RESPONSE AND DEVELOPMENT WORK PLAN

AREA A: SUB-PARCEL A10-1
TRADEPOINT ATLANTIC
SPARROWS POINT, MARYLAND

Prepared For:

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1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has prepared this Response and Development Work Plan (RADWP) for a portion of the Tradepoint Atlantic property that has been designated as Area A: Sub-Parcel A10-1 (the Site). Tradepoint Atlantic submitted a letter (**Appendix A**) requesting an expedited plan review to achieve construction deadlines for the proposed development on this Site. Parcel A10 is comprised of approximately 31.7 acres of the approximately 3,100-acre former plant property. As shown on **Figure 1**, Sub-Parcel A10-1 consists of approximately 29.4 acres located within Parcel A10.

As shown on **Figure 2** and **Figure 3**, Sub-Parcel A10-1 is slated for development and occupancy as a logistics center, including a warehouse building with a total area of approximately 399,600 square feet. Associated water lines, sanitary sewer lines, storm drains, conventional and trailer parking, access roads, and interior roads are also proposed. The planned development activities will generally include grading; construction of a 399,600 square foot building; installation of utilities; and paving of parking areas and roadways. Subsequent site-use will involve workers in the on-site building, and truck drivers entering and leaving the Site with goods. Outside of the main development area designated as Sub-Parcel A10-1, temporary construction zones (not intended for permanent occupancy) with a total area of less than 1 acre within the Limit of Disturbance (LOD) will be utilized to install the facility entrance and subgrade utility connections for the project.

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (MDE), 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 (USEPA), effective November 25, 2014.

Sub-Parcel A10-1 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from USEPA on September 12, 2014. Based on this agreement, USEPA determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the USEPA's Resource Conservation and Recovery Act (RCRA) Corrective Action authorities.

An application to enter the full Tradepoint Atlantic property (3,100 acres) into the MDE Voluntary Cleanup Program (MDE-VCP) was submitted to the MDE and delivered on June 27, 2014. The property's current and anticipated future use is Tier 3 (Industrial), and plans for the property include demolition and redevelopment over several years.

In consultation with the MDE, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the MDE and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (Code of Maryland Regulations (COMAR) 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on the Sub-Parcel A10-1 and complement the statutory requirements of the VCP (Section 7-501 of the Environment Article). Upon submission of a RADWP and completion of any remedial activities for the sub-parcel, the MDE shall issue a No Further Action Letter (NFA) upon a recordation of an Environmental Covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the MDE a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic or other entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this RADWP are implemented and a NFA is issued by the MDE pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the RADWP, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this RADWP.

This RADWP provides a Site description and history; summary of environmental conditions identified by the Phase I Environmental Site Assessment (ESA); summary of relevant findings and environmental conditions identified by the Parcel A10 Phase II Investigation; a human health Screening Level Risk Assessment (SLRA) conducted for the identified conditions; and any necessary engineering and/or institutional controls to facilitate the planned Sub-Parcel A10-1 development and address the impacts and potential human health exposures. These controls include work practices and applicable protocols that are submitted for approval to support the development and use of the Site. Engineering/institutional controls approved and installed for this RADWP shall be described in closure certification documentation submitted to the MDE

demonstrating that exposure pathways on the Site are addressed in a manner that protects public health and the environment.

The remaining acreage of Parcel A10 will be addressed in future work associated with completion of the obligations of the ACO and associated VCP requirements. This work will include assessments of risk and, if necessary, RADWPs to address unacceptable risks associated with future land use. As noted above, temporary construction zones with a total area of less than 1 acre will be utilized to install the facility entrance and subgrade utility connections for the project outside of the sub-parcel. The temporary utility work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction is covered by this RADWP.

Figure 4 highlights the remnant areas that exist outside of the sub-parcel development boundary (i.e., the Site), but inside the investigative Parcel A10. As indicated on the figure, Parcel A10 has one contiguous remnant along the northern edge of Sub-Parcel A10-1. The northern remnant will either be covered by a separate Remnant SLRA Report if this area is expected to remain undeveloped, or it will be incorporated into a RADWP for the adjacent Parcel A18 as part of a separate development project.

2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

Parcel A10 includes an area of 31.7 acres as shown on **Figure 1**. The Sub-Parcel A10-1 development project consists of 29.4 acres intended for occupancy comprising much of Parcel A10. The development will include a logistics center totaling approximately 399,600 square feet (**Figure 2** and **Figure 3**). Outside of the main development area designated as Sub-Parcel A10-1, temporary construction zones (not intended for permanent occupancy) with a total area of less than 1 acre within the construction LOD will be utilized to install the facility entrance and subgrade utility connections for the project. The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM), and is not occupied. Several small historical structures and railways remain on the Site and will be required to be demolished during the proposed development. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

Parcel A10 is at an elevation of approximately 12 to 20 feet above mean sea level (amsl) in most areas. Across most of the Site, elevations are fairly uniform and overland flow appears to discharge across the northern boundary of the Site toward the stormwater impoundment in Parcel A16 located beyond Warehouse Road. According to Figure B-2 of the Stormwater Pollution Prevention Plan (SWPPP) Revision 8 dated April 30, 2020, runoff waters from Parcel A10 are ultimately directed to the Humphrey Creek Wastewater Treatment Plant (HCWWTP) via the Tin Mill Canal (TMC). Surface waters which are collected and treated at the HCWWTP ultimately flow through the National Pollutant Discharge Elimination System (NPDES) permitted Outfall 014, which discharges to Bear Creek across the western boundary of the Tradepoint Atlantic property.

2.2 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 the facility ceased in fall 2012.

The proposed Sub-Parcel A10-1 development project occupies the majority of Parcel A10. This area of the Tradepoint Atlantic property was formerly occupied by the Nelson Box Company facility including several lumber storage buildings and sheds. Other smaller buildings and facilities associated with the steel mill (Maintenance of Way Yard, ATEC Storeroom and Shop, Office, and Repair Shop) were also present at the Site. The Nelson Box Company building structure was located directly south of the lumber storage areas. Beginning in 1921, operations at the Nelson Box Company included the production of wood pallets, cable/wire reels, and industrial

packaging products. Through the years, the Nelson Box Company expanded its operations to produce crates, corrugated products, angleboard, and slipsheets, and more recently (post 1990) metal and plastic products. All large buildings associated with lumber storage and the Nelson Box Company have been demolished, although building slabs remain. Several smaller buildings associated with the Maintenance of Way Yard (ATEC Storeroom and Shop, Office, and Repair Shop) remain intact at the Site. These existing buildings will be required to be demolished during the proposed development. Numerous rail tracks occupy the central and northern portions of the Site, and will also be required to be removed. More information regarding the specific historical activities conducted at the Site can be found in the agency-approved Phase II Investigation Work Plan for Parcel A10 (Revision 3 dated April 21, 2016).

3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos Consultants for the entire Sparrows Point property on May 19, 2014. Weaver Boos completed site visits of Sparrows Point from February 19 through 21, 2014, for the purpose of characterizing current conditions at the former steel plant. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. These Recognized Environmental Conditions (RECs) included buildings and process areas where releases of hazardous substances and/or petroleum products potentially may have occurred. The Phase I ESA also relied upon findings identified during a previous visual site inspection (VSI) conducted as part of the RCRA Facility Assessment (RFA) prepared by A.T. Kearney, Inc. dated August 1993, for the purpose of identifying Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) on the property. This 1991 VSI is regularly cited in the Description of Current Conditions (DCC) Report prepared by Rust Environment and Infrastructure, dated January 1998 (included with Weaver Boos' Phase I ESA).

Weaver Boos' distinction of a REC or Non-REC was based upon the findings of the DCC Report (which was prepared when the features remained on-site in 1998) or on observations of the general area during their site visit. Weaver Boos made the determination to identify a feature as a REC based on historical information, observations during the site visit, and prior knowledge and experience with similar facilities. The following RECs were identified in Sub-Parcel A10-1:

Hazardous Materials Storage (REC 10A, Finding 240):
During the Phase I site visit by Weaver Boos, a building was observed to contain a hazardous materials storage room. The ATEC facility was formerly responsible for roll (locomotive) repairs. The identified building held several above ground storage tanks (ASTs) and containers, the condition of which could not be determined due to restricted access (building locks). An additional AST with a hazardous materials label was observed along the western exterior wall. It is unknown whether any leaks or spills occurred.

Large Historical AST (REC 10B, Finding 241):
A large circular structure appearing to be an AST surrounded by a berm was identified on historical aerial photography. Based on the size and location, it is reasonable that the AST may have contained petroleum products. The condition of the tank and berm, as well as the exact contents and spill/leak history, are unknown.

Maintenance of Way Yard UST (REC 12A, Finding 246):
The Maintenance of Way Yard located north of the ATEC facility was identified as containing a 12,000-gallon gasoline underground storage tank (UST), listed as permanently out of service. Additionally, three fuel dispensers were observed outside of a building in the yard. It is unknown

whether the dispensers were associated with the UST, or if they had underground piping which may have leaked or spilled. It is unknown whether the UST was abandoned in place or removed.

Relevant SWMUs and AOCs were also identified as located on Figure 3-1 from the DCC Report. This figure generally shows the SWMUs, AOCs, and main facility areas within the property boundaries. There were no SWMUs or AOCs identified within the Sub-Parcel A10-1 boundary.

3.2 INVESTIGATION RESULTS – SUB-PARCEL A10-1

A Phase II Investigation specific to soil and groundwater conditions was performed for the area encompassing Sub-Parcel A10-1 in accordance with the requirements outlined in the ACO as further described in the agency-approved Phase II Investigation Work Plan for Parcel A10 (Revision 3 dated April 21, 2016). All soil and groundwater samples were collected and analyzed in accordance with agency-approved protocols during the Phase II Investigation, the specific details of which can be reviewed in the agency-approved Work Plan.

The Phase II Investigation was developed to target specific features which represented a potential release of hazardous substances and/or petroleum products to the environment, including the identified RECs, as well as numerous other targets defined from former operations that would have the potential for environmental contamination. Samples were also collected at site-wide locations to ensure full coverage of the investigation area. The full analytical results and conclusions of the investigation have been presented to the agencies in the Parcel A10 Phase II Investigation Report (Revision 1 dated July 8, 2019) which was approved on August 20, 2019. This RADWP summarizes the relevant soil and groundwater findings from the Phase II Investigation with respect to the proposed development of Sub-Parcel A10-1.

3.2.1 Phase II Soil Investigation Findings

Based on the scope of development for Sub-Parcel A10-1, all 78 soil samples collected from 33 soil borings during the Parcel A10 Phase II Investigation were selected for a representative evaluation of Sub-Parcel A10-1. The 33 boring locations are shown on **Figure 5**, and the samples obtained from these borings provided relevant analytical data for discussion of on-site conditions. Note that one of the selected soil borings, A10-027-SB, is located outside Sub-Parcel A10-1; however, data from this location has been included in this data evaluation because it is very close to the development boundary and characterizes soil in the northernmost portion of the sub-parcel. As described in the Phase II Investigation Report (Revision 1 dated July 8, 2019), no soil samples were recovered from boring A10-034-SB. However, a piezometer was installed, and groundwater samples were collected at this location.

Soil samples collected during the Phase II Investigation were analyzed for the USEPA Target Compound List (TCL) semi-volatile organic compounds (SVOCs), TCL volatile organic compounds (VOCs), total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline

range organics (GRO), USEPA Target Analyte List (TAL) metals, hexavalent chromium, and cyanide. During the implementation of the Parcel A10 Work Plan, TPH-DRO/GRO analysis was required at every location, but Oil & Grease analysis was not required or completed. Shallow soil samples (0 to 1 foot bgs) were also analyzed for polychlorinated biphenyls (PCBs). The laboratory Certificates of Analysis (including Chains of Custody) and relevant Data Validation Reports (50% validated soil data) are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

Soil sample results were screened against the Project Action Limits (PALs) established in the property-wide Quality Assurance Project Plan (QAPP) dated April 5, 2016, or based on other direct agency guidance (e.g., TPH). **Table 1** and **Table 2** provide a summary of the detected organic compounds and inorganics in the soil samples collected from the 33 soil borings at the Site. **Figure S1** through **Figure S3** present the soil sample results that exceeded the PALs among these soil borings. The PALs for relevant polynuclear aromatic hydrocarbons (PAHs) have been adjusted upward based on revised toxicity data published in the USEPA Regional Screening Level (RSL) Composite Worker Soil Table. PAL exceedances in the Phase II Investigation soil samples relevant for the proposed development project were limited to five inorganics (arsenic, lead, manganese, thallium, and vanadium), three SVOCs (benzo[a]pyrene, benzo[b]fluoranthene, and dibenz[a,h]anthracene), and total PCBs.

Potential evidence of non-aqueous phase liquid (NAPL) was observed at a single soil boring location (A10-006-SB). These findings and supplemental activities that were completed at this location are further discussed in Section 3.2.5. Contingency measures to address the presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP.

3.2.2 Phase II Groundwater Investigation Findings

Groundwater conditions were investigated in accordance with the Parcel A10 Phase II Investigation Work Plan. During this groundwater investigation, samples were obtained from 11 temporary groundwater sample collection points (piezometers) within close proximity to Sub-Parcel A10-1. One permanent well (SG06-PDM001) located slightly to the north of the proposed development area was also sampled. The 12 groundwater points which provided relevant analytical data for the proposed development project are shown on **Figure 6**. There is no direct exposure risk for future Composite Workers at the Site because there is no use of groundwater on the Tradepoint Atlantic property; however, groundwater may be encountered in the sub-parcel during some construction tasks.

The groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs, TAL-dissolved metals, TPH-DRO/GRO, dissolved hexavalent chromium, and total cyanide. The laboratory Certificates of Analysis (including Chains of Custody) and relevant Data Validation Reports (50% validated

groundwater data) are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

The Phase II Investigation groundwater results were screened against the PALs established in the property-wide QAPP dated April 5, 2016, or based on other direct agency guidance (e.g., TPH). **Table 3** and **Table 4** provide a summary of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure GW1** through **Figure GW4** present the groundwater results that exceeded the PALs. Similar to the evaluation of soil data, the PALs for relevant PAHs have been adjusted upward based on revised toxicity data published in the USEPA RSL Resident Tapwater Table. PAL exceedances in the Phase II Investigation groundwater samples collected in the vicinity of the proposed development project consisted of seven VOCs (cis-1,2-dichloroethene and 1,2-dichlorethene (total), carbon tetrachloride, chloroform, tetrachloroethene, trichloroethene, and vinyl chloride), four SVOCs (1,1-biphenyl, 1,4-dioxane, benz[a]anthracene, and naphthalene), TPH-DRO, TPH-GRO, and seven dissolved metals (arsenic, cobalt, iron, manganese, thallium, vanadium, and hexavalent chromium).

Each groundwater collection point was also inspected for evidence of NAPL using an oil-water interface probe prior to sampling. None of the groundwater sample collection points relevant for the proposed development project showed evidence of NAPL during these checks. If groundwater is encountered during development, it will be managed to prevent exposures in accordance with the dewatering requirements outlined in Section 5.2.

Elevated vapor intrusion (VI) risks/hazards primarily attributed to groundwater concentrations of tetrachloroethene and trichloroethene were identified at several locations during the Phase II Investigation. A cumulative risk assessment of each individual sample location indicated that cumulative VI non-cancer hazards exceeded the allowable limit at locations A10-025-PZ, A10-027-PZ, and A10-034-PZ, while cumulative cancer risks exceeded the allowable limit at locations A10-025-PZ and A10-027-PZ. Based on these risk-based exceedances, the Phase II Investigation Report for Parcel A10 recommended additional delineation to further define the nature and extent of the groundwater impacts. The recommended supplemental investigation work has since been completed as described below in Section 3.2.3.

3.2.3 CVOC Groundwater Supplemental Investigation Findings

Following completion of the Parcel A10 Phase II Investigation, elevated groundwater concentrations of several chlorinated volatile organic compounds (CVOCs), in particular tetrachloroethene and trichloroethene, were identified in groundwater below the Site. A Work Plan for Characterization of CVOCs in Groundwater dated September 5, 2019 was submitted and later approved by the agencies on September 9, 2019.

A total of 21 new temporary piezometers were installed in September 2019 to provide supplemental sampling points to determine the nature and extent of groundwater containing

elevated concentrations of CVOCs throughout Parcel A10. Seven existing piezometers were also included as additional sampling points, for a total of 28 proposed sample collection locations. The piezometers were installed as co-located pairs to investigate both the shallow groundwater aquifer as well as an overlying perched zone. Five piezometers in the perched zone did not yield adequate water to collect a sample. Groundwater samples were successfully collected in October 2019 from a total of 23 piezometers and analyzed for VOCs. **Table 5** provides a summary of the detected VOCs in the groundwater samples submitted for laboratory analysis during the supplemental investigation, and **Figure 7** presents the groundwater results that exceeded the PALs.

Figure 7 also highlights (in red) the locations that were identified with exceedances of the cumulative VI cancer or non-cancer criteria. **Table 6** provides the cumulative VI evaluation, including the original groundwater data collected during the Phase II Investigation as well as the more recent data collected during the supplemental CVOC investigation. During the supplemental CVOC investigation, the three shallow piezometers which had previously been identified with VI exceedances (A10-025(S)-PZ, A10-027(S)-PZ, and A10-034(S)-PZ) were confirmed, and two additional shallow piezometers (A10-035(S)-PZ and A10-039(S)-PZ) also exhibited VI exceedances. The five shallow groundwater locations with exceedances of the VI criteria are all located along the eastern side of Parcel A10. Tetrachloroethene and trichloroethene were confirmed as the most significant CVOCs in groundwater at the Site.

The complete findings of the supplemental CVOC investigation are provided in the Supplemental Investigation Report for CVOC Impacted Groundwater in Parcel A10 dated January 6, 2020. This report has been provided as an electronic attachment to the RADWP. Overall, the potential for unacceptable VI risks/hazards within Sub-Parcel A10-1 will require the installation of a vapor barrier to mitigate the potential for intrusion of contaminant vapors into the logistics center. The details of the proposed vapor barrier are provided in Section 4.2.5.

3.2.4 Soil Gas Investigation Findings

A limited environmental investigation was completed in February 2020, which included the collection of soil gas samples from the subsurface to further evaluate subsurface conditions and assess the potential for contaminant vapors to vertically migrate into the proposed logistics center. The investigation was conducted in accordance with the Proposed A10 Soil Gas Investigation Work Plan (email correspondence) dated February 7, 2020.

Soil gas samples were proposed to be co-located with five existing piezometers that were installed inside the proposed building footprint, and three additional piezometers that yielded the highest concentrations of CVOCs along the eastern property boundary in close proximity to the proposed building. One of the soil gas samples (A10-015-SG) was shifted roughly 150 feet to the north due to active demolition occurring on the Site in the immediate vicinity of the proposed location. The soil gas samples were collected using temporary monitoring probes installed to an approximate depth of 4 to 5 feet bgs, or 1-foot above the perched water table (whichever was shallower). After

conducting leak testing in accordance with the QAPP, soil gas samples were collected over a period of 60 minutes using 1-liter stainless-steel Summa Canisters. One of the proposed soil gas samples was not successfully collected, but a total of seven samples were collected and submitted for VOCs analysis via method TO-15.

The complete findings of the soil gas investigation are provided in the Sub-Parcel A10-1 Soil Gas Investigation Report dated March 7, 2020. This report has been provided as an electronic attachment to the RADWP. While there were several VOCs detected at low concentrations in the samples, none of the detected concentrations exceeded the applicable sub-slab soil gas PALs (or updated sub-slab soil gas criteria published by MDE in May 2019) in any of the samples. Further, the screening levels specified for sub-slab soil gas are believed to be conservative since the samples in this investigation were collected from the subsurface closer to the groundwater source. Based on the sampling results, there does not appear to be a significant risk to future workers via the VI to indoor air risk pathway. The proposed vapor barrier detailed within this RADWP appears to be adequate to mitigate any residual potential VI risk to future occupants.

3.2.5 Locations of Potential Concern

As noted above, concerns related to VI risks/hazards with respect to the proposed future use of the Site will be mitigated through installation of a vapor barrier. Other locations of potential concern which are subject to special requirements could include elevated lead, PCBs, or TPH in soil. The soil data for Sub-Parcel A10-1 were evaluated to determine the presence of any such locations of potential concern including: lead concentrations above 10,000 mg/kg, PCB concentrations above 50 mg/kg, or TPH concentrations above 6,200 mg/kg. There were no soil concentrations of lead, PCBs, or TPH above the specified criteria.

Locations with physical evidence of NAPL are also considered to be locations of potential concern with respect to proposed development. None of the groundwater sample collection points included in the preceding groundwater investigations exhibited evidence of NAPL. However, during field screening of the soil cores for the original Phase II investigation, one location (A10-006-SB) had observations of physical evidence of NAPL. A screening piezometer was subsequently installed to evaluate potential mobility. Following a detection of NAPL in the initial screening piezometer, a delineation network of additional temporary NAPL screening piezometers was installed to define the impacts. Both dense and light petroleum products (DNAPL and LNAPL) were identified in the delineation network. The methods and findings of the delineation investigation are provided in the Parcel A10 NAPL Delineation Completion Report (dated January 6, 2020), which has been included as an electronic attachment to this RADWP. The combined soil boring observation logs and piezometer construction logs from the delineation network are included in the NAPL Delineation Completion Report. The locations of the NAPL screening piezometers are also shown on **Figure 7**.

