	ug/L	70	26	0	70	100.00%
Benzo[a]pyrene	SVOC	Water	ug/L	70	17	0	70	100.00%
Benzo[b]fluoranthene	SVOC	Water	ug/L	70	16	0	70	100.00%
Benzo[g,h,i]perylene	SVOC	Water	ug/L	70	3	0	70	100.00%
Benzo[k]fluoranthene	SVOC	Water	ug/L	70	16	0	70	100.00%
Beryllium	Metal	Water	ug/L	109	11	0	109	100.00%
bis(2-chloroethoxy)methane	SVOC	Water	ug/L	70	1	0	70	100.00%
bis(2-Chloroethyl)ether	SVOC	Water	ug/L	70	0	0	70	100.00%
bis(2-Chloroisopropyl)ether	SVOC	Water	ug/L	70	0	0	70	100.00%
bis(2-Ethylhexyl)phthalate	SVOC	Water	ug/L	70	30	0	70	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Bromodichloromethane	VOC	Water	ug/L	71	3	0	71	100.00%
Bromoform	VOC	Water	ug/L	71	0	0	71	100.00%
Bromomethane	VOC	Water	ug/L	71	0	0	71	100.00%
Cadmium	Metal	Water	ug/L	109	44	0	109	100.00%
Caprolactam	SVOC	Water	ug/L	70	5	0	70	100.00%
Carbazole	SVOC	Water	ug/L	70	18	0	70	100.00%
Carbon disulfide	VOC	Water	ug/L	71	16	0	71	100.00%
Carbon tetrachloride	VOC	Water	ug/L	71	0	0	71	100.00%
Chlorobenzene	VOC	Water	ug/L	71	0	0	71	100.00%
Chloroethane	VOC	Water	ug/L	71	0	0	71	100.00%
Chloroform	VOC	Water	ug/L	71	21	0	71	100.00%
Chloromethane	VOC	Water	ug/L	71	1	0	71	100.00%
Chromium	Metal	Water	ug/L	109	76	0	109	100.00%
Chromium VI	Metal	Water	ug/L	79	8	0	79	100.00%
Chrysene	SVOC	Water	ug/L	70	27	0	70	100.00%
cis-1,2-Dichloroethene	VOC	Water	ug/L	71	3	0	71	100.00%
cis-1,3-Dichloropropene	VOC	Water	ug/L	71	0	0	71	100.00%
Cobalt	Metal	Water	ug/L	109	43	0	109	100.00%
Copper	Metal	Water	ug/L	109	30	0	109	100.00%
Cyanide	CN	Water	ug/L	71	30	0	71	100.00%
Cyclohexane	VOC	Water	ug/L	71	3	0	71	100.00%
Dibenz[a,h]anthracene	SVOC	Water	ug/L	70	0	0	70	100.00%
Dibromochloromethane	VOC	Water	ug/L	71	0	0	71	100.00%
Dichlorobiphenyl	PCB	Water	ug/L	18	1	0	18	100.00%
Dichlorodifluoromethane	VOC	Water	ug/L	71	0	0	71	100.00%
Diesel Range Organics	TPH	Water	ug/L	70	64	0	70	100.00%
Diethylphthalate	SVOC	Water	ug/L	70	2	0	70	100.00%
Di-n-butylphthalate	SVOC	Water	ug/L	70	8	0	70	100.00%
Di-n-ocytlphthalate	SVOC	Water	ug/L	70	0	0	70	100.00%
Ethylbenzene	VOC	Water	ug/L	71	3	0	71	100.00%
Fluoranthene	SVOC	Water	ug/L	70	45	0	70	100.00%
Fluorene	SVOC	Water	ug/L	70	35	0	70	100.00%
Gasoline Range Organics	TPH	Water	ug/L	71	2	0	71	100.00%
Heptachlorobiphenyl	PCB	Water	ug/L	18	0	0	18	100.00%
Hexachlorobenzene	SVOC	Water	ug/L	70	0	0	70	100.00%
Hexachlorobiphenyl	PCB	Water	ug/L	18	0	0	18	100.00%