Upon MDE request, samples of NAPL were collected from delineation piezometers A10-006C-PZ (black DNAPL), A10-00E-PZ (black LNAPL), and A10-006K-PZ (pale gray DNAPL) for characterization on January 3, 2020. The samples were submitted to be analyzed for VOCs, SVOCs, and PCBs, as well as Whole Oil (ASTM D3328) and Full Scan (ASTM D5739) analytical testing to establish the "fingerprint" of the NAPL and to determine the chemical constituents that are present. The results of the sampling were provided to the agencies in the NAPL Characterization Results Transmittal Letter (dated January 23, 2020), which has been included as an electronic attachment to this RADWP.

Concurrently, a Test Pitting Work Plan (dated January 17, 2020) was prepared to further characterize the extent of the NAPL and to remove impacted material. The Test Pitting Work Plan has been included as an electronic attachment to this RADWP. The plan also included the gauging, surveying, groundwater sampling, and subsequent abandonment of the NAPL screening piezometers surrounding A10-006-PZ. The Test Pitting Work Plan was subsequently approved on January 21, 2020. While implementing the Test Pitting Work Plan in late January 2020, a UST was discovered within the perimeter of the NAPL delineation area. The UST was removed on February 3, 2020 with oversight provided by an MDE Oil Control Program (OCP) inspector. The MDE visited the site on February 20, 2020 and gave approval to backfill the excavations. All standing water was removed from the excavations with a vacuum truck prior to placing fill. An open graded aggregate (#57 stone) was placed in 12-inch lifts up to the maximum height of groundwater and tamped into place with the excavator bucket. Marker fabric was placed above the aggregate layer. The remainder of the excavation was backfilled with sandy gravel fill material. Documentation of the UST removal, along with the additional field tasks outlined in the Test Pitting Work Plan, was documented in the Test Pitting Completion Report (dated July 14, 2020). The Test Pitting Completion Report has been included as an electronic attachment to this RADWP. Given that the NAPL impacts were addressed by excavation and UST removal, the future risk of NAPL migration from this area appears to be minimal. Overall, the NAPL identified in the test pitting area does not appear to be a significant source of CVOC groundwater contamination within the project area.

3.3 HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT

3.3.1 Analysis Process

A human health Screening Level Risk Assessment (SLRA) has been completed based on the analytical data obtained from the characterization of surface and subsurface soils. This includes the soil data obtained during the preceding Phase II Investigation (discussed in Section 3.2.1). It should be noted that processed slag aggregate sourced from the Tradepoint Atlantic property was recently placed on the Site and will be used as the primary fill material and pavement subbase for this project; therefore, regardless of the findings of the Composite Worker baseline assessment, Sub-Parcel A10-1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the slag

aggregate. The SLRA was conducted to further evaluate the existing soil conditions prior to the placement of the processed slag aggregate in support of the design of any additional response measures.

The SLRA included the following evaluation process:

Identification of Exposure Units (EUs): The Composite Worker SLRA was evaluated using a single site-wide EU (designated as EU1) with an area of 29.4 acres covering the entirety of Sub-Parcel A10-1. The Construction Worker SLRA was evaluated using a slightly expanded EU (designated as EU1-EXP), covering 30.1 acres in total which includes the additional construction worker areas incorporated within the LOD to address the facility entrance and utility connections outside of the sub-parcel.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, compounds that were present at concentrations at or above the USEPA RSLs set at a target cancer risk of 1E-6 or target non-cancer Hazard Quotient (HQ) of 0.1 were identified as COPCs to be included in the SLRA. A COPC screening analysis is provided in **Table 7** to identify all compounds above the relevant screening levels.

Exposure Point Concentrations (EPCs): The COPC soil datasets for the site-wide EU were divided into surface (0 to 1 foot), subsurface (>1 foot), and pooled depths for estimation of potential EPCs. Thus, there are three soil datasets associated with the EU. A statistical analysis was performed for each COPC dataset using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth was calculated for comparison to the Adult Lead Model (ALM)-based values, and any individual results exceeding 10,000 mg/kg would be delineated for possible excavation and removal (if applicable). For PCBs, all results equaling or exceeding 50 mg/kg would be delineated for excavation and removal (if applicable).

Risk Ratios: The surface soil EPCs, subsurface soil EPCs, and pooled soil EPCs were compared to the USEPA RSLs for the Composite Worker and to site-specific Soil Screening Levels (SSLs) for the Construction Worker based on equations derived in the USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (OSWER 9355.4-24, December 2002). Risk ratios were calculated with a cancer risk of 1E-6 and a non-cancer HQ of 1. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer hazard.

For the Construction Worker, site-specific risk-based evaluations were completed for a range of potential exposure frequencies to determine the maximum exposure frequency for the site-wide EU that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or Hazard Index (HI) of 1 for the individual target organs. This analysis indicated that the allowable exposure frequency before additional worker protections or more detailed job safety evaluations might be needed is 55 days.

There is no potential for direct human exposure to groundwater for a Composite Worker since groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). In the event that construction/excavation leads to a potential Construction Worker exposure to groundwater during development, health and safety plans and management procedures shall be followed to limit exposure risk.

Assessment of Lead: For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled soils for the site-wide EU were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU were below the applicable RSL, the EU was identified as requiring no further action for lead. If a mean concentration exceeded the RSL, the mean values were compared to calculated ALM values (ALM Version dated 6/21/2009 updated with the 5/17/2017 OLEM Directive) with inputs of 1.8 for the geometric standard deviation and a blood baseline lead level of 0.6 ug/dL. The ALM calculation generates a soil lead concentration of 2,518 mg/kg, which is the most conservative (i.e., lowest) concentration which would yield a probability of 5% of a blood lead concentration of 10 ug/dL. If the arithmetic mean concentrations for the EU were below 2,518 mg/kg, the EU was identified as requiring no further action for lead. The lead averages and ALM screening levels are presented for surface, subsurface, and pooled soils in **Table 8**. Any individual results equaling or exceeding 10,000 mg/kg of lead would warrant additional delineation for possible excavation (if applicable).

Assessment of TPH-DRO/GRO: EPCs were not calculated for TPH-DRO/GRO. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). No soil samples exceeded the PAL for TPH-DRO or TPH-GRO. Potential evidence of NAPL was observed at one soil boring location (A10-006-SB). This finding and subsequent response actions at this location are further discussed in Section 3.2.5. Contingency measures to address the potential presence of NAPL which could be encountered during construction are addressed in subsequent sections of this RADWP.

Risk Characterization Approach: Generally, if the baseline risk ratio for each non-carcinogenic COPC or cumulative target organ does not exceed 1 (with the exception of lead), and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of 1E-5, then a no further action determination will be recommended. If the baseline estimate of cumulative cancer risk exceeds 1E-5 but is less than or equal to 1E-4, then capping of the EU will be considered to be an acceptable remedy

for the Composite Worker. For the Construction Worker, cumulative cancer risks exceeding 1E-5, but less than or equal to 1E-4, will be mitigated via site-specific health and safety requirements. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of exceedance and other factors such as bioavailability of the COPC.

Due to the grading activities including cut and fill which will be implemented during development at the Site, the SLRA was evaluated to determine baseline Composite and Construction Worker exposures to surface, subsurface, and pooled data. It should be noted that processed slag aggregate sourced from the Tradepoint Atlantic property was recently placed on the Site and will be used as the primary fill material and pavement subbase for this project; therefore, regardless of the findings of the Composite Worker baseline assessment, Sub-Parcel A10-1 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the slag aggregate material. The goal of the SLRA is therefore to determine whether additional response actions beyond capping may be needed due to baseline conditions at the Site.

The USEPA's acceptable risk range is between 1E-6 and 1E-4. If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of 1E-4, further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of any non-carcinogen HI exceedances and bioavailability of the COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for a remedy. For lead, if the ALM results indicate that the mean concentrations would present a 5% to 10% probability of a blood concentration of 10 ug/dL for the EU, then capping of the EU would be an acceptable presumptive remedy. The mean soil lead concentrations corresponding to ALM probabilities of 5% and 10% are 2,518 mg/kg, and 3,216 mg/kg, respectively. If the ALM indicates that the mean concentrations would present a >10% probability of a blood concentration of 10 ug/dL for the EU, further analysis of site conditions including toxicity reduction will be completed such that the probability would be reduced to less than 10% after toxicity reduction, but before capping.

3.3.2 Sub-Parcel A10-1 SLRA Results and Risk Characterization

Soil data were divided into three datasets (surface, subsurface, and pooled) for Sub-Parcel A10-1 to evaluate potential exposure scenarios. Due to the grading activities including cut and fill which will be implemented during development at the Site, each of these potential exposure scenarios is relevant for both the Composite and Construction Worker.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled surface/subsurface) in the site-wide EU. ProUCL output tables (with computed UCLs) derived

from the data for each COPC in soils are provided as electronic attachments, with computations presented and EPCs calculated for COPCs within each of the three datasets. The ProUCL input tables are also included as electronic attachments. The results were evaluated to identify any samples that may require additional assessment or special management based on the risk characterization approach. The calculated EPCs for the surface, subsurface, and pooled exposure scenarios are provided in **Table 9**. These EPCs were used for both the Composite Worker and Construction Worker risk assessments.

As indicated above, the EPCs for lead are the average (i.e., arithmetic mean) values for each dataset. A lead evaluation spreadsheet, providing the computations to determine lead averages for each dataset, is also included as an electronic attachment. The average lead concentrations are presented for each dataset in **Table 8**, which indicates that neither surface, subsurface, nor pooled soils exceeded an average lead value of 800 mg/kg. The screening criterion for lead was set at an arithmetic mean of 800 mg/kg based on the RSL, with a secondary limit of 2,518 mg/kg based on the May 2017 updated ALM developed by the USEPA (corresponding to a 5% probability of a blood lead level of 10 ug/dL). There were no locations with detections of lead above 10,000 mg/kg.

None of the detections of PCBs included in the project-specific SLRA evaluation exceeded the mandatory excavation criterion of 50 mg/kg.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker baseline scenario prior to the placement of slag aggregate at the Site are shown in **Table 10** (surface), **Table 11** (subsurface), and **Table 12** (pooled soils). The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Composite Worker	EU1 (29.4 acres)	Surface Soil	Dermal = 2	5E-6
		Subsurface Soil	Dermal = 2	6E-6
		Surface & Subsurface Soil	Dermal = 2	5E-6

Based on the risk ratios for Sub-Parcel A10-1, environmental capping (100% of the Site) is an acceptable remedy to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios. None of the carcinogenic risk estimates for the Composite Worker were greater than 1E-4. Each scenario exceeded the non-cancer HI value of 1 for the dermal system target organ (HI=2), and the proposed capping remedy will provide adequate protection. Capping and institutional controls (to maintain the integrity of the cap) are suitable measures for the protection of the future Composite Worker for both cancer risks and non-cancer hazards. The

capping remedy will additionally be protective of slag aggregate that has been placed on the Site and will be used as the primary fill material and pavement subbase.

Construction Worker Assessment:

According to the work schedule provided by Tradepoint Atlantic, intrusive activities which could result in potential Construction Worker exposures are expected to be limited to three primary utility installation tasks:

- Domestic Water/Fire Loop: 4 weeks (20 exposure days) estimated
- Sanitary: 2 weeks (10 exposure days) estimated
- Stormwater: 6 weeks (30 exposure days) estimated

Although the anticipated work period may be subject to change (see schedule in Section 7.0), the duration of these activities is not expected to increase. Construction Worker risks were evaluated for several exposure scenarios to determine the maximum exposure frequency for the side-wide EU1-EXP (which includes the additional construction worker areas as noted above) that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for any individual target organ. Risk ratios for the estimates of potential EPCs for the Construction Worker scenario using the selected duration (55 work days) are shown in **Table 13** (surface), **Table 14** (subsurface), and **Table 15** (pooled soils). The variables entered for calculation of the site-specific Construction Worker SSLs (EU area, input assumptions, and exposure frequency) are indicated as notes on the tables. The spreadsheet used for computation of the site-specific Construction Worker SSLs is included in **Appendix B**. The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker	EU1-EXP (30.1 acres) (55 exposure days)	Surface Soil	none	2E-7
		Subsurface Soil	none	2E-7
		Surface & Subsurface Soil	none	2E-7

Using the selected exposure duration of 55 days, the carcinogenic risks were all less than 1E-5, and none of the non-carcinogens caused a cumulative HI to exceed 1 for any target organ system. These findings are below the acceptable limits for no further action established by the agencies. This evaluation indicates that additional site-specific health and safety requirements (beyond standard Level D protection) would be required only if the allowable exposure duration of 55 days were to be exceeded for an individual worker.

While no individual activity at the Site is anticipated to exceed 55 exposure days, completion of multiple activities by the same construction team, or construction schedule changes or delays could

potentially cause the allowable exposure duration to be exceeded. In such an event, Construction Worker risks would be required to be mitigated, warranting additional site-specific health and safety requirements to be protective of workers. Upgraded Personal Protective Equipment (PPE) beyond standard Level D protection will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE Standard Operational Procedure (SOP) provided as **Appendix C**.

Institutional controls will be required to be established for the protection of future Construction Workers in the event of any future long-term development which could include intrusive activities. The anticipated institutional controls, including notification requirements, health and safety requirements, and materials management requirements, are specified in Section 5.4.

3.3.3 Evaluation of Comprehensive Environmental Response, Compensation, and Liability Act Criteria

Results from the SLRA indicate that a site-wide remedy of capping with institutional controls will be acceptable to mitigate potential current and future Composite Worker risks resulting from on-site soil conditions. The potential for unacceptable VI risks/hazards resulting from the presence of CVOCs in the groundwater will require the installation of a vapor barrier to mitigate the potential for intrusion of contaminant vapors into the logistics center.

Site-specific health and safety controls will be implemented to mitigate Construction Worker risks within the sub-parcel. This includes using modified Level D PPE. The modified Level D PPE requirements will be implemented throughout the project duration in accordance with the PPE SOP provided as **Appendix C**. Institutional controls will also be required to be established for the protection of future Construction Workers in the event of any future long-term development which could include intrusive activities.

The proposed VCP capping remedy with installation of a sub-slab vapor barrier and institutional controls was evaluated for consistency with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Threshold Criteria and the Balancing Criteria. The Threshold Criteria assess the overall protection of human health and the environment, as well as achievement of media cleanup objectives and control of sources of releases at the Site. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the remedy, as a whole, protects and maintains protection of human health and the environment. This criterion is satisfied when response actions are complete. The purpose of this remedy is to provide a protective barrier between human site users and impacted materials (and sub-slab vapors), and to protect the environment by preventing surface water from contacting potentially impacted materials in place. The capping and institutional control remedy would eliminate risk to current and future industrial workers by preventing exposure to areas of the Site where processed slag aggregate has been placed or where soil concentrations exceed a cancer risk of 1E-5 or a HI of 1. Groundwater does not present a direct human health hazard since there is no groundwater use on the property, but the sub-slab vapor barrier will prevent the intrusion of contaminant vapors from the groundwater into the logistics center. Implementation of the proposed use restrictions will address the residual risk and will also protect future workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil/groundwater COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the remedy meets the cleanup objective, which is risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objective is to protect current/future Composite Workers and Construction Workers from potential exposures to COPCs present in soil or groundwater at levels that may result in risks of adverse health effects. The proposed capping of the site and institutional controls will prevent contact with any soil or groundwater exceeding the risk-based PAL screening levels. The sub-slab vapor barrier will prevent the intrusion of contaminant vapors into the logistics center. Given the controlled access and use restrictions, the proposed remedy will attain soil and groundwater objectives. The activity use restrictions will eliminate current and future unacceptable exposures to both soil and groundwater.

Control the Source of Releases: In its RCRA Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases. Sampling results did not indicate localized, discernible source areas associated with the soil conditions observed at the Site, with the possible exception of NAPL at one location (A10-006-SB) which has since been addressed via the removal of a UST (see Section 3.2.5). The control measures included in the proposed remedy, such as Materials Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning associated with intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the remedy in maintaining protection of human health and the environment after the response objectives have been met. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by slag aggregate, treatment residuals, and/or untreated wastes. The proposed capping and vapor control measures have been proven to be effective in the long-term at similar sites with similar conditions. The capping remedy will permanently contain the slag aggregate and other potentially contaminated media in place. In order for the cap to effectively act as a barrier, regular inspections will be required to determine if erosion or cracks have formed that could expose workers to contaminated materials.

Institutional controls will be implemented to protect future Composite and Construction Workers against inadvertent contact with potentially impacted media. The anticipated institutional controls are specified in Section 5.4. The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. The proposed remedy will maintain protection of human health and the environment over time by controlling exposures to the hazardous constituents potentially remaining in slag aggregate or existing on-site media. The long-term effectiveness is high, as use restrictions are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, land and groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. The removal of the UST and associated NAPL reduced the volume and mobility of waste at the Site. The capping remedy will prevent the spread of contaminants in wind-blown dust or stormwater and will prevent infiltration through the unsaturated zone from carrying contaminants to the groundwater. Thus, the mobility of contaminants will be reduced by the capping remedy.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed remedy protects human health and the environment during the construction and implementation until response objectives have been met. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The risks to the Construction Worker during remedy implementation are mitigated by executing the modified Level D PPE requirements outlined in **Appendix C**. The short-term risk to site workers following these upgraded health and safety measures during implementation of the remedy will be low, leading to a high level of short-term effectiveness for protection of future site users and the environment. Short-term effectiveness in protecting on-site workers and the

environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security and fences will be used to maintain controlled access during construction.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. The proposed capping remedy for the Composite Worker area and the installation of the proposed vapor barrier below the logistics center will use readily available, typically acceptable, and proven technologies.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual Operating and Maintenance (O&M) costs, and the net present value (NPV) of this remedy relative to alternatives. The capping remedy remedial costs would be incurred as part of the proposed site development, regardless of the findings of the SLRA. The estimated costs for implementation of the vapor barrier are relatively low in both the short term and long term.

State Support / Agency Acceptance: MDE has been involved throughout the Site investigation process. The proposed use restrictions included in the proposed remedy are generally recognized as commonly employed measures for long-term stewardship. Ultimately State/MDE support will be evaluated based on comments received during the public comment period.

A capping remedy with vapor barrier installation and institutional controls would satisfy the CERCLA Threshold Criteria and the Balancing Criteria and would do so in a manner that ensures reliable implementation and effectiveness.

4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing to construct a logistics center totaling approximately 399,600 square feet on Sub-Parcel A10-1. The proposed development will include permanent improvements on approximately 29.4 acres of land intended for occupancy within Parcel A10. The proposed future use of Sub-Parcel A10-1 is Tier 3 – Industrial. The remainder of Parcel A10 will be addressed in separate development plans in accordance with the requirements of the ACO that will include RADWPs, if necessary. Outside of the main development area, temporary construction zones with a total area of less than 1 acre will be utilized to install the facility entrance and subgrade utility connections for the project. The temporary utility work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction work is covered by this RADWP. The Site (29.4 acres encompassing Sub-Parcel A10-1; excluding the temporary construction zones) will be fully capped by surface engineering controls.

Certain compounds are present in the soils located near the surface and in the subsurface at concentrations in excess of the PALs. Therefore, soil is considered a potential media of concern. Potential risks to future adult workers associated with impacts to soil and groundwater exceeding the PALs will be addressed through a remedy consisting of surface engineering controls (capping of the entire area with the installation of a vapor barrier) and institutional controls (deed restrictions). The development plan provides for a containment remedy and institutional controls that will mitigate future adult workers from contacting impacted soil at the Site. In addition, Tradepoint Atlantic has placed processed slag aggregate which will be used as the primary fill material and pavement subbase at the Site. The placement of materials other than approved clean fill, including slag aggregate, requires the installation of surface engineering controls regardless of the existing soil conditions. The potential for unacceptable VI risks/hazards resulting from the presence of CVOCs in the groundwater will require the installation of a vapor barrier to mitigate the potential for intrusion of contaminant vapors into the logistics center.

Future Construction Workers may contact impacted surface and/or subsurface soil during earth movement activities associated with construction activities, including within the temporary construction zones outside of the primary development area. The findings of the Construction Worker SLRA indicated that the screening level estimates of Construction Worker cancer risk for the site-specific 55-day exposure frequency was less than 1E-5 (the acceptable level for no further action) for the site-wide EU. Furthermore, no HI values above 1 were identified for any target organ using this exposure frequency.

Although the planned intrusive construction tasks are not anticipated to exceed the allowable exposure duration of 55 days, additional site-specific health and safety requirements will be implemented as a conservatism to be protective of workers. Upgraded PPE beyond standard Level D protection will be used in conjunction with the property-wide Health and Safety Plan (HASP)

for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

A restriction prohibiting the use of groundwater for any purpose at the Site will be included as an institutional control in the NFA and COC issued by the MDE, and a deed restriction prohibiting the use of groundwater will be filed. The groundwater use restriction will protect future Composite Workers from potential direct exposures. Proper water management is required to prevent unacceptable discharges or risks to Construction Workers during development. Work practices and health and safety plans governing groundwater encountered during excavation activities will provide protection for Construction Workers involved with development at the Site.

The development plan for the Site is shown on **Figure 2** and **Figure 3**, and the detailed development drawings (provided by Bohler Engineering and Hofmann Associates, Inc.) are included as **Appendix D**. The various types of surface engineering controls proposed to be installed on the Site (concrete, asphalt, and landscaping) are summarized on **Figure 8**. The process of constructing the proposed logistics center will involve the tasks listed below. As-built and regulatory documentation for the outlined tasks and procedures will be provided in a Sub-Parcel A10-1 Development Completion Report.

4.1 RESPONSE PHASE – PIEZOMETER ABANDONMENTS

As shown on **Figure 9**, all temporary groundwater sample collection points (piezometers) and NAPL screening piezometers within Parcel A10 have previously been abandoned. The permanent groundwater monitoring well SG06-PDM001 will not be abandoned because it is located outside of the Sub-Parcel A10-1 LOD.

Records of all piezometer abandonments (including abandonment forms) will be included in the Development Completion Report. It is understood that the agencies will require the installation of additional permanent wells in the future following site development. A Work Plan will be submitted in the future for installation of monitoring wells at the Site. The Work Plan with the proposed locations will need to be approved by the agencies prior to implementation.

4.2 DEVELOPMENT PHASE

4.2.1 Erosion and Sediment Control Installation

Installation of erosion and sediment controls will be completed in accordance with the requirements of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control prior to any construction at the Site. Any soils which are disturbed during the installation of erosion and sediment controls will be replaced on-site below the cap.

4.2.2 Grading and Site Preparation

As indicated on the development plans in **Appendix D**, grading activities including both cut and fill will occur within the Sub-Parcel A10-1 boundary. Any material that is not suitable for compaction will be excavated and replaced with subbase material, although it is not anticipated that poor soils will be encountered. Borrow materials will be obtained from MDE-approved sources and will be documented prior to transport to the Site. Processed slag aggregate sourced from the Tradepoint Atlantic property or other materials approved by the MDE for industrial use will be used as fill, but the placement of materials other than approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping). Fill sources shall be free of organic material, frozen material, or other deleterious material. In the case that there is excess material (not anticipated), the spoils will be stockpiled at a suitable location in accordance with the Materials Management Plan (MMP) for the Sparrows Point Facility (Papadopulos & Associates, et al., June 17, 2015). This work will be coordinated with MDE accordingly. No excess material will leave the 3,100-acre property without prior approval from MDE.

4.2.3 Installation of Structures and Underground Utilities

The logistics center building, parking lots, and other infrastructure associated with the development of Sub-Parcel A10-1 will be installed as shown on the development plans in **Appendix D**. Soils relocated or removed during construction may be replaced on-site below the cap, but soil removed from utility trenches cannot be used as fill within the utility trenches unless such materials are approved for this use by the VCP. Additional protocols for the installation of utilities at the Site are provided in Section 5.1.2. Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site HCWWTP.

4.2.4 Floor Slabs and Paving

Much of the Site will be covered with floor slabs or paving as indicated in the development plans provided in **Appendix D** and summarized on **Figure 8**. The paved areas will receive a layer of subbase material which will consist of compacted aggregate base, which may include processed slag aggregate sourced from the Tradepoint Atlantic property. The placement of processed slag aggregate or materials other than MDE-approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping).

The required minimum thicknesses of all site-wide pavement sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix E**. According to the development plans, all paved areas at the Site will be installed with a minimum of 4 inches of compacted aggregate base and a minimum of 4 inches of overlying pavement surface (asphalt or concrete), which meet these required minimum thicknesses.

4.2.5 Sub-Slab Vapor Barrier

As noted earlier, a sub-slab vapor barrier will be installed below the concrete floor slab of the logistics center to prevent the intrusion of VOC vapors to indoor air. The installation of the vapor barrier will address the potential for unacceptable VI risks/hazards resulting from the presence of CVOCs in the groundwater.

The vapor barrier will consist of a Drago® Wrap vapor barrier membrane that has been proven to be effective for similar applications. The barrier will be chemically resistant to the anticipated CVOC vapor concentrations, and will be sealed at all penetrations, seams, and edges. The manufacturer's information and seaming details for the selected Drago® Wrap vapor barrier are presented in **Appendix F**. Installation methods for the vapor barrier, including methods for ensuring the seams and any penetrations are sealed properly are included in **Appendix F** (see "Installation Instructions"). Detailed installation specifications have also been developed and are included in **Appendix F**. The manufacturer's recommended methods for sealing any seams or surface penetrations generally include overlapping pieces of the Drago® Wrap and then sealing with Drago® Tape or Drago® Sealant.

The MDE must be notified prior to the installation of the Drago® Wrap vapor barrier on-site. Sufficient time must be provided to allow for an MDE site visit and observation of the installation. The installation of the Drago® Wrap vapor barrier will be performed by a construction crew that will be trained for the installation by a certified technician or engineer from Stego® Industries (the manufacturer). The certified technician or engineer will review representative portions of the Drago® Wrap vapor barrier prior to concrete placement, and daily oversight during installation will be provided by the Environmental Professional (EP) providing oversight on the project. Following installation of the vapor barrier, and prior to concrete placement, a smoke test will be performed to confirm that the barrier is properly sealed at all penetrations, seams, and edges. The MDE must be notified prior to conducting the smoke test, with sufficient time to allow for the MDE to be present on-site during the smoke test. The EP will also provide oversight during the smoke test to document the results.

Alternate vapor barrier materials may be used in place of the Drago® Wrap if approved in advance by the EP, MDE, and USEPA, and if documentation is provided to demonstrate that the proposed alternative barrier material is equal to or better than the specified material with respect to chemical compatibility and its ability to prevent cross-migration of CVOC vapors.

A sampling program has been developed to ensure sub-slab soil gas and indoor air are monitored following the installation of the vapor barrier (see Section 5.5). The approximate locations of the proposed sub-slab soil gas monitoring points and co-located indoor air monitoring points are shown on **Figure 10**. Minor adjustments to the final locations of the monitoring points may be necessary following construction based on the final interior layout of the logistics center.

For the installation of each sub-slab monitoring point, a 6-inch diameter pilot-hole will be drilled through the concrete floor. The vapor barrier (below the concrete slab) will be carefully cut and peeled back to gain access to the subsurface. A hammer drill or hand auger will be used to create a shallow borehole that extends through the subgrade to a depth of 8 to 12 inches below the bottom of the floor slab. A 6-inch soil gas implant, constructed of double woven stainless-steel wire screen, will be attached to an appropriate length of polyethylene tubing and lowered to the bottom of the borehole. Once the implant and tubing are installed, the tubing will be capped with a three-way valve, and clean sand will be added around the implant to create a permeable layer that extends at least 2 inches above the implant. Bentonite will be added and hydrated to create a seal above the sand pack that extends to the vapor barrier, which will then be folded back into place prior to adding additional hydrated bentonite. Additional bentonite will be added until it is within the pilot-hole at least 2 inches above the vapor barrier. Concrete will be used to seal the hole to the surface and secure the surface completion.

4.2.6 Landscaping

Much of the Site will be covered with landscaping caps as indicated in the development plans provided in **Appendix D** and summarized on **Figure 8**. The required minimum thicknesses of all site-wide landscaping sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix E**. According to the development plans, all landscaped areas at the Site will be installed with a minimum of 6 inches of clean topsoil overlying 18 inches of clean fill, with an underlying geotextile marker fabric between the clean fill and the existing underlying material. The proposed landscape sections for the Site meet the minimum capping requirements.

4.2.7 Stormwater Management

The proposed stormwater utility layout for the Site is provided on the development plan drawings in **Appendix D**. New stormwater infrastructure will be installed throughout the Site, and will connect to existing subgrade stormwater utilities.

Tradepoint Atlantic is working with the MDE Industrial & General Permits Division to renew the property-wide NPDES permit. The stormwater management systems for each parcel are reviewed and approved by Baltimore County for each individual development project.

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1 DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with the development of Sub-Parcel A10-1. In particular, this plan highlights the minimum standards for construction practices and managing potentially contaminated materials to reduce potential risks to workers and the environment.

Several exceedances of the PALs were identified in soil samples across the Site. The PALs are set based on USEPA's RSLs for industrial soils, or other direct guidance from the MDE. Because PAL exceedances can present potential risks to human health and the environment at certain concentrations, this plan presents material management and other protocols to be followed during the work to adequately mitigate such potential risks for material remaining on-site during the development phase. There were no locations within the proposed development boundary with soil exceedances of the special management criteria for PCBs (50 mg/kg), lead (10,000 mg/kg) or TPH-DRO/GRO (6,200 mg/kg). NAPL was identified in the soil core at A10-006-SB as part of the A10 Phase II Investigation, which was later delineated through piezometer installation. The soil impacts were subsequently addressed by excavation and removal of a previously unknown UST. The future risk of NAPL migration from this area appears to be minimal. No additional action is proposed in this area, but soil screening will be especially important during any excavation of existing soil in this area.

Following completion of the SLRA, the screening level estimates of Construction Worker cancer risk for the site-specific 55-day exposure frequency were less than 1E-5 (the acceptable level for no further action) for the site-wide EU. Furthermore, none of the non-cancer hazards were elevated above the HI of 1 for any exposure scenario when the schedule for intrusive construction activities was limited to this exposure duration. Although the planned intrusive construction tasks are not anticipated to exceed the allowable exposure duration of 55 days, additional site-specific health and safety requirements will be implemented as a conservatism to be protective of workers. Upgraded PPE beyond standard Level D protection will be used in conjunction with the HASP for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

Based on the characterization of surface and subsurface soils and the associated SLRA findings, surface engineering controls are an acceptable remedy to be protective of future adult Composite Workers who otherwise could potentially contact surface soil (or relocated subsurface soil) at the Site. In addition, Tradepoint Atlantic has placed processed slag aggregate which will be used as

the primary fill material and pavement subbase at the Site. The placement of materials other than approved clean fill, including slag aggregate, requires the installation of surface engineering controls (i.e., capping) regardless of the existing soil conditions. The proposed capping sections will meet the required minimum thicknesses for surface engineering controls, which are provided in **Appendix E**. The potential for unacceptable VI risks/hazards resulting from the presence of CVOCs in the groundwater will require the installation of a vapor barrier to mitigate the potential for intrusion of contaminant vapors into the logistics center.

5.1.1 Erosion/Sediment Control

Erosion and sediment controls will be installed prior to commencing work in accordance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The erosion and sediment controls will be approved by the MDE. In addition, the following measures will be taken to prevent contaminated soil from exiting the Site:

- Stabilized construction entrance will be placed at site entrance.
- A dry street sweeper will be used as necessary on adjacent roads, and the swept dust will be collected and properly managed.
- Accumulated sediment removed from silt fence, and sediment traps if applicable, shall be periodically removed and returned to the Site.

5.1.2 Soil Excavation and Utility Trenching

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring excavations and utility trenching in potentially contaminated material. This meeting shall include the construction manager and the EP providing oversight on the project. During the meeting, the construction manager and the EP shall review the proposed excavation/trenching locations and any associated utility inverts. The construction manager will be responsible for conveying all relevant information regarding excavation/grading and/or utility work to the workers who will be involved with these activities. The Utility Excavation NAPL Contingency Plan (discussed below) must also be reviewed during the pre-excavation meeting. The HASP and PPE SOP for the project shall also be reviewed and discussed.

There was a single soil boring with potential evidence of NAPL identified during the previous Phase II Investigation (A10-006-SB). The NAPL source (previously unknown UST) was subsequently addressed via a remedial excavation. No additional action is proposed, but soil screening will be especially important during any excavation of existing soil in this area.

The EP will provide oversight of soil excavation/trenching activities as described in Section 5.6. Soil excavation/trenching will occur during various phases of construction. In general, and based on the existing sampling information, all excavated materials are expected to be suitable for replacement on the Site. However, the EP will monitor the soil excavation activities for signs of

significantly contaminated material which may not be suitable for reuse (as described below). The EP will also be responsible for monitoring organic vapor concentrations in the worker breathing zone within utility trenches and excavations to determine whether any increased level of health and safety protection is required.

To the extent practical, all excavation activities should be conducted in a manner to minimize double or extra handling of materials. Any stockpiles shall be kept within the Site footprint, and in a location that is not subjected to concentrated stormwater runoff. Stockpiles shall be managed as necessary to prevent the erosion and off-site migration of stockpiled materials, and in accordance with the applicable provisions of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Soil designated for replacement on-site which does not otherwise exhibit evidence of contamination (as determined by the EP) may be managed in large stockpiles (no size restriction) as long as they remain within the erosion and sediment controls.

All utility trenches will be backfilled with bedding and backfill materials approved by the MDE for industrial use. A general utility cross section is provided as **Appendix G**. Additional preventative measures will be required if evidence of petroleum contamination is encountered, to prevent the discharge to, or migration of, petroleum product along a utility conduit. Contingency measures have been developed to ensure that utilities will be constructed in a manner that will prevent the migration of any encountered NAPL, and that excavated material will be properly managed. The Utility Excavation NAPL Contingency Plan (**Appendix H**) provides protocols to be followed if NAPL is encountered during the construction activities. Preventative measures to inhibit the spread of petroleum product will be conducted in accordance with this plan.

The EP will monitor all soil excavation and utility trenching activities for signs of potential contamination. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management.

Excavated material exhibiting evidence of significant contamination shall be placed in stockpiles (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting to minimize potential exposures and erosion when not in use. Materials stockpiled due to evidence of contamination will be sampled in accordance with waste disposal requirements and transported to an appropriate permitted disposal facility. Plans for analysis of segregated soils for any use other than disposal must be submitted to the MDE for approval.

Excavated material that is visibly impacted by NAPL will be segregated and managed in accordance with the requirements specified in the Utility Excavation NAPL Contingency Plan. Excavated material with indications of possible NAPL contamination will also be containerized or

placed in a stockpile (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting until the material can be analyzed for TPH/Oil & Grease and PCBs (total) to characterize the material for appropriate disposal. The MDE will be notified if such materials are encountered during excavation or utility trenching activities.

5.1.3 Soil Sampling and Disposal

Excavated materials that are determined by the EP to warrant sampling and analysis because of elevated PID readings or other indications of potential contamination shall be sampled and analyzed to determine how the materials should be managed. If excavated and stockpiled, such materials should be covered with a polyethylene tarp to minimize potential exposures and erosion. All stockpiled soil may be considered for use as fill at this Site or on other areas of the property depending on the analytical results. A sampling Work Plan including a description of the material, estimated volume, and sampling parameters will be submitted to the MDE for approval. The resulting analytical data will be submitted to the MDE to determine the suitability of the material for reuse. If the MDE determines that the materials are unsuitable for reuse, the materials will be sampled to determine if they are classified as hazardous waste.

Soil material that is determined to be a hazardous waste shall be shipped off-site in accordance with applicable regulations to an appropriate and permitted RCRA disposal facility. Soil material may be taken to an appropriate non-hazardous landfill (including Greys Landfill) for proper disposal if the concentrations of excavated sampled materials indicate that the materials are not hazardous, but still are not suitable for reuse. The quantities of all materials that require disposal, if any, will be recorded and identified in the Development Completion Report.

5.1.4 Fill

Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as the primary fill material for this project. The placement of processed slag aggregate or materials other than approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping). Soil excavated on the sub-parcel has been determined to be suitable for re-use at the Site below the surface engineering controls, unless such materials are determined by the EP/MDE to be unsuitable for use as outlined in Section 5.1.2 and Section 5.1.3.

All over-excavated utility trenches will be backfilled with bedding and backfill approved by the MDE for industrial use. Soil removed from utility trenches cannot be used as fill within the utility trenches unless such materials are approved for this use by the VCP. As with structural fill, processed slag aggregate and other materials approved for industrial use can be used as backfill in utility trenches if the area will be covered by a VCP cap. Any utility backfill which will extend into the cap (i.e., top 2 feet of backfill in landscaped areas) must meet the VCP clean fill requirements, and a geotextile marker fabric will be placed between the VCP clean fill and any underlying material. Materials placed in areas outside of the Site boundary (i.e., within the

temporary construction zones outside of Sub-Parcel A10-1) must meet the VCP clean fill requirements, or be otherwise approved by the MDE prior to placement. A general utility detail drawing is provided as **Appendix G**. Material imported to the Site will be screened according to MDE guidance for suitability.

5.1.5 Dust Control

General construction operations, including soil excavation and transport, and trenching for utilities will be performed at the Site. These activities are anticipated to be performed in areas of soil impacted with COPCs. Best management practices should be undertaken at the Sparrows Point property as a whole to prevent the generation of dust which could impact other areas of the property outside of the immediate work zone. To limit worker exposure to contaminants borne on dust and windblown particulates, dust monitoring will be performed in the immediate work zone and at the upwind and downwind perimeter of the Site, and dust control measures will be implemented if warranted based on the monitoring results. The action level proposed for the purpose of determining the need for dust suppression techniques (e.g. watering and/or misting) during the development activities at the Site will be 3.0 mg/m^3. The lowest of the site-specific dust action levels, OSHA PELs, and ACGIH TLV was selected as the proposed action level.

The EP will be responsible for the dust monitoring program. Air monitoring will be performed using Met One Instruments, Inc. E-Sampler dust monitors or equivalent real-time air monitoring devices. The EP will set-up dust monitoring equipment at the outset of ground intrusive work or other dust-generating activities, and continuous dust monitoring will be performed during this work. In addition to work area monitoring, a dust monitor will be placed at selected perimeter locations that will correspond to the upwind and downwind boundaries based on the prevailing wind direction predicted for that day. The prevailing wind direction will be assessed during the day, and the positions of the perimeter monitors will be adjusted if there is a substantial shift in the prevailing wind direction.

Once all dust-generating activities are complete (which may occur at a later stage of the project once ground intrusive work has been completed or after the Site has been capped), the dust monitoring program may be discontinued. If additional dust-generating activities commence, additional dust monitoring activities will be performed.

If sustained dust concentrations exceed the action level (3.0 mg/m^3) at any of the monitoring locations as a result of conditions occurring at the Site, operations will be stopped temporarily until dust suppression can be implemented. Operations may be resumed once monitoring indicates that dust concentrations are below the action level. The background dust concentration will be utilized to evaluate whether Site activities are the source of the action level exceedance. The background dust concentration will be based on measurements over a minimum of a 1-hour period at the upwind Site boundary. The upwind data will be used to calculate a time weighted average

background dust concentration. As noted above, the locations of the perimeter dust monitors may be adjusted periodically if there is a substantial shift in the prevailing wind direction.

As applicable, air monitoring will be conducted during development implementation activities to assess levels of exposure to Site workers, establish that the work zone designations are valid, and verify that respiratory protection being worn by personnel, if needed, is adequate. Concurrent with the work zone air monitoring, perimeter air monitoring will also be performed at the upwind and downwind Site boundaries to ensure contaminants are not migrating off-site. The concentration measured at the downwind perimeter shall not exceed the action level of 3.0 mg/m^3, unless caused by background dust from upwind of the Site. If exceedances of the action level are identified downwind for more than five minutes, the background dust concentration shall be evaluated to determine whether the action level exceedances are attributable to Site conditions. If on-site activities are the source of the exceedances, dust control measures and additional monitoring will be implemented. The dust suppression measures may include wetting or misting using a hose connected to a water supply or a water truck stationed at the Site.

Dust control measures will be implemented as described above to address dust generated as a result of construction activities conducted at the Site. However, based on the nature of the area and/or ongoing activities surrounding the Site, it is possible that windblown particulates may come from surrounding areas. As discussed above, the dust concentration in the upwind portion of the Site will be considered when monitoring dust levels in the work area. A pre-construction meeting will be held to discuss the potential of windblown particulates from other activities impacting the air monitoring required for this RADWP. Site contact information will be provided to address the possibility of upwind dust impacts. If sustained dust is observed above the action level (3.0 mg/m^3) and it is believed to originate from off-site (i.e., upwind) sources, this will immediately be reported to the MDE-VCP project team, as well as the MDE Air and Radiation Administration (ARA).

5.2 WATER MANAGEMENT

This plan presents the protocols for handling any groundwater or surface water that needs to be removed to facilitate construction of the proposed Sub-Parcel A10-1 development.

5.2.1 Groundwater PAL Exceedances

A total of 12 groundwater samples (as shown on **Figure 6**) were collected during the preceding Phase II Investigation from 11 temporary groundwater sample collection points (piezometers) and one permanent monitoring well within and surrounding the Site. Aqueous PAL exceedances in groundwater in the vicinity of the development LOD included both inorganic and organic compounds. The aqueous PAL exceedances obtained during the Parcel A10 Phase II Investigation are summarized on **Figure GW1** through **Figure GW4**. Additional groundwater samples were also collected from a total of 23 piezometers as part of the CVOC Supplemental Investigation, and the groundwater PAL exceedances among the supplemental VOC data are provided on **Figure 7**.

While the concentrations of PAL exceedances are not deemed to be a significant human health hazard for future Composite Workers since there is no on-site groundwater use which could lead to direct exposures, proper water management is required during construction to prevent unacceptable discharges or risks to Construction Workers.