Hexachlorobutadiene	SVOC	Water	ug/L	70	0	0	70	100.00%
Hexachlorocyclopentadiene	SVOC	Water	ug/L	70	0	0	70	100.00%
Hexachloroethane	SVOC	Water	ug/L	70	0	0	70	100.00%
Indeno[1,2,3-c,d]pyrene	SVOC	Water	ug/L	70	2	0	70	100.00%
Iron	Metal	Water	ug/L	109	103	0	109	100.00%
Isophorone	SVOC	Water	ug/L	70	0	0	70	100.00%
Isopropylbenzene	VOC	Water	ug/L	71	2	0	71	100.00%
Lead	Metal	Water	ug/L	109	11	0	109	100.00%
Manganese	Metal	Water	ug/L	109	98	0	109	100.00%
Mercury	Metal	Water	ug/L	109	2	0	109	100.00%
Methyl Acetate	VOC	Water	ug/L	71	0	1	70	98.59%
Methyl tert-butyl ether (MTBE)	VOC	Water	ug/L	71	5	0	71	100.00%
Methylene Chloride	VOC	Water	ug/L	71	1	0	71	100.00%
Monochlorobiphenyl	PCB	Water	ug/L	18	0	0	18	100.00%
Naphthalene	SVOC	Water	ug/L	70	63	0	70	100.00%
Nickel	Metal	Water	ug/L	109	85	0	109	100.00%
Nitrobenzene	SVOC	Water	ug/L	70	0	0	70	100.00%
N-Nitroso-di-n-propylamine	SVOC	Water	ug/L	70	0	0	70	100.00%
N-Nitrosodiphenylamine	SVOC	Water	ug/L	70	0	0	70	100.00%
Nonachlorobiphenyl	PCB	Water	ug/L	18	0	0	18	100.00%
Octachlorobiphenyl	PCB	Water	ug/L	18	0	0	18	100.00%
PCBs (total)	PCB	Water	ug/L	36	20	0	36	100.00%
Pentachlorobiphenyl	PCB	Water	ug/L	18	0	0	18	100.00%
Pentachlorophenol	SVOC	Water	ug/L	70	13	0	70	100.00%

EVALUATION OF DATA COMPLETENESS
Percentage of Non-Rejected Results vs. Total Results

Parameter	Parameter Group	Matrix	Unit	Number of Results	Detections	Number of Rejected Results	Number of Non-rejected Results	Completeness
Phenanthrene	SVOC	Water	ug/L	70	49	0	70	100.00%
Phenol	SVOC	Water	ug/L	70	11	0	70	100.00%
Pyrene	SVOC	Water	ug/L	70	41	0	70	100.00%
Selenium	Metal	Water	ug/L	109	17	0	109	100.00%
Silver	Metal	Water	ug/L	109	23	0	109	100.00%
Styrene	VOC	Water	ug/L	71	0	0	71	100.00%
Tetrachlorobiphenyl	PCB	Water	ug/L	18	1	0	18	100.00%
Tetrachloroethene	VOC	Water	ug/L	71	4	0	71	100.00%
Thallium	Metal	Water	ug/L	109	22	0	109	100.00%
Toluene	VOC	Water	ug/L	71	24	0	71	100.00%
trans-1,2-Dichloroethene	VOC	Water	ug/L	71	0	0	71	100.00%
trans-1,3-Dichloropropene	VOC	Water	ug/L	71	0	0	71	100.00%
Trichlorobiphenyl	PCB	Water	ug/L	18	2	0	18	100.00%
Trichloroethene	VOC	Water	ug/L	71	2	0	71	100.00%
Trichlorofluoromethane	VOC	Water	ug/L	71	0	0	71	100.00%
Vanadium	Metal	Water	ug/L	109	97	0	109	100.00%
Vinyl chloride	VOC	Water	ug/L	71	1	0	71	100.00%
Xylenes	VOC	Water	ug/L	71	7	0	71	100.00%
Zinc	Metal	Water	ug/L	109	93	0	109	100.00%