5.2.2 **Dewatering**

Dewatering may be necessary during the installation of underground utilities and within excavations/trenches. **Figure 11** and **Figure 12** display the groundwater elevations underlying the Site for the perched and shallow aquifer zones, respectively, based on prior investigation data. If dewatering is required, it shall be done in accordance with all local, state, and federal regulations. Water that collects in excavations/trenches due to intrusion of groundwater, stormwater, and/or dust control waters will be transported to the HCWWTP. The water will be treated and discharged in accordance with NPDES Permit No. 90-DP-0064A; I. Special Conditions; A.4; Effluent Limitations and Monitoring Requirements.

The EP will inspect any water that collects in the excavations/trenches. If the water exhibits indications of significant contamination (sheen, odor, discoloration, presence of product), or if the excavation/trench is within a known area of significant groundwater contamination (if groundwater is the source of the intrusive water) or a significant Phase II Investigation target, the water may be sampled and analyzed for some or all of the analyses listed below. The analyses run will be dependent on the suspected source of contamination and local site conditions.

It is notable that the groundwater in the shallow aquifer contains concentrations of VOCs which exceed the threshold levels for acceptable treatment at the HCWWTP (listed below). These data are shown on **Figure 7**. Therefore, any water that collects in excavations/trenches due to infiltration must be contained, pre-treated, and tested prior to discharge. The water will be treated using filter bags to remove suspended solids and carbon vessels to remove VOCs. At a minimum the water shall be analyzed for VOCs after treatment and prior to discharge. A water sample will be collected for every 20,000 gallons of treated water passing through the units. Sampling results will be included in quarterly status reports and the results will ultimately be included in the final Development Completion Report.

The results of the analyses will be reviewed by the HCWWTP operator to determine if any wastewater treatment system adjustments are necessary. If the results of the analyses are above the threshold levels listed below, the water will be further evaluated to confirm acceptable treatment at the HCWWTP, or will be evaluated to design an appropriate pre-treatment option. Alternatively, the water may be disposed of at an appropriate off-site facility. There is no specific threshold for CVOCs versus total VOCs for treatment at the HCWWTP.

Analysis	Threshold Levels
• Total metals by USEPA Method 6020A	1,000 ppm
• PCBs by USEPA Method 8082	>Non-Detect
• SVOCs by USEPA Method 8270C	1 ppm
• VOCs by USEPA Method 8260B	1 ppm
• Oil & Grease by USEPA Method 1664	200 ppm

Following pre-treatment and testing, any water that must be sent to the HCWWTP will be pumped to the stormwater impoundment in Parcel A16 to the north (which discharges to the TMC), or otherwise pumped directly to the TMC. Water in the TMC feeds into the HCWWTP where it is treated prior to release into Bear Creek. Any water discharged directly to the impoundment in Parcel A16 or the TMC will be pumped through a filter bag or equivalent to remove suspended solids prior to discharge. Documentation of the discharge location(s) shall be provided in the Development Completion Report.

If adjustments to the dewatering sampling plan are proposed, these will be submitted to the Agencies for review prior to implementation. Documentation of the water testing described above, as well as the selected disposal option, will be reported to the MDE in the Development Completion Report. Any permits or permit modifications related to dewatering will be provided to the agencies as addenda to this RADWP.

5.3 HEALTH AND SAFETY

A property-wide HASP has been developed and is provided with this RADWP (as an electronic attachment) to present the minimum requirements for worker health and safety protection for all development projects. All contractors working on the Site must prepare their own HASP that provides a level of protection at least as much as that provided by the property-wide HASP. Alternately, on-site contractors may elect to adopt the HASP provided.

General health and safety controls (level D protection) are adequate to mitigate potential risk to Construction Workers for a duration of up to 55 exposure days. While no individual activity at the Site is anticipated to exceed 55 exposure days, completion of multiple activities by the same construction team, or construction schedule changes or delays could potentially cause the allowable exposure duration to be exceeded. Modified Level D PPE will be used for the entire scope of intrusive work covered by this RADWP as an additional protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. Health and safety controls outlined in the HASP and PPE SOP will mitigate any potential risk to Construction Workers from contacting impacted soil and groundwater during development. The modified Level D PPE requirements planned for this development project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE

SOP provided as **Appendix C**. The EP will be responsible for monitoring organic vapor concentrations in the worker breathing zone within the utility trenches and excavations to determine whether any increased level of health and safety protection (including engineering controls and/or PPE) is required.

Prior to commencing work, the contractor must conduct an on-site safety meeting for all personnel. All personnel must be made aware of the HASP and the PPE SOP. Detailed safety information shall be provided to personnel who may be exposed to COPCs. Workers will be responsible for following established safety procedures to prevent contact with potentially contaminated material.

5.4 INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

Long-term conditions related to future use of the Site will be placed on the RADWP approval, NFA, and COC. These conditions are anticipated to include the following:

- A restriction prohibiting the use of groundwater for any purpose at the Site and a requirement to characterize, containerize, and properly dispose of groundwater in the event of deep excavations encountering groundwater. The entire Tradepoint Atlantic property will be subject to the groundwater use restriction.
    - Once development is complete and permanent monitoring wells are installed at the Site (see Section 4.1) a more accurate measure of groundwater elevations in the northeastern and eastern portions of the site will be available. These measurements will be used to define "deep" excavations as described above.
- Notice to the MDE at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy (i.e., through the pavement cap or marker fabric in landscaped areas).
- Notice to the USEPA at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy, only if the proposed duration of intrusive activity would exceed the allowable exposure duration determined in the SLRA and the contractor will not use the modified Level D PPE specified in the approved SOP.
- Requirement for a HASP in the event of any future excavations at the Site.
- Complete appropriate characterization and disposal of any material excavated at the Site in accordance with applicable local, state and federal requirements.
- Requirement to further evaluate vapor control measures if another enclosed structure is proposed in the future on the Site.
- Implementation of inspection procedures and maintenance of the containment remedies.

The responsible party will file the above deed restrictions as defined by the MDE-VCP in the NFA and COC. The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. Tradepoint Atlantic will notify the Tenant of this requirement and will provide MDE with contact information for the Tenant prior to issuance of the NFA.

5.5 POST REMEDIATION REQUIREMENTS

Post remediation requirements will include compliance with the conditions specified in the NFA, COC, and the deed restrictions recorded for the Site. Deed restrictions will be recorded within 30 days after receipt of the final NFA. In addition, the MDE and USEPA will be provided with a written notice of any future excavations (as applicable) in accordance with the requirements given in Section 5.4. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation, health and safety protocols (as required), clean fill source (as required), and proposed characterization and disposal requirements.

Additional requirements will include inspection procedures and maintenance of the containment remedies to minimize degradation which could lead to future exposures. An Operations and Maintenance Plan (O&M Plan) will be submitted in the future for MDE approval. This O&M Plan will include long-term inspection and maintenance requirements for the capped areas of the Site as well as the vapor barrier. The responsible party will perform cap/barrier inspections, perform maintenance of the cap/barrier, and retain inspection records, as required by the O&M Plan. The O&M Plan must include specific requirements for the repair of any future penetrations of the vapor barrier below the floor slab.

The responsible party will also perform indoor air and/or sub-slab soil gas sampling as required. A sampling program has been developed to ensure sub-slab soil gas and indoor air are monitored following the installation of the vapor barrier. The specific sampling procedures and analyte list will be provided within a Sub-Slab Soil Gas & Indoor Air Monitoring Plan, which will be prepared and submitted to the MDE and USEPA as an Addendum to this RADWP. The proposed monitoring point locations are shown on **Figure 10**. Minor adjustments to the final locations of the monitoring points may be necessary following construction based on the final interior layout of the logistics center. One round of pre-occupancy sub-slab soil gas sampling will be performed using the new monitoring points following their installation. If the results of the initial round of sub-slab soil gas sampling are below the PALs, then the building will be occupied and a subsequent post-occupancy round of indoor air and sub-slab soil gas sampling will be performed within 90 days of occupancy. If the pre-occupancy sub-slab soil gas results indicate the presence of a potentially unacceptable VI risk (i.e., exceedances of the PALs), then the subsequent round of indoor air and sub-slab soil gas sampling will be performed prior to occupancy, and any additional monitoring and/or response measures will be coordinated with the MDE and USEPA as needed.

5.6 CONSTRUCTION OVERSIGHT

Construction Oversight by an EP will ensure and document that the project is built as designed and appropriate environmental and safety protocols are followed. Upon completion, the EP will certify that the project is constructed in accordance with this RADWP.

The EP will monitor all soil excavation and utility trenching activities for signs of potential contamination that may not have been previously identified. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management (as described in Section 5.1.2; Soil Excavation and Utility Trenching). The EP will also perform routine periodic breathing zone monitoring and PPE spot checks during ground intrusive activities. The EP will also inspect any water that collects in the excavations/trenches on an as-needed basis to coordinate appropriate sampling prior to disposal (as described in Section 5.2.2; Dewatering).

Daily inspections, as necessary, will be performed during general site grading and cap construction activities. The EP will verify that the Drago® Wrap vapor barrier is installed in accordance with the manufacturers specifications and any seams or penetrations are sealed properly (as described in Section 4.2.5; Sub-Slab Vapor Barrier), appropriate fill materials are being used (as described in Section 5.1.4; Fill), dust monitoring and control measures are being implemented as appropriate (as described in Section 5.1.5; Dust Control), the requirements of the HASP and the PPE SOP are being enforced as applicable (as described in Section 5.3; Health and Safety), and surface engineering controls are being installed with the appropriate thicknesses (shown on the RADWP attachments). Oversight by an EP will not be required during construction activities which do not have a significant environmental component, such as above-grade building construction.

Records shall be provided by the EP to document:

- Compliance with soil screening requirements
- Proper water management, including documentation of any testing and water disposal
- Observations of construction activities during site grading and cap construction
- Proper construction of sub-slab vapor barrier
- Proper cap thickness and construction

6.0 PERMITS, NOTIFICATIONS AND CONTINGENCIES

The participant and their contractors will comply with all local, state, and federal laws and regulations by obtaining any necessary approvals and permits to conduct the activities contained herein. Any permits or permit modifications from State or local authorities will be provided as addenda to this RADWP.

A grading permit is required if the proposed grading disturbs over 5,000 square feet of surface area or over 100 cubic yards of earth. A grading permit is required for any grading activities in any watercourse, floodplain, wetland area, buffers (stream and within 100 feet of tidal water), habitat protection areas or forest buffer areas (includes forest conservation areas). Erosion and Sediment Control Plans will be submitted to, and approved by, the MDE prior to initiation of land disturbance for development. Wetlands were previously identified within the project area, so a permit was required from the MDE Water Resources Administration.

Contingency measures will include the following:

1. The MDE will be notified immediately of any previously undiscovered contamination, previously undiscovered storage tanks and other oil-related issues, and citations from regulatory entities related to health and safety practices.

2. Any significant change to the implementation schedule will be noted in the progress reports to MDE.

3. Modified Level D PPE will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project are outlined in the PPE SOP provided as **Appendix C**. If it is not possible to implement the PPE SOP as provided, the agencies will be notified and a RADWP Addendum will be submitted to detail any appropriate mitigative measures.

7.0 IMPLEMENTATION SCHEDULE

Progress reports will be submitted to the MDE on a quarterly basis. Each quarterly progress report will include, at a minimum, a discussion of the following information regarding tasks completed during the specified quarter:

- Development Progress
- Dust Monitoring
- Water Management
- Soil Management (imported materials, screening, stockpiling)
- Soil Sampling and Disposal
- Notable Occurrences (if applicable)
- Additional Associated Work (if applicable)

The proposed implementation schedule is shown below. Certain activities have already been initiated at the Site under the prior submittal of the RADWP (Revision 1 dated March 16, 2020), as noted below. Tradepoint Atlantic had previously received grading approval.

Task	**Proposed Completion Date**
Anticipated RADWP Approval	February 28, 2020 *(received prior grading approval)* January 8, 2021 *(final RADWP approval)*

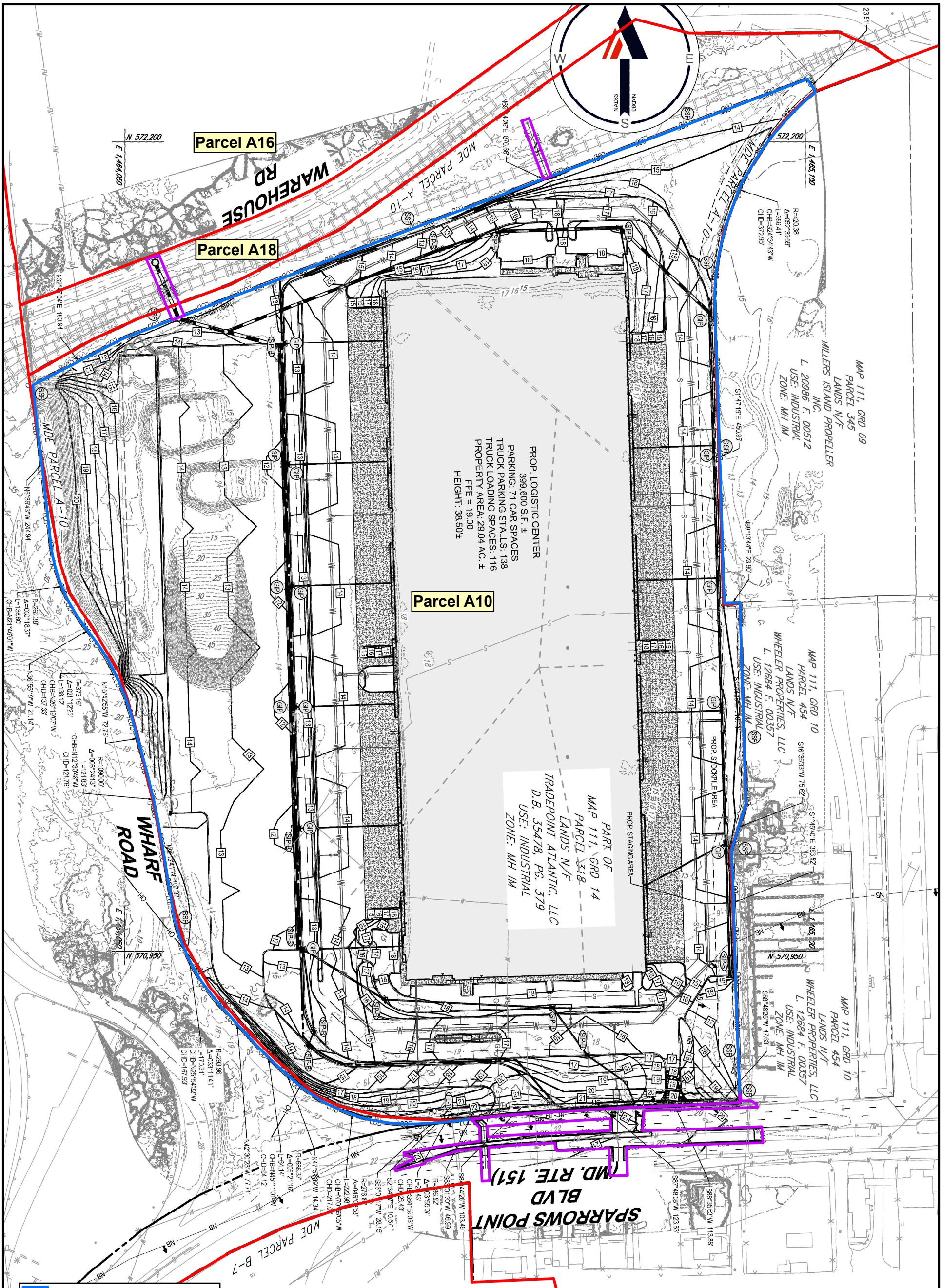
Task	**Proposed Completion Date**
Installation of Erosion and Sediment Controls	March 2020 (start) *(Initiated under grading approval)*
Slag (or Alternative Fill) Delivery and Placement	March 2020 (start) *(Initiated under grading approval)*
Site Preparation/Grading – Building Pad & Parking	March 2020 (start) *(Initiated under grading approval)*
Utility Installations: Domestic Water/Fire Loop (4 weeks) Sanitary (2 weeks) Stormwater (6 weeks)	January 2021 (start)

Construction of Building	February 2021 (start)
Installation of Pavements	April 2021 (start)
Pre-Occupancy Sub-Slab Soil Gas Monitoring	August 2021
Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	September 2021
Post-Occupancy Indoor Air & Sub-Slab Soil Gas Monitoring	September 2021 to December 2021
Request for NFA from the MDE	April 2022
Recordation of institutional controls in the land records office of Baltimore County	Within 30 days of receiving the approval of NFA from the MDE
Submit proof of recordation with Baltimore County	Upon receipt from Baltimore County

*Notice of Completion of Remedial Actions will be prepared by Professional Engineer registered in Maryland and submitted with the Development Completion Report to certify that the work is consistent with the requirements of this RADWP and the Site is suitable for occupancy and use.

FIGURES


A10-1 Development Boundary
Site Boundary
Parcel Boundaries
Private Property
Parcel A9
Parcel A5
Parcel A13
Parcel A7
Parcel A14
Parcel A11
Parcel A8
Parcel A12
Parcel A15
Parcel A2
Parcel A17
Parcel A18
Parcel A16
Parcel A6
Parcel A10
A10-1
Parcel A4
Parcel A3
Parcel A1
Parcel B6
Parcel B8
Parcel B14
Parcel B21
Parcel B22
Parcel B16
Parcel B24
Parcel B15
Parcel B23
Parcel B7
Parcel B25
Parcel B1
Parcel B2
Parcel B3
Parcel B17
Parcel B19
Parcel B4
Parcel B5
Parcel B9
Parcel B18
Parcel B10
Parcel B13
Parcel B20
Parcel B11
Parcel B12
Tradepoint Atlantic
Area A and Area B Parcels
December 30, 2020
Figure
1
ARM Group LLC
Engineers and Scientists
0 500 1,000 2,000
Feet
Tradepoint Atlantic
Sparrows Point
Baltimore County, MD
Area A: Project 200101
Area B: Project 200102
A10-1: Project 20010110



ARM Group LLC
Engineers and Scientists

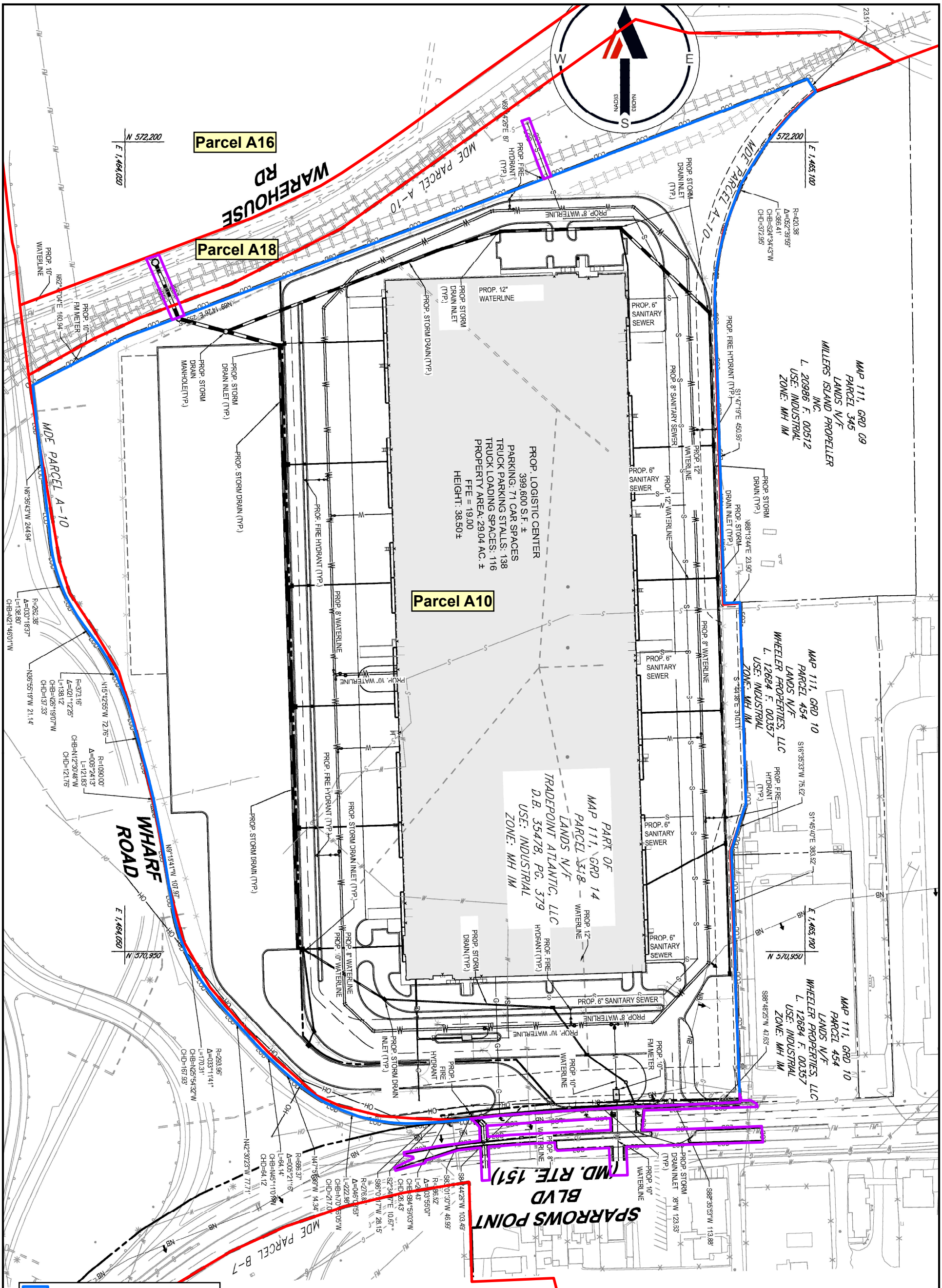
Sub-Parcel A10-1
Development Plan Layout
Grading Plan

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
2



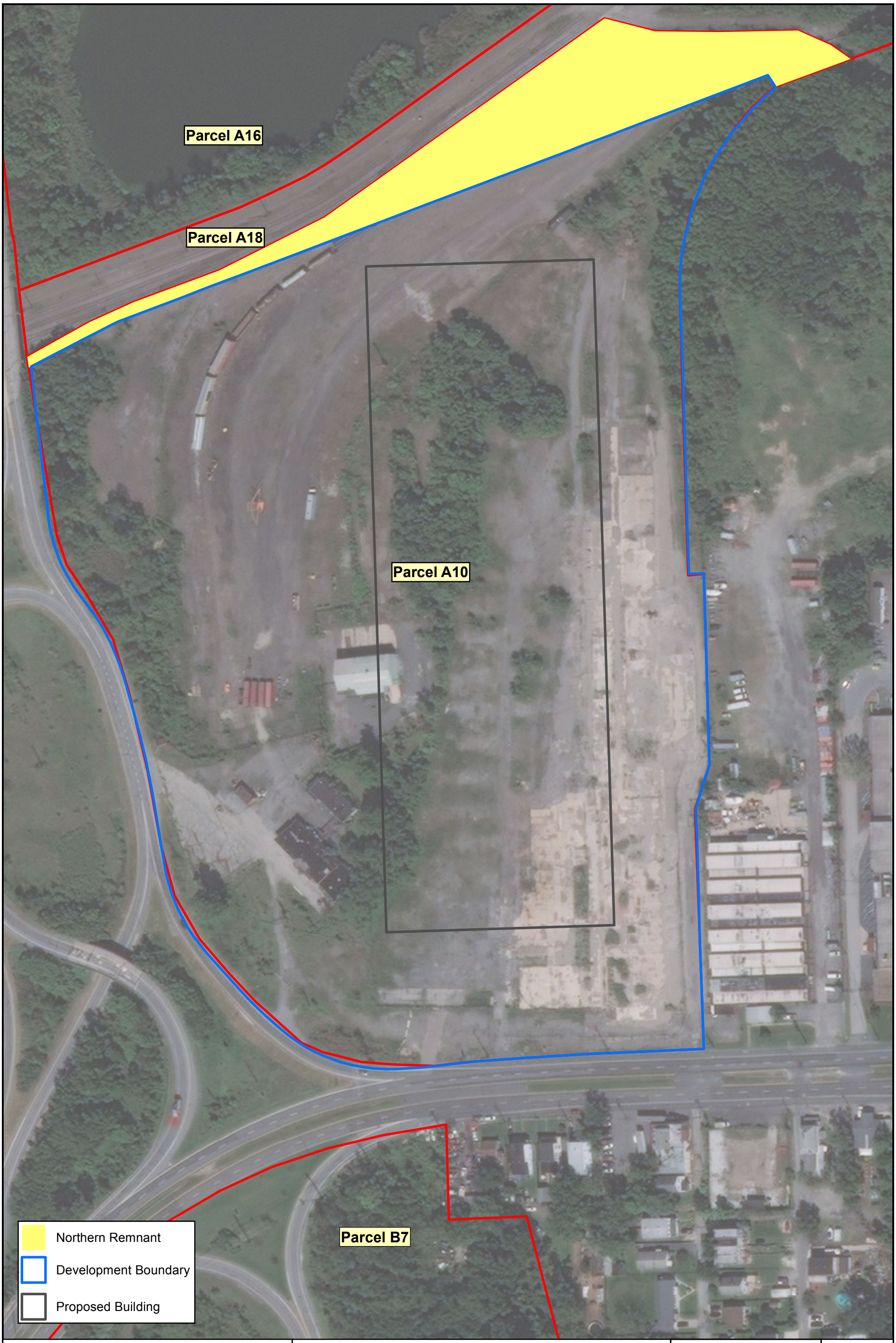
ARM Group LLC
Engineers and Scientists

Sub-Parcel A10-1
Development Plan Layout
Utility Plan
December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
3



ARM Group LLC
Engineers and Scientists

0 100 200 400
Feet

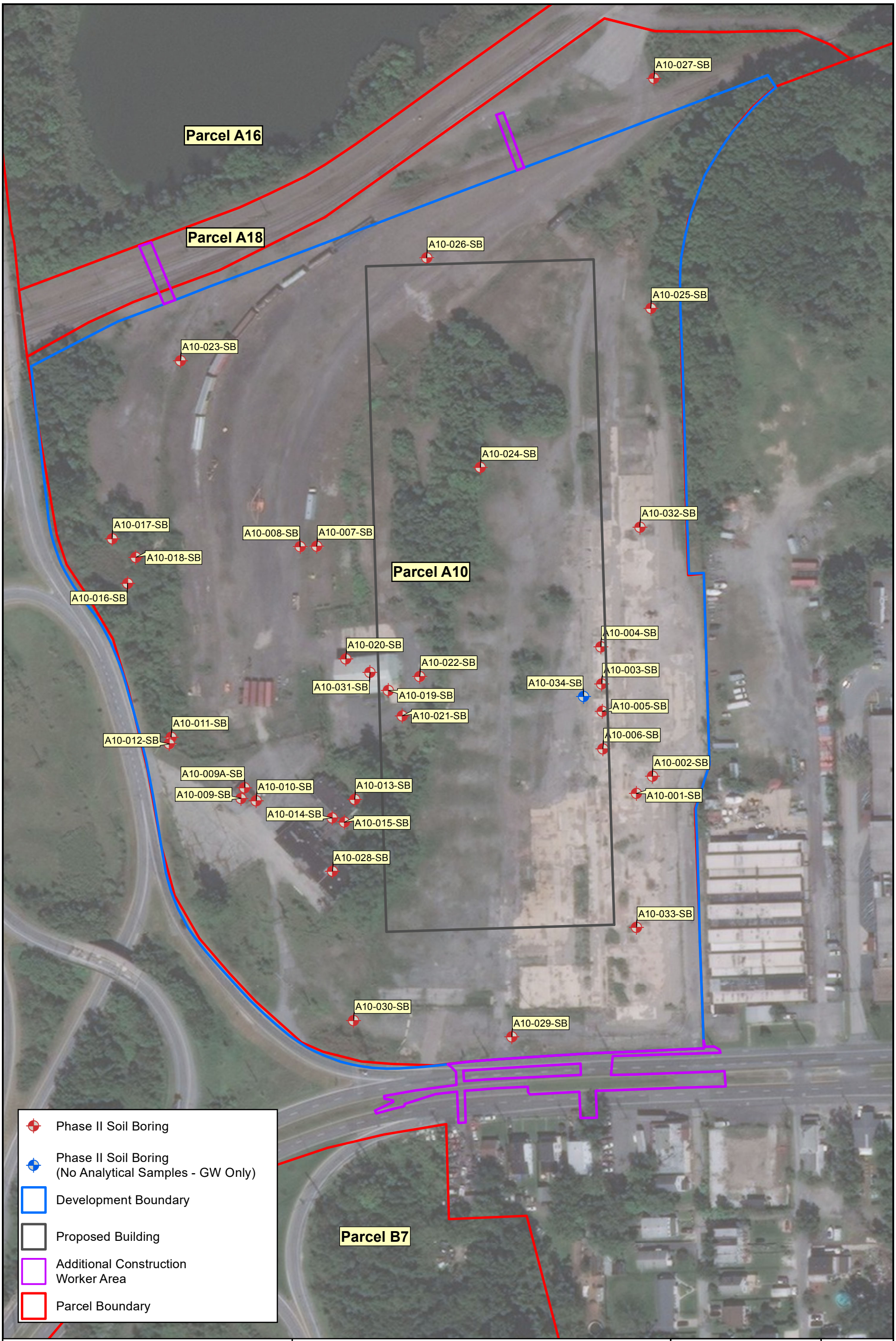
Sub-Parcel A10-1
Remnant Areas for Investigative Parcel A10

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
4


Parcel A16
Parcel A18
Parcel A10
Parcel B7
A10-027-SB
A10-026-SB
A10-025-SB
A10-023-SB
A10-024-SB
A10-032-SB
A10-017-SB
A10-008-SB
A10-007-SB
A10-018-SB
A10-016-SB
A10-020-SB
A10-022-SB
A10-031-SB
A10-019-SB
A10-021-SB
A10-004-SB
A10-003-SB
A10-034-SB
A10-005-SB
A10-011-SB
A10-012-SB
A10-006-SB
A10-002-SB
A10-009A-SB
A10-010-SB
A10-013-SB
A10-009-SB
A10-001-SB
A10-014-SB
A10-015-SB
A10-028-SB
A10-033-SB
A10-030-SB
A10-029-SB
Phase II Soil Boring
Phase II Soil Boring
(No Analytical Samples - GW Only)
Development Boundary
Proposed Building
Additional Construction
Worker Area
Parcel Boundary
ARM Group LLC
Engineers and Scientists
0
100
200
400
Feet
Sub-Parcel A10-1
Phase II Investigation
Soil Boring Locations
December 30, 2020
Tradepoint Atlantic
ARM Project 20010110
Sparrows Point
Baltimore County, MD
Figure
5

Parcel A16

Parcel A18

Parcel A10

Parcel B7

A10-027-SB-1
A10-027-SB-4
A10-027-SB-10

A10-026-SB-1
A10-026-SB-5

A10-025-SB-1
A10-025-SB-4

A10-023-SB-1
A10-023-SB-4

A10-024-SB-1
A10-024-SB-5

A10-008-SB-1
A10-008-SB-4
Benzo[a]pyrene: 13.6
Benzo[b]fluoranthene: 33.9
Dibenz[a,h]anthracene: 3.2
A10-008-SB-10

A10-032-SB-1
A10-032-SB-5

A10-017-SB-1
A10-017-SB-4

A10-007-SB-1
A10-007-SB-4

A10-018-SB-1
A10-018-SB-5

A10-016-SB-1
A10-016-SB-6

A10-031-SB-1.5
A10-031-SB-8

A10-004-SB-1
A10-004-SB-4

A10-022-SB-2
A10-022-SB-4

A10-003-SB-1
Benzo[a]pyrene: 3.5
A10-003-SB-9

A10-020-SB-1.5
A10-020-SB-7

A10-021-SB-2
A10-021-SB-4

A10-019-SB-1
A10-019-SB-4

A10-011-SB-1
A10-011-SB-7

A10-012-SB-1
A10-012-SB-4

A10-005-SB-1
A10-005-SB-5

A10-006-SB-1
A10-006-SB-7

A10-009A-SB-1

A10-014-SB-2
A10-014-SB-5

A10-013-SB-1
A10-013-SB-4

A10-002-SB-1
A10-002-SB-5

A10-001-SB-1
A10-001-SB-5

A10-009-SB-1.5
A10-009-SB-5

A10-010-SB-1
A10-010-SB-8

A10-015-SB-1
A10-015-SB-5

A10-028-SB-1
A10-028-SB-6

A10-033-SB-1
A10-033-SB-4

A10-030-SB-1
A10-030-SB-7

A10-029-SB-1
A10-029-SB-4

Phase II Soil Boring
Development Boundary
Proposed Building
Additional Construction Worker Area
Parcel Boundary

0 100 200 400 Feet

ARM Group LLC
Engineers and Scientists

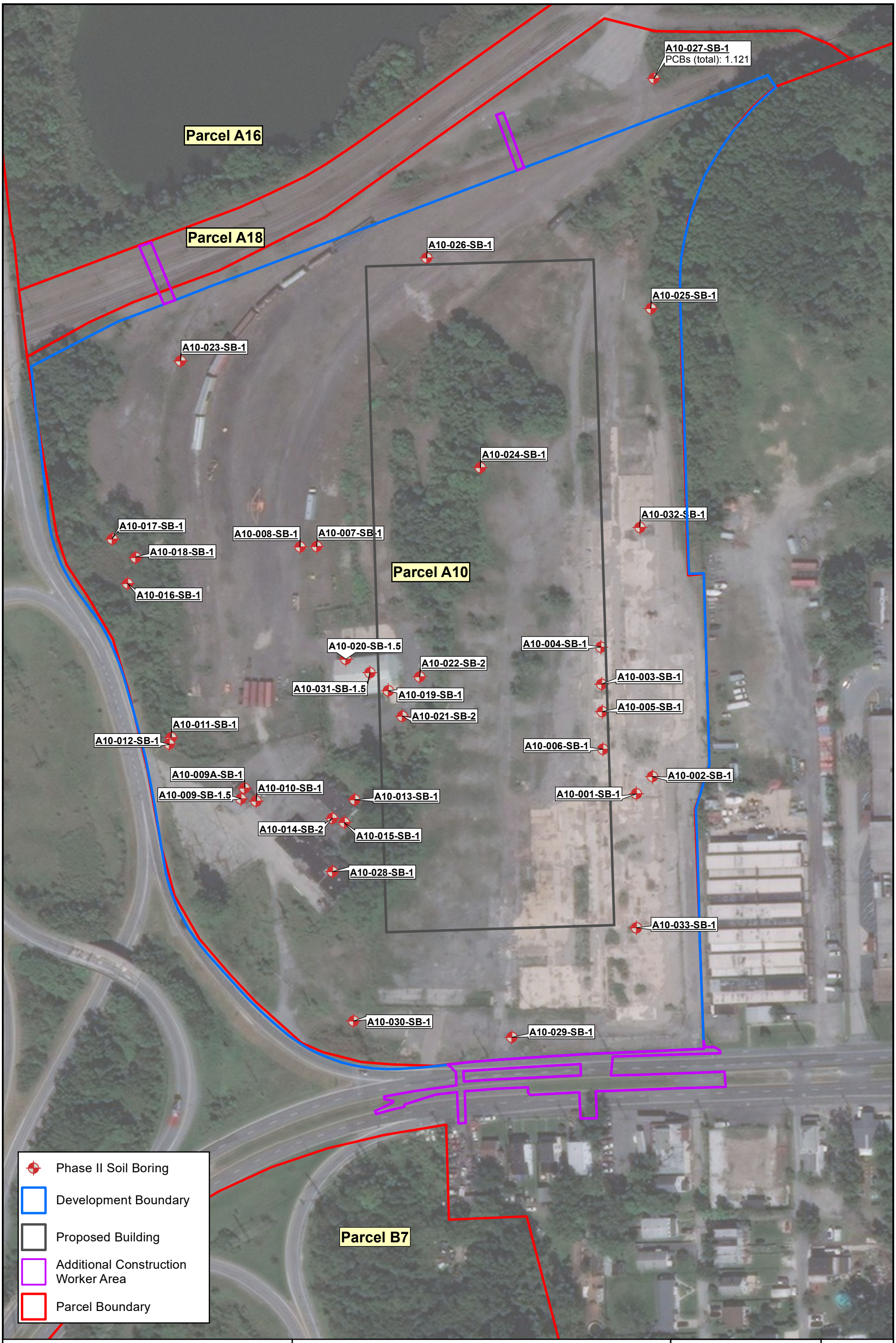
Sub-Parcel A10-1
Phase II Investigation
Soil SVOC PAL Exceedances (mg/kg)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
S1



ARM Group LLC
Engineers and Scientists

Sub-Parcel A10-1
Phase II Investigation
Soil PCB PAL Exceedances (mg/kg)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
S2

Parcel A16

Parcel A18

Parcel A10

Parcel B7

A10-027-SB-1
Arsenic: 5.5

A10-027-SB-4
Arsenic: 21.3

A10-027-SB-10
Arsenic: 13.1

A10-026-SB-1
Arsenic: 5.7

A10-026-SB-5
Manganese: 46,100
Thallium: 88.0
Vanadium: 7,200

A10-025-SB-1
Arsenic: 7.1

A10-025-SB-4
Arsenic: 17.1

A10-025-SB-10
Arsenic: 12.0

A10-023-SB-1
Arsenic: 7.7

A10-023-SB-4
Arsenic: 3.7

A10-024-SB-1
Arsenic: 4.4

A10-024-SB-5
Arsenic: 5.2

A10-032-SB-1
Arsenic: 8.4
Lead: 1,020
Thallium: 20.2

A10-032-SB-5
Arsenic: 18.5
Manganese: 31,900
Thallium: 78.6

A10-008-SB-1
Arsenic: 3.8

A10-008-SB-4
Arsenic: 9.5

A10-008-SB-10
Arsenic: 9.5

A10-007-SB-1
Arsenic: 3.1

A10-007-SB-4
Arsenic: 5.7
Manganese: 94,000
Thallium: 23.9

A10-004-SB-1
Arsenic: 16.7
Lead: 1,580
Thallium: 21.2

A10-004-SB-4
Arsenic: 6.0
Manganese: 32,000
Thallium: 81.1
Vanadium: 7,200

A10-004-SB-10
Arsenic: 5.9
Manganese: 56,000
Thallium: 36.4
Vanadium: 10,600

A10-018-SB-1
Arsenic: 6.0

A10-018-SB-5
Arsenic: 4.8

A10-018-SB-10
Arsenic: 13.4

A10-017-SB-1

A10-017-SB-4
Arsenic: 3.6

A10-016-SB-1
Arsenic: 3.5

A10-016-SB-6

A10-020-SB-1.5
Arsenic: 6.7
Thallium: 34.9

A10-020-SB-7
Arsenic: 6.8

A10-020-SB-10
Arsenic: 5.1

A10-031-SB-1.5
Arsenic: 10.6

A10-031-SB-8
Arsenic: 15.9

A10-031-SB-10
Arsenic: 4.0

A10-003-SB-1
Manganese: 50,200
Thallium: 102
Vanadium: 7,590

A10-003-SB-9
Arsenic: 13.3

A10-011-SB-1

A10-011-SB-7
Arsenic: 14.4

A10-011-SB-10
Arsenic: 14.7

A10-022-SB-2
Arsenic: 5.9

A10-022-SB-4
Arsenic: 5.1

A10-019-SB-1
Arsenic: 4.8

A10-019-SB-4

A10-021-SB-2

A10-021-SB-4
Arsenic: 5.7

A10-021-SB-10
Arsenic: 13.1

A10-005-SB-1
Arsenic: 16.5
Thallium: 19.0

A10-005-SB-5
Arsenic: 4.3
Manganese: 28,800
Thallium: 67.7
Vanadium: 5,810

A10-006-SB-1
Arsenic: 71.2

A10-006-SB-7
Arsenic: 6.6
Lead: 1,030

A10-012-SB-1
Manganese: 38,500
Vanadium: 10,000 J

A10-012-SB-4
Arsenic: 4.7

A10-009A-SB-1

A10-009-SB-1.5

A10-009-SB-5
Arsenic: 6.0

A10-014-SB-2
Arsenic: 4.2

A10-014-SB-5
Arsenic: 4.3

A10-013-SB-1
Arsenic: 4.7

A10-013-SB-4
Arsenic: 5.4

A10-010-SB-1
Arsenic: 20.5

A10-010-SB-8
Arsenic: 12.3

A10-010-SB-10
Arsenic: 24.3

A10-015-SB-1
Arsenic: 3.2

A10-015-SB-5
Arsenic: 9.8

A10-028-SB-1
Arsenic: 5.5

A10-028-SB-6

A10-001-SB-1
Arsenic: 4.1

A10-001-SB-5
Arsenic: 3.7

A10-002-SB-1
Arsenic: 4.0

A10-002-SB-5
Arsenic: 4.3

A10-002-SB-10
Arsenic: 4.2

A10-033-SB-1
Arsenic: 5.9

A10-033-SB-4
Arsenic: 3.4

A10-030-SB-1

A10-030-SB-7
Arsenic: 4.4

A10-029-SB-1
Arsenic: 6.9

A10-029-SB-4

Phase II Soil Boring
Development Boundary
Proposed Building
Additional Construction Worker Area
Parcel Boundary

ARM Group LLC
Engineers and Scientists

0 100 200 400 Feet

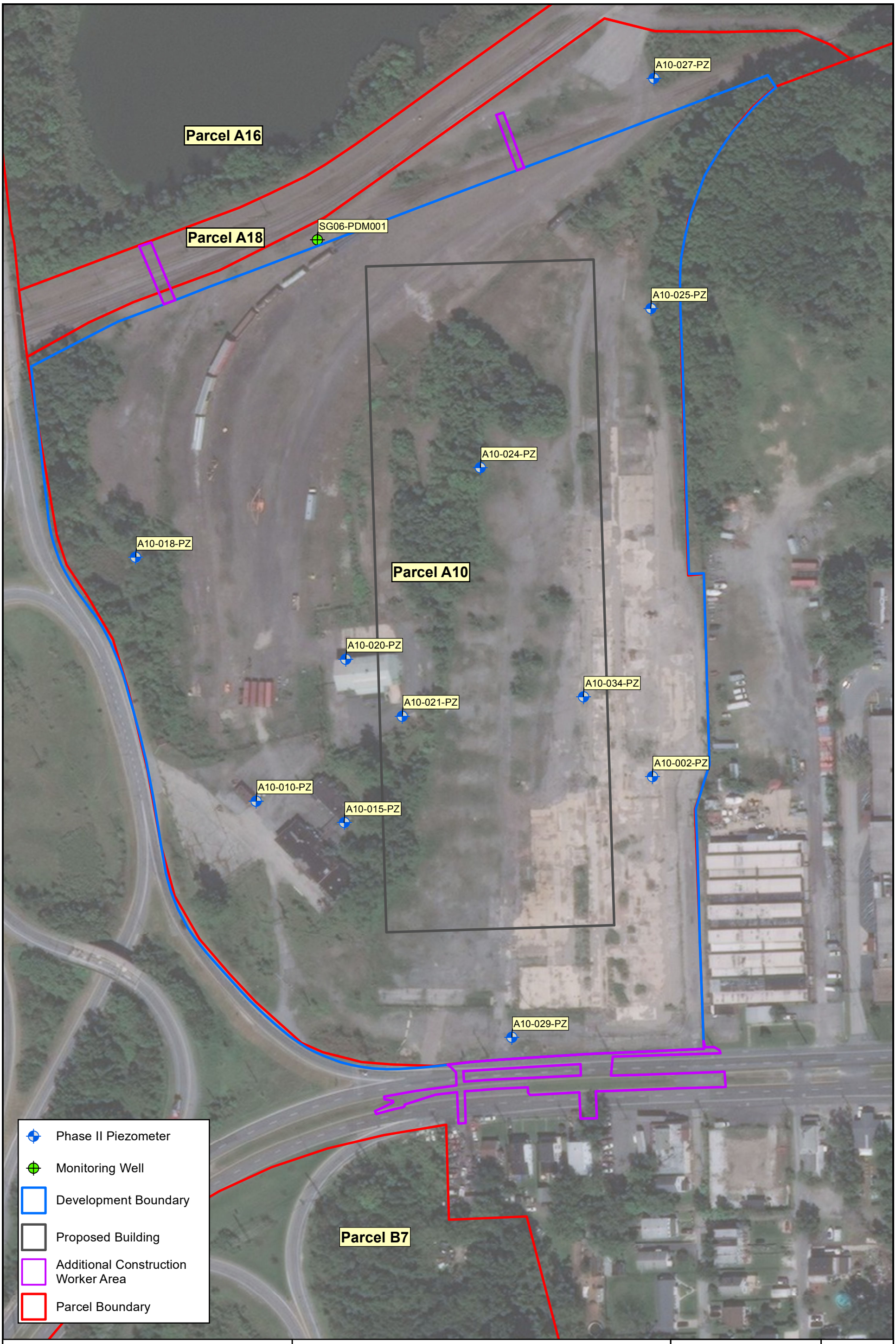
Sub-Parcel A10-1
Phase II Investigation
Soil Inorganic PAL Exceedances (mg/kg)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
S3



ARM Group LLC
Engineers and Scientists

Sub-Parcel A10-1
Phase II Investigation
Groundwater Sample Locations

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
6

Parcel A16

Parcel A18

Parcel A10

Parcel B7

A10-027-PZ
Tetrachloroethene: 123
Trichloroethene: 255

SG06-PDM001

A10-025-PZ
1,2-Dichloroethene (Total): 190
Carbon tetrachloride: 6.2
Chloroform: 1.7
cis-1,2-Dichloroethene: 188
Tetrachloroethene: 1,010
Trichloroethene: 494
Vinyl chloride: 22.6

A10-024-PZ

A10-018-PZ

A10-020-PZ
Chloroform: 0.53 J

A10-021-PZ
Chloroform: 12.3

A10-034-PZ
Tetrachloroethene: 34.2
Trichloroethene: 33.5

A10-010-PZ
Tetrachloroethene: 14.2
Trichloroethene: 7.6

A10-015-PZ

A10-002-PZ

A10-029-PZ
Trichloroethene: 5.0

- Phase II Piezometer
- Monitoring Well
- Development Boundary
- Proposed Building
- Additional Construction Worker Area
- Parcel Boundary

0 100 200 400 Feet

ARM Group LLC
Engineers and Scientists

Sub-Parcel A10-1
Phase II Investigation
Groundwater VOC PAL Exceedances (ug/L)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
GW1

ARM Group LLC
Engineers and Scientists

0 100 200 400 Feet

Sub-Parcel A10-1
Phase II Investigation
Groundwater SVOC PAL Exceedances (ug/L)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
GW2

ARM Group LLC
Engineers and Scientists

0 100 200 400 Feet

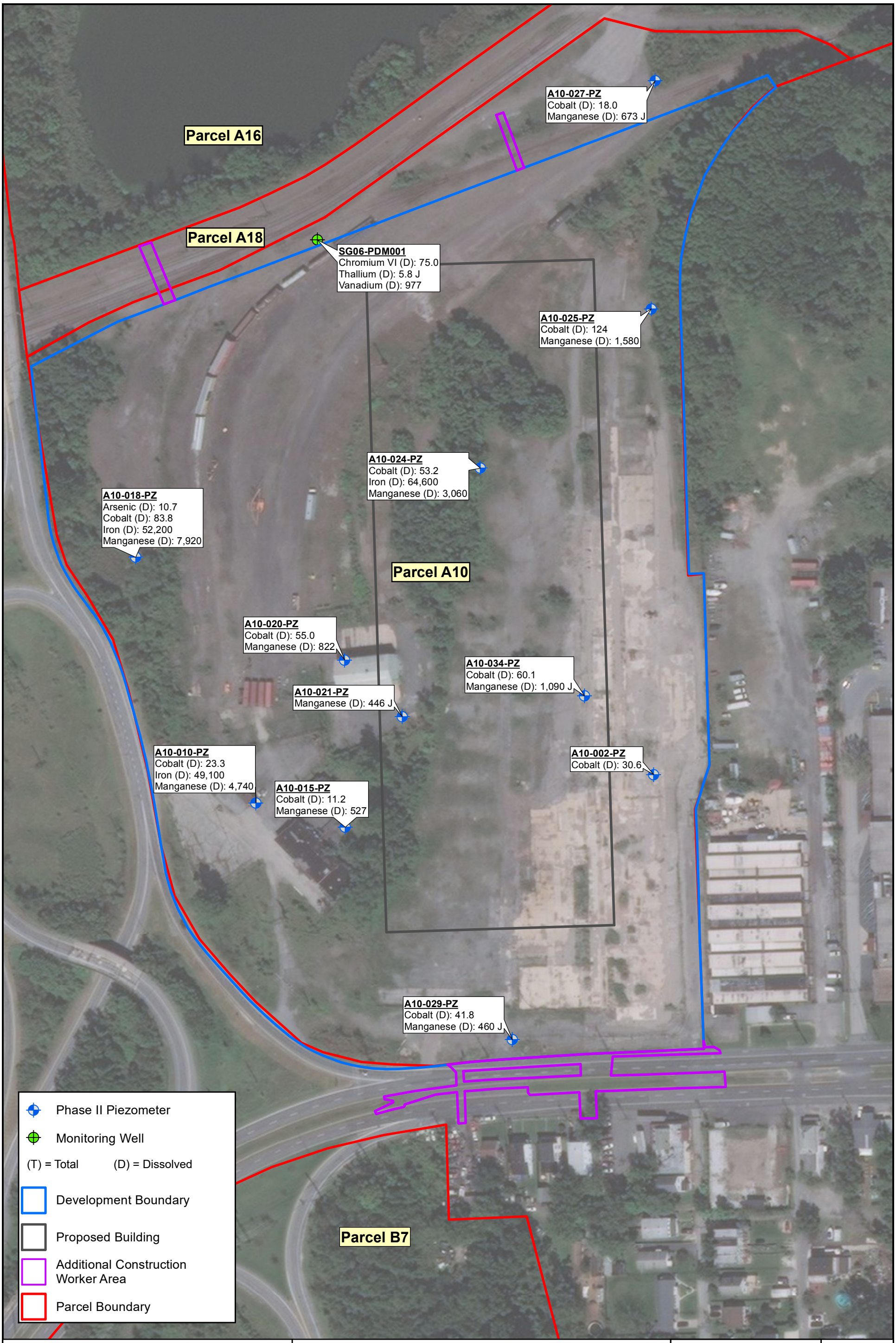
Sub-Parcel A10-1
Phase II Investigation
Groundwater TPH PAL Exceedances (ug/L)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
GW3



ARM Group LLC
Engineers and Scientists

0 100 200 400 Feet

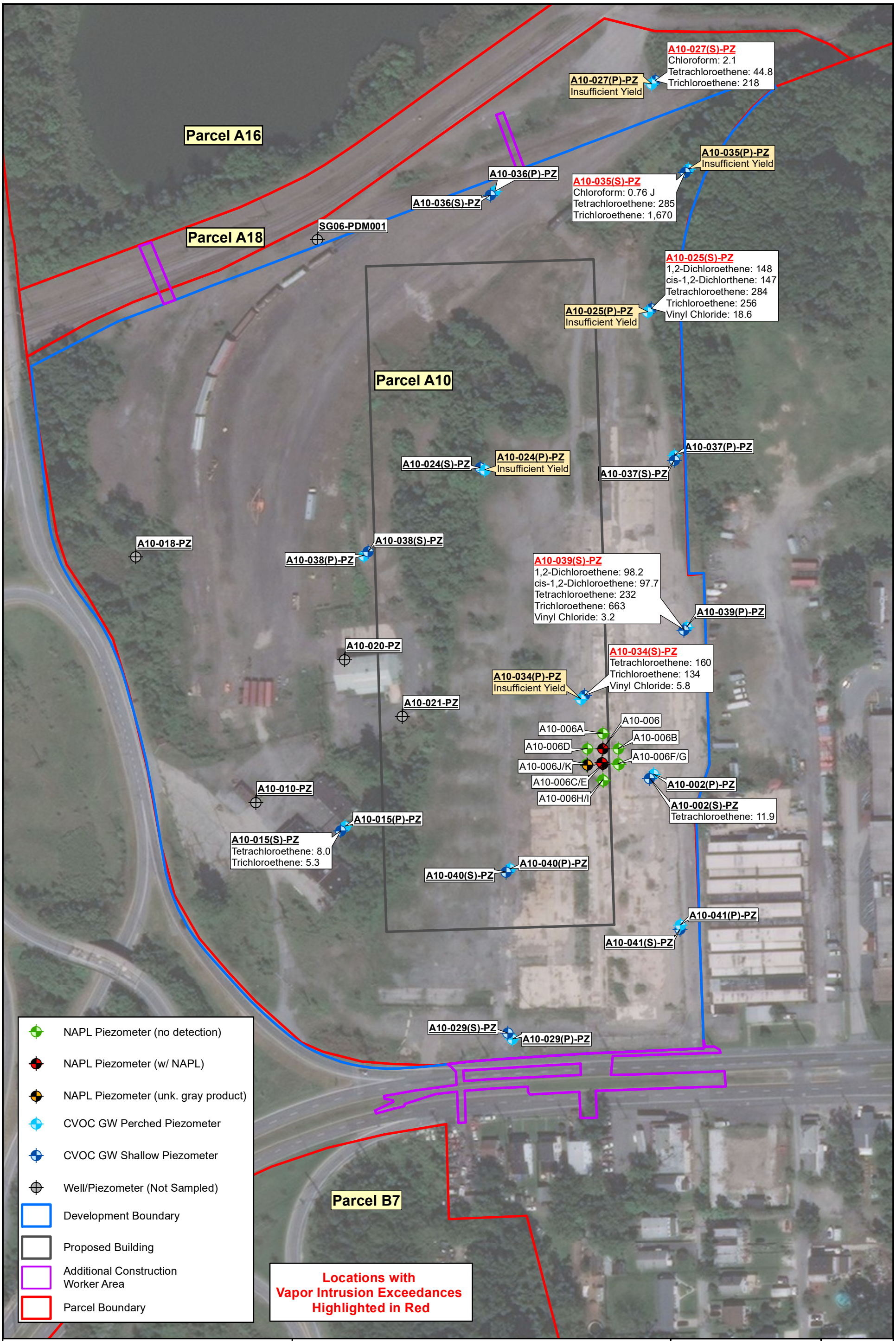
Sub-Parcel A10-1
Phase II Investigation
Groundwater Inorganic PAL Exceedances (ug/L)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
GW4



ARM Group LLC
Engineers and Scientists

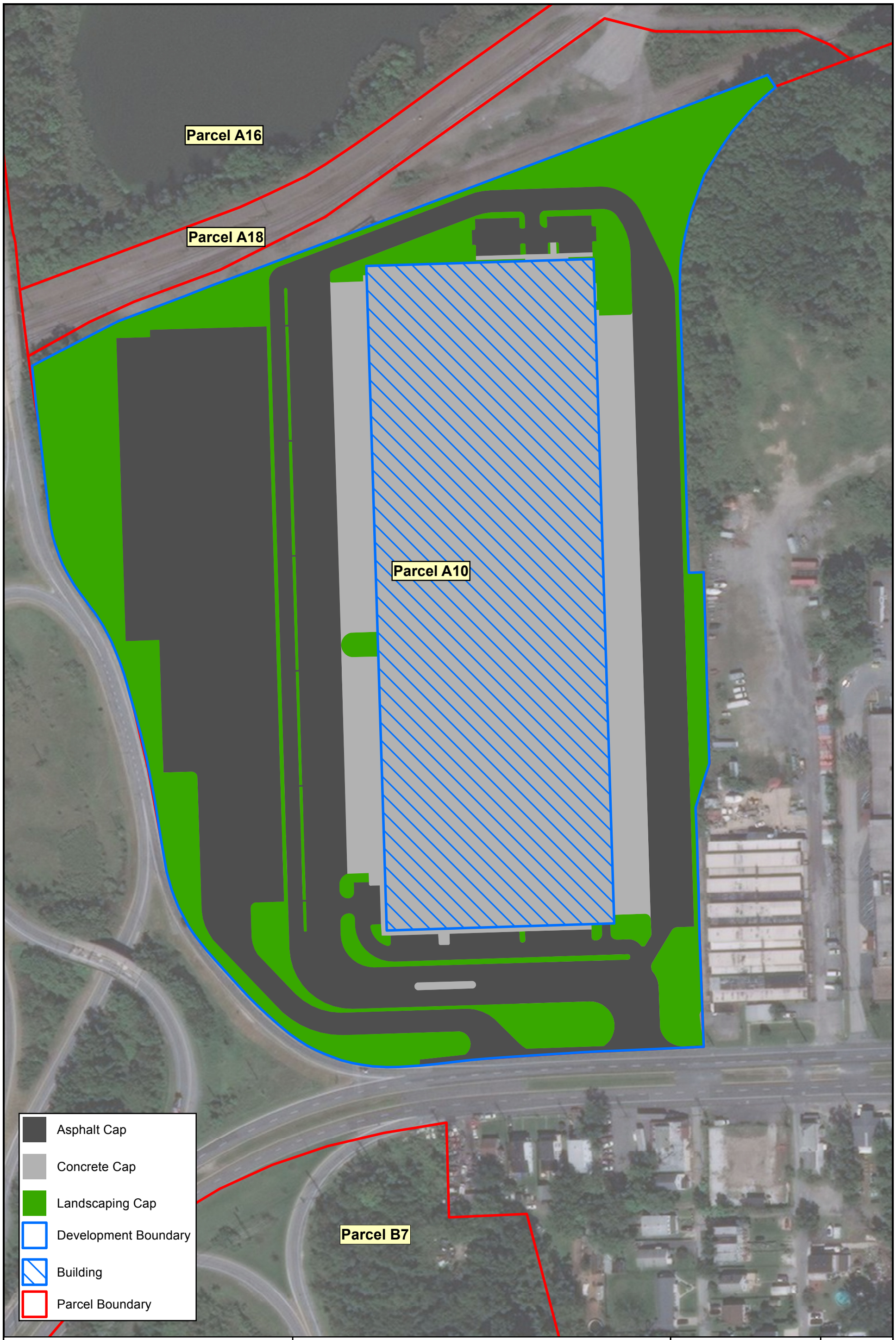
Sub-Parcel A10-1
Groundwater CVOC Investigation
Vapor Intrusion & PAL Exceedances (ug/L)

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
7



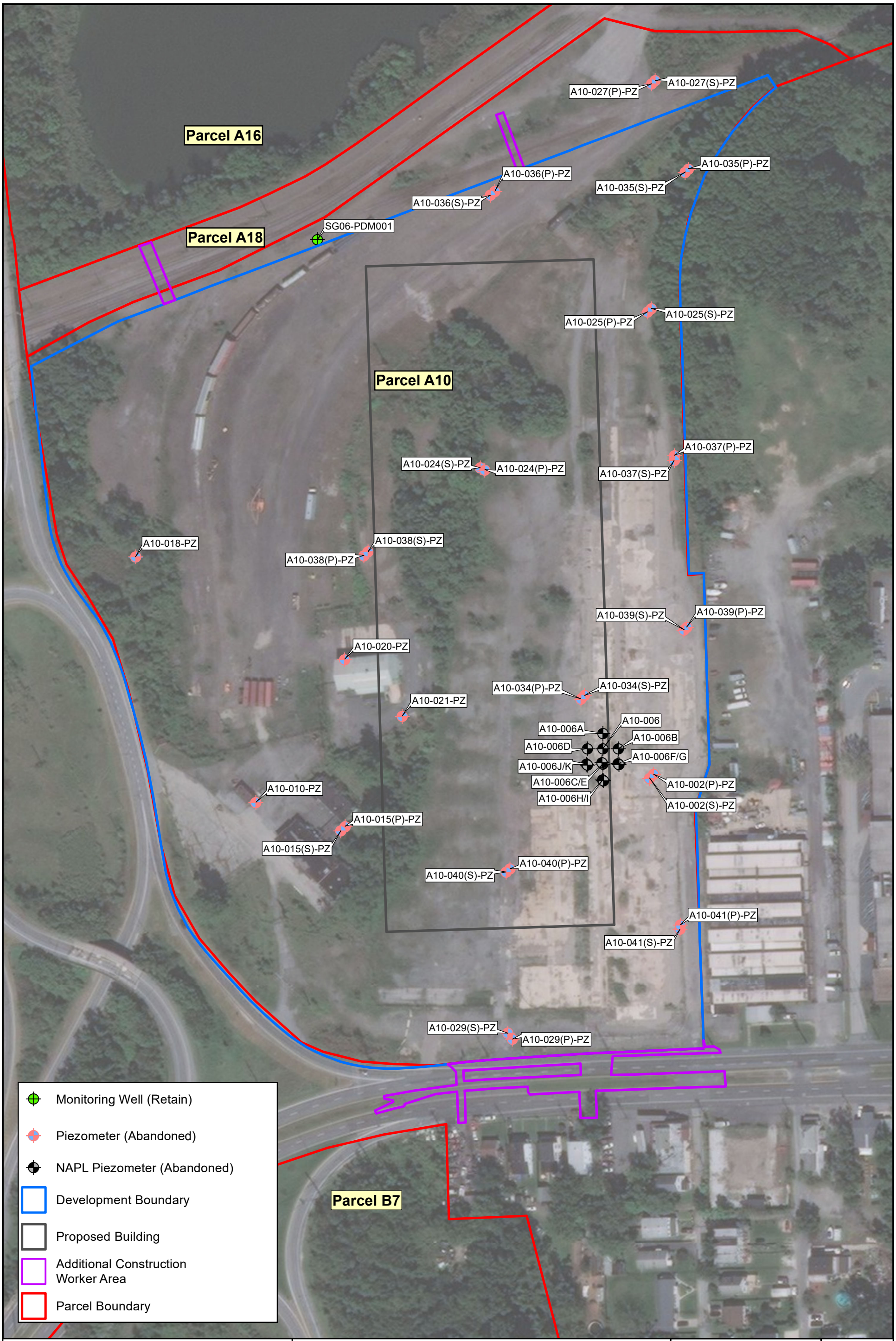
ARM Group LLC
Engineers and Scientists

Sub-Parcel A10-1
Development Plan Layout
Cap Types
December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
8



ARM Group LLC
Engineers and Scientists

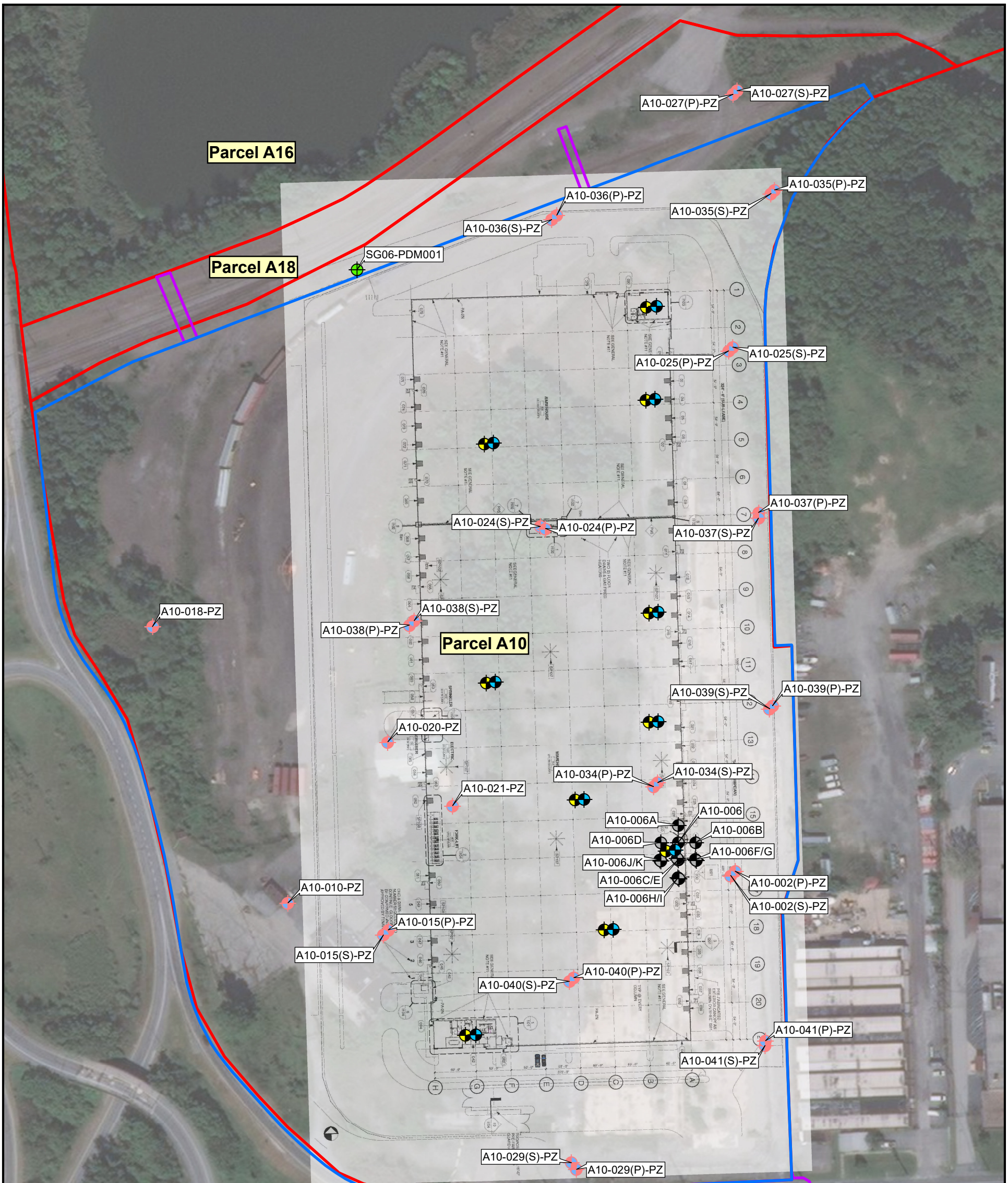
Sub-Parcel A10-1
Groundwater Network Abandonment

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
9



ARM Group LLC
Engineers and Scientists

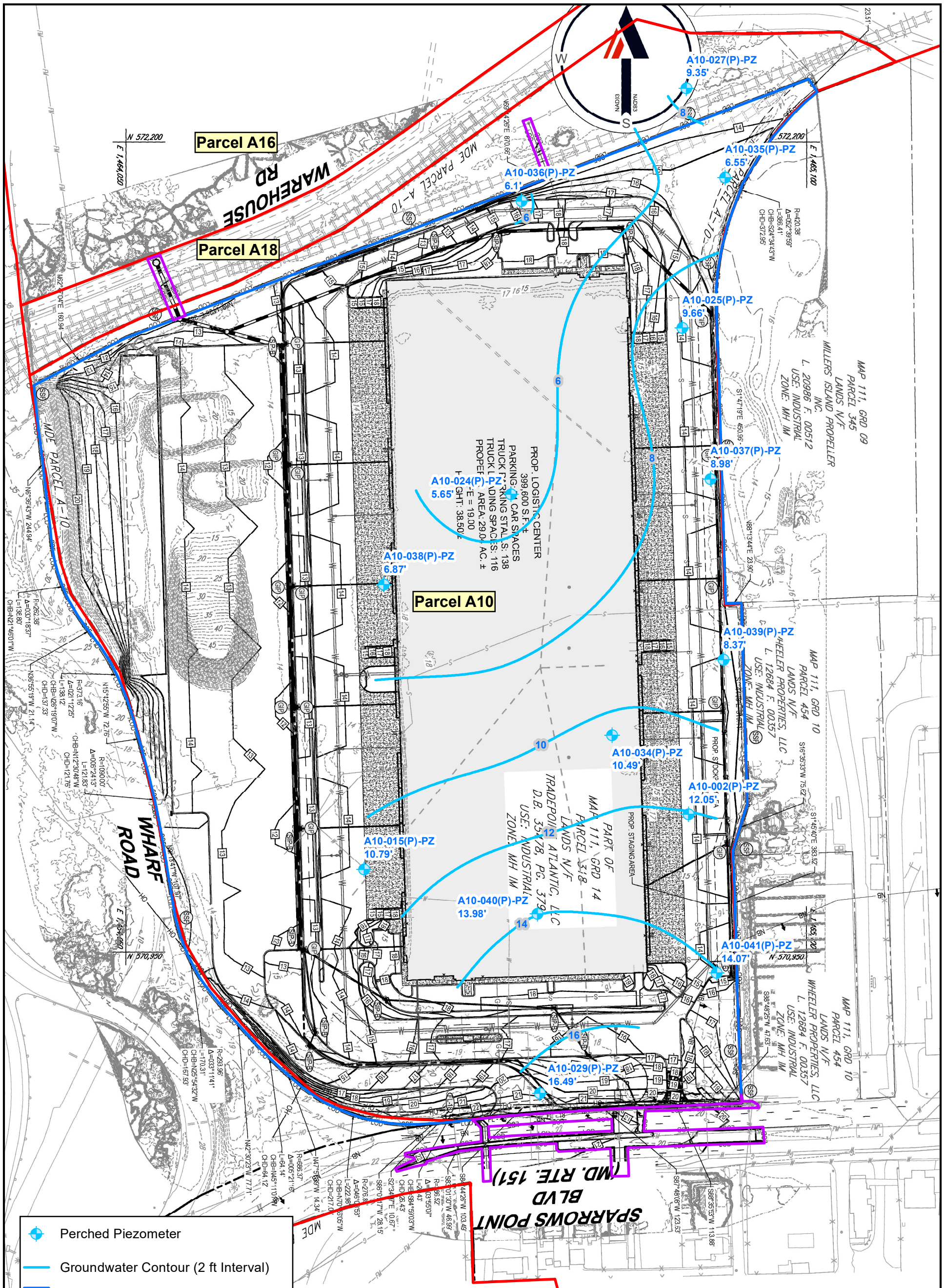
Sub-Parcel A10-1
Building Layout Monitoring Locations
Proposed Sub-Slab Soil Gas and Indoor Air

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
10



ARM Group LLC
Engineers and Scientists

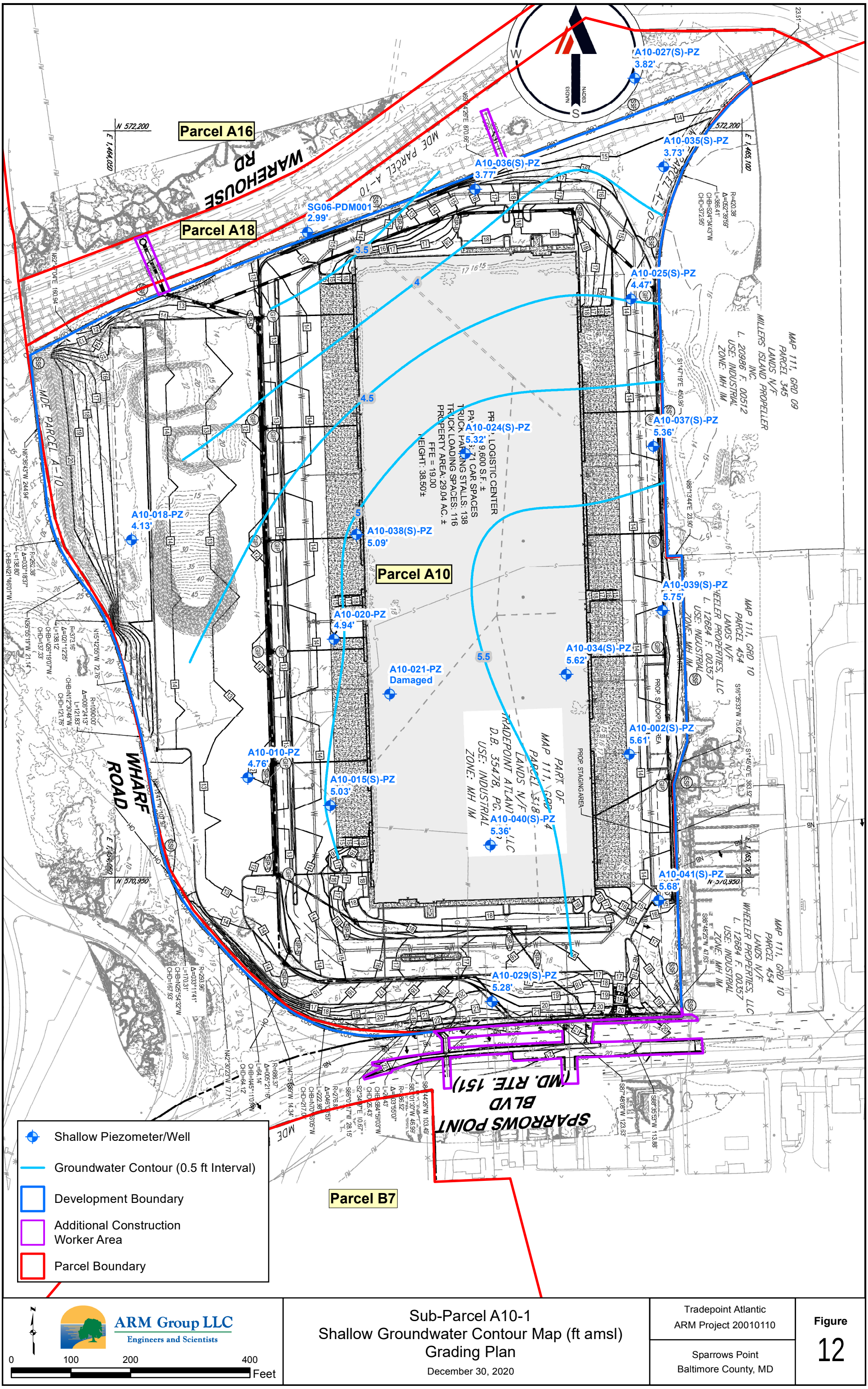
Sub-Parcel A10-1
Perched Groundwater Contour Map (ft amsl)
Grading Plan

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
11



ARM Group LLC
Engineers and Scientists

Sub-Parcel A10-1
Shallow Groundwater Contour Map (ft amsl)
Grading Plan

December 30, 2020

Tradepoint Atlantic
ARM Project 20010110

Sparrows Point
Baltimore County, MD

Figure
12

TABLES

Table 1 - Sub-Parcel A10-1
Summary of Organics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-001-SB-1	A10-001-SB-5	A10-002-SB-1	A10-002-SB-5	A10-003-SB-1*	A10-003-SB-9*	A10-004-SB-1*	A10-004-SB-4*	A10-005-SB-1*	A10-005-SB-5*	A10-006-SB-1*	A10-006-SB-7*	A10-007-SB-1	A10-007-SB-4	A10-008-SB-1
			07/06/2016	07/06/2016	07/06/2016	07/06/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/08/2016	07/08/2016	07/08/2016
Volatile Organic Compounds																	
1,2,3-Trichlorobenzene	mg/kg	930	0.005 U	0.0049 U	0.0053 U	0.0054 U	0.0082 U	0.0075 U	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	0.0057 U	0.0059 U	0.0053 U	0.0065 U
2-Butanone (MEK)	mg/kg	190,000	0.01 UJ	0.0098 UJ	0.011 UJ	0.011 UJ	0.016 U	0.015 U	0.012 U	0.012 U	0.011 U	0.014 U	0.015 U	0.011 U	0.012 U	0.011 U	0.013 U
Acetone	mg/kg	670,000	0.01 U	0.0098 U	**0.0073 J**	**0.016**	**0.013 J**	**0.015 J**	0.012 U	**0.0061 J**	0.011 U	**0.0073 J**	**0.024**	**0.043**	**0.042 J**	**0.18 J**	**0.019 J**
Benzene	mg/kg	5.1	0.005 U	0.0049 U	0.0053 U	0.0054 U	0.0082 U	**0.0028 J**	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	0.0057 U	0.0059 U	0.0053 U	0.0065 U
Carbon disulfide	mg/kg	3,500	0.005 UJ	0.0049 UJ	0.0053 UJ	0.0054 UJ	0.0082 U	0.0075 U	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	0.0057 U	**0.006**	0.0053 U	**0.0066**
Cyclohexane	mg/kg	27,000	0.01 U	0.0098 U	0.011 U	0.011 U	0.016 U	0.015 U	0.012 U	0.012 U	0.011 U	0.014 U	0.015 U	0.011 U	0.012 UJ	0.011 UJ	0.013 UJ
Ethylbenzene	mg/kg	25	0.005 U	0.0049 U	0.0053 U	0.0054 U	0.0082 U	0.0075 U	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	**0.0029 J**	0.0059 U	0.0053 U	0.0065 U
Isopropylbenzene	mg/kg	9,900	0.005 U	0.0049 U	0.0053 U	0.0054 U	0.0082 U	0.0075 U	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	**0.029**	0.0059 U	0.0053 U	0.0065 U
Methyl Acetate	mg/kg	1,200,000	0.05 U	0.049 U	0.053 U	0.054 U	0.082 U	0.075 U	0.058 U	0.06 U	0.055 U	0.068 U	0.077 U	0.057 U	0.059 R	0.053 R	0.065 R
Methyl tert-butyl ether (MTBE)	mg/kg	210	0.005 U	0.0049 U	0.0053 U	0.0054 U	0.0082 U	0.0075 U	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	0.0057 U	0.0059 U	0.0053 U	0.0065 U
Methylene Chloride	mg/kg	1,000	0.005 UJ	0.0049 UJ	0.0053 UJ	0.0054 UJ	0.0082 U	0.007 B	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	0.0057 U	**0.011 J**	**0.016 J**	**0.036 J**
Tetrachloroethene	mg/kg	100	0.005 U	0.0049 U	0.0053 U	0.0054 U	0.0082 U	0.0075 U	0.0058 U	0.006 U	0.0055 U	0.0068 U	0.0077 U	0.0057 U	0.0059 U	0.0053 U	0.0065 U
Toluene	mg/kg	47,000	0.005 U	0.0049 U	0.0053 U	0.0054 U	0.0082 U	0.0075 U	0.0058 U	**0.0025 J**	0.0055 U	0.0068 U	0.0077 U	0.0057 U	0.0059 U	0.0053 U	0.0065 U
Xylenes	mg/kg	2,800	0.015 U	0.015 U	0.016 U	0.016 U	0.025 U	0.023 U	0.018 U	0.018 U	0.017 U	0.02 U	0.023 U	**0.0068 J**	0.018 U	0.016 U	0.02 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	0.082 U	0.081 U	0.084 U	0.083 U	**0.033 J**	**0.037 J**	0.076 U	0.074 U	**0.017 J**	0.074 U	0.1 U	**0.047 J**	0.072 U	0.077 U	0.076 U
2,3,4,6-Tetrachlorophenol	mg/kg	25,000	0.082 U	0.081 U	0.084 U	0.083 U	0.078 U	0.08 U	0.076 U	0.074 U	0.075 U	0.074 U	0.1 U	0.087 U	0.072 U	0.077 U	0.076 U
2,4,5-Trichlorophenol	mg/kg	82,000	0.2 U	0.2 U	0.21 U	0.21 U	0.19 U	0.2 U	0.19 U	0.18 U	0.19 U	0.19 U	0.25 U	0.22 U	0.18 U	0.19 U	0.19 U
2,4-Dimethylphenol	mg/kg	16,000	0.082 U	0.081 U	0.084 U	0.083 U	**0.018 J**	**0.02 J**	0.076 U	0.074 U	0.075 U	0.074 U	0.1 U	**0.078 J**	0.072 U	0.077 U	0.076 U
2-Chloronaphthalene	mg/kg	60,000	0.082 U	0.081 U	0.084 U	0.083 U	0.078 U	0.08 U	0.076 U	0.074 U	0.075 U	0.074 U	0.1 U	0.087 U	0.072 U	0.077 U	0.076 U
2-Methylnaphthalene	mg/kg	3,000	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**0.24**	**0.41**	**0.069 J**	**0.024**	**0.21**	**0.031**	**0.065 J**	**0.034 J**	**0.0027 J**	**0.013 J**	0.075 U
2-Methylphenol	mg/kg	41,000	0.082 U	0.081 U	0.084 U	0.083 U	0.078 U	0.08 U	0.076 U	0.074 U	0.075 U	0.074 U	0.1 U	0.087 U	0.072 U	0.077 U	0.076 U
2-Nitroaniline	mg/kg	8,000	0.2 U	0.2 U	0.21 U	0.21 U	0.19 U	0.2 U	0.19 U	0.18 U	0.19 U	0.19 U	0.25 U	0.22 U	0.18 U	0.19 U	0.19 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.16 U	0.16 U	0.17 U	0.17 U	0.16 U	**0.04 J**	0.15 U	0.15 U	0.15 U	0.15 U	0.2 U	0.17 U	0.14 U	0.15 U	0.15 U
Acenaphthene	mg/kg	45,000	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**0.22**	**0.056 J**	**0.014 J**	**0.0019 J**	**0.11**	**0.0062 J**	**0.0074 J**	**0.059 J**	**0.00098 J**	**0.089 J**	0.075 U
Acenaphthylene	mg/kg	45,000	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**0.63**	**0.029 J**	**0.13**	**0.036**	**0.02 J**	**0.0099**	0.1 U	0.087 U	**0.023**	**0.0043 J**	**0.14**
Acetophenone	mg/kg	120,000	0.082 U	0.081 U	0.084 U	0.083 U	0.078 U	0.08 U	**0.025 J**	0.074 U	0.075 U	0.074 U	0.1 U	0.087 U	0.072 U	0.077 U	0.076 U
Anthracene	mg/kg	230,000	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**1.6**	**0.21**	**0.2**	**0.039**	**0.31**	**0.04**	**0.044 J**	**0.12**	**0.024**	**0.046 J**	**0.1**
Benz[a]anthracene	mg/kg	21	0.0082 U	**0.0023 J**	0.0084 U	0.0085 U	**2.3**	**0.19**	**0.64**	**0.16**	**0.78**	**0.12**	**0.054 J**	**0.058 J**	**0.065**	**0.079 J**	**0.36**
Benzaldehyde	mg/kg	120,000	0.082 UJ	0.081 UJ	0.084 UJ	0.083 UJ	**0.032 J**	**0.067 J**	**0.044 J**	0.074 U	**0.044 J**	0.074 U	0.1 U	0.087 U	0.072 UJ	0.077 UJ	0.076 UJ
Benzo[a]pyrene	mg/kg	2.1	0.0082 U	**0.0011 J**	0.0084 U	0.0085 U	3.5	**0.14**	**0.51**	**0.14**	**0.61**	**0.12**	**0.051 J**	**0.061 J**	**0.085**	**0.057 J**	**0.36**
Benzo[b]fluoranthene	mg/kg	21	**0.001 J**	**0.0016 J**	**0.001 J**	0.0085 U	**5.7**	**0.31**	**0.84**	**0.22**	**1.1**	**0.23**	**0.089 J**	**0.13**	**0.22**	**0.085 J**	**0.91**
Benzo[g,h,i]perylene	mg/kg		0.0082 U	0.0082 U	0.0084 U	0.0085 U	**5.8**	**0.13**	**0.39**	**0.11**	**0.41**	**0.12**	**0.042 J**	**0.05 J**	**0.067**	**0.03 J**	**0.31**
Benzo[k]fluoranthene	mg/kg	210	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**2.1**	**0.26**	**0.36**	**0.089**	**0.98**	**0.2**	**0.034 J**	**0.11**	**0.19**	**0.037 J**	**0.79**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.082 U	0.081 U	0.084 U	0.083 U	**0.034 J**	0.08 U	**0.02 J**	0.074 U	**0.018 J**	0.074 U	**0.68**	0.087 U	0.072 U	0.077 U	0.076 U
Carbazole	mg/kg		0.082 U	0.081 U	0.084 U	0.083 U	**0.35**	**0.04 J**	**0.041 J**	**0.036 J**	**0.12**	0.074 U	0.1 U	0.087 U	0.072 U	**0.025 J**	**0.028 J**
Chrysene	mg/kg	2,100	0.0082 U	**0.0011 J**	**0.00083 J**	0.0085 U	**4.9**	**0.34**	**0.67**	**0.17**	**0.83**	**0.15**	**0.12**	**0.17**	**0.081**	**0.085 J**	**0.27**
Dibenz[a,h]anthracene	mg/kg	2.1	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**1.5**	**0.059 J**	**0.13**	**0.041**	**0.16**	**0.038**	**0.017 J**	**0.021 J**	**0.022**	**0.012 J**	**0.091**
Di-n-butylphthalate	mg/kg	82,000	0.082 U	0.081 U	0.084 U	0.083 U	0.078 U	0.08 U	0.076 U	0.074 U	0.075 U	0.074 U	**0.07 J**	0.087 U	0.072 U	0.077 U	0.076 U
Fluoranthene	mg/kg	30,000	**0.00091 J**	**0.0019 J**	**0.0013 J**	0.0085 U	**3.6**	**0.33**	**1.5**	**0.31**	**1.7**	**0.18**	**0.11**	**0.099**	**0.081**	**0.29 J**	**0.4**
Fluorene	mg/kg	30,000	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**0.27**	**0.11**	**0.027 J**	**0.0094**	**0.12**	**0.0067 J**	**0.012 J**	**0.064 J**	**0.0016 J**	**0.06 J**	0.075 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**3.9**	**0.09**	**0.38**	**0.11**	**0.38**	**0.099**	**0.033 J**	**0.041 J**	**0.063**	**0.028 J**	**0.27**
Naphthalene	mg/kg	8.6	0.0082 U	0.0082 U	0.0084 U	0.0085 U	**0.31**	**0.25**	**0.14**	**0.033**	**0.18**	**0.04**	**0.042 J**	**0.038 J**	0.0045 B	**0.023 J**	0.024 B
N-Nitrosodiphenylamine	mg/kg	470	0.082 U	0.081 U	0.084 U	0.083 U	0.078 U	0.08 U	0.076 U	0.074 U	0.075 U	0.074 U	0.1 U	0.087 U	0.072 U	0.077 U	0.076 U
Pentachlorophenol	mg/kg	4	0.2 U	0.2 U	0.21 U	0.21 U	0.19 U	0.2 U	0.19 U	0.18 U	0.19 U	0.19 U	0.25 U	0.22 U	0.18 U	0.19 U	0.19 U
Phenanthrene	mg/kg		**0.00077 J**	**0.00096 J**	**0.0013 J**	0.0085 U	**2.6**	**1.4**	**0.93**	**0.18**	**1.5**	**0.16**	**0.21**	**0.35**	**0.015**	**0.29 J**	**0.095**
Phenol	mg/kg	250,000	0.082 U	0.081 U	0.084 U	0.083 U	0.078 U	0.08 U	0.076 U	0.074 U	0.075 U	0.074 U	0.1 U	0.087 U	0.072 U	0.077 U	0.076 U
Pyrene	mg/kg	23,000	0.0082 U	**0.0016 J**	**0.0011 J**	0.0085 U	**3.1**	**0.29**	**1.1**	**0.22**	**1.5**	**0.2**	**0.091 J**	**0.18**	**0.09**	**0.23 J**	**0.39**
PCBs																	
Aroclor 1242	mg/kg	0.97	0.0602 U	N/A	0.0623 U	N/A	0.0564 U	N/A	0.0588 U	N/A	0.0595 U	N/A	0.0573 U	N/A	0.051 U	N/A	0.0582 U
Aroclor 1248	mg/kg	0.94	**0.141**	N/A	0.0623 U	N/A	0.0564 U	N/A	0.0588 U	N/A	0.0595 U	N/A	0.0573 U	N/A	0.051 U	N/A	0.0582 U
Aroclor 1254	mg/kg	0.97	0.0602 U	N/A	0.0623 U	N/A	0.0564 U	N/A	0.0588 U	N/A	0.0595 U	N/A	0.0573 U	N/A	0.051 U	N/A	0.0582 U
Aroclor 1260	mg/kg	0.99	0.0602 U	N/A	0.0623 U	N/A	0.0564 U	N/A	0.0588 U	N/A	0.0595 U	N/A	**0.206**	N/A	0.051 U	N/A	0.0582 U
Aroclor 1268	mg/kg		0.0602 U	N/A	0.0623 U	N/A	0.0564 U	N/A	0.0588 U	N/A	0.0595 U	N/A	0.0573 U	N/A	0.051 U	N/A	0.0582 U
PCBs (total)	mg/kg	0.97	**0.141**	N/A	0.0623 U	N/A	0.0564 U	N/A	0.0588 U	N/A	0.0595 U	N/A	**0.206**	N/A	0.051 U	N/A	0.0582 U
TPH																	
Diesel Range Organics	mg/kg	6,200	**4 J**	**3.7 J**	8.3 UJ	**3.6 J**	**320**	**95.3**	**69.3**	**21.8**	**80.7**	**43.9**	**774**	**281**	**11.3 J**	**107 J**	**37.6 J**
Gasoline Range Organics	mg/kg	6,200	9.9 U	10 U	12 U	10.8 U	17 U	15.3 U	12.6 U	17.5 U	9.8 U	14 U	16.8 U	**47.4**	10.8 U	9 U	12.8 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
^ PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value repesents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1 - Sub-Parcel A10-1
Summary of Organics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-008-SB-4	A10-008-SB-10*	A10-009A-SB-1*	A10-009-SB-1.5*	A10-009-SB-5*	A10-010-SB-1	A10-010-SB-8	A10-011-SB-1	A10-011-SB-7	A10-012-SB-1	A10-012-SB-4	A10-013-SB-1	A10-013-SB-4	A10-014-SB-2*	A10-014-SB-5*
			07/08/2016	07/08/2016	07/21/2016	07/21/2016	07/21/2016	07/11/2016	07/11/2016	07/12/2016	07/12/2016	07/12/2016	07/12/2016	07/11/2016	07/11/2016	07/21/2016	07/21/2016
Volatile Organic Compounds																	
1,2,3-Trichlorobenzene	mg/kg	930	0.0047 U	N/A	0.0062 U	0.0074 U	0.0046 U	0.0085 UJ	0.0053 UJ	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 UJ	0.0049 UJ	0.0052 U	0.0048 U
2-Butanone (MEK)	mg/kg	190,000	**0.012**	N/A	0.012 U	0.015 U	0.0092 U	0.017 U	0.011 U	0.016 U	0.01 U	0.012 U	0.01 U	0.012 U	0.0099 U	0.01 U	0.0097 U
Acetone	mg/kg	670,000	**0.16 J**	N/A	**0.015**	0.015 U	**0.011**	0.017 U	**0.02 J**	0.016 UJ	0.01 UJ	0.012 UJ	0.01 UJ	0.012 U	0.0099 U	0.01 U	0.0097 U
Benzene	mg/kg	5.1	0.0047 U	N/A	0.0062 U	0.0074 U	0.0046 U	0.0085 U	0.0053 U	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Carbon disulfide	mg/kg	3,500	0.0047 U	N/A	**0.0044 J**	0.0074 U	0.0046 U	0.0085 U	0.0053 U	**0.0065 J**	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Cyclohexane	mg/kg	27,000	0.0095 UJ	N/A	0.012 U	0.015 U	0.0092 U	0.017 U	0.011 U	0.016 UJ	0.01 UJ	0.012 UJ	0.01 UJ	0.012 U	0.0099 U	0.01 U	0.0097 U
Ethylbenzene	mg/kg	25	0.0047 U	N/A	0.0062 U	0.0074 U	0.0046 U	0.0085 U	0.0053 U	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Isopropylbenzene	mg/kg	9,900	**0.0019 J**	N/A	0.0062 U	0.0074 U	0.0046 U	0.0085 U	0.0053 U	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Methyl Acetate	mg/kg	1,200,000	0.047 R	N/A	0.062 U	0.074 U	0.046 U	0.085 R	0.053 R	0.079 R	0.051 R	0.058 R	0.051 R	0.06 R	0.049 R	0.052 U	0.048 U
Methyl tert-butyl ether (MTBE)	mg/kg	210	0.0047 U	N/A	0.0062 U	0.0074 U	0.0046 U	0.0085 U	0.0053 U	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Methylene Chloride	mg/kg	1,000	**0.0089 J**	N/A	0.0062 U	0.0074 U	0.0046 U	0.0085 U	0.0053 U	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Tetrachloroethene	mg/kg	100	0.0047 U	N/A	0.0062 U	**0.01**	0.0046 U	0.0085 U	0.0053 U	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Toluene	mg/kg	47,000	0.0047 U	N/A	0.0062 U	0.0074 U	0.0046 U	0.0085 U	0.0053 U	0.0079 U	0.0051 U	0.0058 U	0.0051 U	0.006 U	0.0049 U	0.0052 U	0.0048 U
Xylenes	mg/kg	2,800	0.014 U	N/A	0.018 U	0.022 U	0.014 U	0.025 U	0.016 U	0.024 U	0.015 U	0.017 U	0.015 U	0.018 U	0.015 U	0.016 U	0.015 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	0.077 U	N/A	0.071 U	**0.021 J**	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
2,3,4,6-Tetrachlorophenol	mg/kg	25,000	0.077 U	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
2,4,5-Trichlorophenol	mg/kg	82,000	0.19 U	N/A	0.18 U	0.2 U	0.2 U	0.19 U	0.21 U	0.2 U	0.21 U	0.18 U	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U
2,4-Dimethylphenol	mg/kg	16,000	0.077 U	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
2-Chloronaphthalene	mg/kg	60,000	0.077 U	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
2-Methylnaphthalene	mg/kg	3,000	**0.75**	0.0082 U	**0.005 J**	**0.029 J**	0.008 U	**0.11**	**0.0025 J**	**0.0052 J**	0.0083 U	**0.091**	0.008 U	**0.0054 J**	0.0077 U	**0.0044 J**	**0.0069 J**
2-Methylphenol	mg/kg	41,000	0.077 U	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
2-Nitroaniline	mg/kg	8,000	0.19 U	N/A	0.18 U	0.2 U	0.2 U	0.19 U	0.21 U	0.2 U	0.21 U	0.18 U	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	N/A	0.14 U	0.16 U	0.16 U	0.15 U	0.17 U	0.16 U	0.17 U	0.14 U	0.16 U	0.15 U	0.15 U	0.16 U	0.16 U
Acenaphthene	mg/kg	45,000	**4.2**	0.0082 U	**0.00087 J**	**0.039 J**	0.008 U	**0.0086 J**	0.0085 U	0.0081 U	0.0083 U	**0.019 J**	0.008 U	**0.00071 J**	0.0077 U	**0.0015 J**	**0.0011 J**
Acenaphthylene	mg/kg	45,000	**0.45**	0.0082 U	**0.0026 J**	**0.035 J**	0.008 U	**0.093**	0.0085 U	0.0081 U	0.0083 U	**0.032 J**	0.008 U	**0.004 J**	0.0077 U	**0.028**	**0.021**
Acetophenone	mg/kg	120,000	0.077 U	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
Anthracene	mg/kg	230,000	**9.1**	0.0082 U	**0.0047 J**	**0.088**	0.008 U	**0.036 J**	**0.0016 J**	0.0081 U	0.0083 U	**0.048 J**	0.008 U	**0.0071 J**	0.0077 U	**0.038**	**0.013**
Benz[a]anthracene	mg/kg	21	**20.8**	0.0082 U	**0.014**	**0.38**	0.008 U	**0.037 J**	0.0085 U	0.0081 U	**0.0016 J**	**0.18**	0.008 U	**0.021**	**0.0021 J**	**0.24**	**0.11**
Benzaldehyde	mg/kg	120,000	0.077 UJ	N/A	0.071 U	0.079 U	0.079 U	**0.025 J**	0.086 UJ	0.079 UJ	0.084 UJ	0.072 UJ	0.08 UJ	0.076 UJ	0.077 UJ	0.079 U	0.079 U
Benzo[a]pyrene	mg/kg	2.1	**13.6**	0.0082 U	**0.014**	**0.39**	0.008 U	**0.038 J**	0.0085 U	0.0081 U	0.0083 U	**0.21**	0.008 U	**0.023**	**0.0011 J**	**0.2**	**0.12**
Benzo[b]fluoranthene	mg/kg	21	**33.9**	0.0082 U	**0.062**	**0.82**	0.008 U	**0.083**	0.0085 U	**0.0009 J**	**0.0019 J**	**0.36**	0.008 U	**0.048**	**0.002 J**	**0.41**	**0.18**
Benzo[g,h,i]perylene	mg/kg		**7.2**	0.0082 U	**0.0083**	**0.15**	0.008 U	**0.025 J**	0.0085 U	0.0081 U	0.0083 U	**0.094**	0.008 U	**0.017**	0.0077 U	**0.088**	**0.069**
Benzo[k]fluoranthene	mg/kg	210	**7.5**	0.0082 U	**0.056**	**0.74**	0.008 U	**0.075 J**	0.0085 U	0.0081 U	0.0083 U	**0.1**	0.008 U	**0.044**	0.0077 U	**0.38**	**0.056**
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.077 UJ	N/A	**0.032 J**	**0.049 J**	0.079 U	**0.12 J**	0.086 UJ	0.079 U	0.084 U	**0.039 J**	0.08 U	0.076 UJ	0.077 UJ	0.079 U	0.079 U
Carbazole	mg/kg		**0.67**	N/A	0.071 U	**0.022 J**	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
Chrysene	mg/kg	2,100	**18**	0.0082 U	**0.049**	**0.47**	0.008 U	**0.072 J**	0.0085 U	0.0081 U	**0.00098 J**	**0.22**	0.008 U	**0.024**	**0.0011 J**	**0.2**	**0.1**
Dibenz[a,h]anthracene	mg/kg	2.1	**3.2**	0.0082 U	**0.002 J**	**0.052 J**	0.008 U	0.079 U	0.0085 U	0.0081 U	0.0083 U	**0.031 J**	0.008 U	**0.0049 J**	0.0077 U	**0.033**	**0.022**
Di-n-butylphthalate	mg/kg	82,000	0.077 UJ	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
Fluoranthene	mg/kg	30,000	**53.8**	0.0082 U	**0.15**	**0.66**	0.008 U	**0.097**	**0.00075 J**	**0.00082 J**	**0.0015 J**	**0.32**	0.008 U	**0.034**	**0.0022 J**	**0.49**	**0.19**
Fluorene	mg/kg	30,000	**4.8**	0.0082 U	**0.0011 J**	**0.023 J**	0.008 U	**0.022 J**	**0.0076 J**	0.0081 U	0.0083 U	**0.022 J**	0.008 U	**0.001 J**	0.0077 U	**0.0094**	**0.0018 J**
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**7.5**	0.0082 U	**0.0072**	**0.13**	0.008 U	**0.015 J**	0.0085 U	0.0081 U	0.0083 U	**0.088**	0.008 U	**0.015**	0.0077 U	**0.098**	**0.069**
Naphthalene	mg/kg	8.6	**1.7**	0.0082 U	**0.0036 J**	**0.032 J**	0.008 U	**0.27**	**0.016**	0.0081 U	0.0083 U	0.05 B	0.008 U	0.0056 B	0.0077 U	**0.029**	**0.11**
N-Nitrosodiphenylamine	mg/kg	470	0.077 U	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
Pentachlorophenol	mg/kg	4	0.19 U	N/A	0.18 U	0.2 U	0.2 U	0.19 U	0.21 U	0.2 UJ	0.21 UJ	0.18 UJ	0.2 UJ	0.19 U	0.19 U	0.2 U	0.2 U
Phenanthrene	mg/kg		**43.7**	0.0082 U	**0.05**	**0.56**	**0.00089 J**	**0.22**	**0.0046 J**	0.00099 B	0.0014 B	**0.24**	0.008 U	**0.017**	**0.0016 J**	**0.14**	**0.03**
Phenol	mg/kg	250,000	0.077 U	N/A	0.071 U	0.079 U	0.079 U	0.077 U	0.086 U	0.079 U	0.084 U	0.072 U	0.08 U	0.076 U	0.077 U	0.079 U	0.079 U
Pyrene	mg/kg	23,000	**39.9**	0.0082 U	**0.063**	**0.95**	0.008 U	**0.1**	**0.00092 J**	**0.00082 J**	**0.0013 J**	**0.3**	0.008 U	**0.036**	**0.002 J**	**0.35**	**0.15**
PCBs																	
Aroclor 1242	mg/kg	0.97	N/A	N/A	0.0526 U	0.0553 U	N/A	0.0653 U	N/A	0.0594 U	N/A	0.0562 U	N/A	0.0584 U	N/A	0.0632 U	N/A
Aroclor 1248	mg/kg	0.94	N/A	N/A	0.0526 U	0.0553 U	N/A	0.0653 U	N/A	0.0594 U	N/A	0.0562 U	N/A	0.0584 U	N/A	0.0632 U	N/A
Aroclor 1254	mg/kg	0.97	N/A	N/A	0.0526 U	0.0553 U	N/A	0.0653 U	N/A	0.0594 U	N/A	0.0562 U	N/A	0.0584 U	N/A	0.0632 U	N/A
Aroclor 1260	mg/kg	0.99	N/A	N/A	0.0526 U	0.0553 U	N/A	0.0653 U	N/A	0.0594 U	N/A	0.0562 U	N/A	0.0584 U	N/A	0.0632 U	N/A
Aroclor 1268	mg/kg		N/A	N/A	0.0526 U	0.0553 U	N/A	0.0653 U	N/A	0.0594 U	N/A	0.0562 U	N/A	0.0584 U	N/A	0.0632 U	N/A
PCBs (total)	mg/kg	0.97	N/A	N/A	0.0526 U	0.0553 U	N/A	0.0653 U	N/A	0.0594 U	N/A	0.0562 U	N/A	0.0584 U	N/A	0.0632 U	N/A
TPH																	
Diesel Range Organics	mg/kg	6,200	**1,270 J**	8.2 U	**108**	**87.2**	7.8 U	**130 J**	**600 J**	**17.5 J**	**3.5 J**	**101 J**	**3.7 J**	**17.3 J**	**5 J**	**14.9**	**9.3**
Gasoline Range Organics	mg/kg	6,200	10.6 U	N/A	14.6 U	13.3 U	10 U	14.2 U	11 U	17.3 U	10.6 U	13.8 U	9.6 U	12.9 U	9.3 U	9.5 U	10.4 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
^ PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1 - Sub-Parcel A10-1
Summary of Organics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-015-SB-1	A10-015-SB-5	A10-016-SB-1*	A10-016-SB-6*	A10-017-SB-1*	A10-017-SB-4*	A10-018-SB-1	A10-018-SB-5	A10-018-SB-10	A10-019-SB-1	A10-019-SB-4	A10-020-SB-1.5	A10-020-SB-7	A10-021-SB-2	A10-021-SB-4
			07/11/2016	07/11/2016	07/21/2016	07/21/2016	07/21/2016	07/21/2016	07/14/2016	07/14/2016	07/14/2016	07/11/2016	07/11/2016	07/08/2016	07/08/2016	07/11/2016	07/11/2016
Volatile Organic Compounds																	
1,2,3-Trichlorobenzene	mg/kg	930	0.0048 UJ	0.0053 UJ	0.005 U	0.004 U	0.0055 U	0.0055 U	**0.0035 J**	0.0043 U	N/A	0.0051 UJ	0.0043 UJ	0.0064 U	0.0058 U	0.0055 UJ	0.005 UJ
2-Butanone (MEK)	mg/kg	190,000	0.0096 U	0.011 U	0.0099 U	0.0081 U	0.011 U	0.011 U	0.0091 U	0.0085 U	N/A	0.01 U	0.0087 U	0.013 U	0.012 U	0.011 U	0.01 U
Acetone	mg/kg	670,000	0.0096 U	0.011 U	**0.025**	**0.038**	**0.034**	**0.031**	**0.028 J**	**0.045 J**	N/A	0.0091 B	0.0087 U	**0.037 J**	**0.084 J**	0.011 U	0.01 U
Benzene	mg/kg	5.1	0.0048 U	0.0053 U	0.005 U	0.004 U	0.0055 U	0.0055 U	0.0046 U	0.0043 U	N/A	0.0051 U	0.0043 U	0.0064 U	0.0058 U	0.0055 U	0.005 U
Carbon disulfide	mg/kg	3,500	0.0048 U	0.0053 U	0.005 U	0.004 U	0.0055 U	0.0055 U	0.0046 U	0.0043 U	N/A	0.0051 U	0.0043 U	0.0064 U	0.0058 U	**0.0039 J**	0.005 U
Cyclohexane	mg/kg	27,000	0.0096 U	0.011 U	0.0099 U	**0.023**	0.011 U	0.011 U	0.0091 UJ	**0.051 J**	N/A	0.01 U	0.0087 U	0.013 UJ	0.012 UJ	0.011 U	0.01 U
Ethylbenzene	mg/kg	25	0.0048 U	0.0053 U	0.005 U	**0.015**	0.0055 U	**0.0091**	0.0046 U	**0.089**	N/A	0.0051 U	0.0043 U	0.0064 U	0.0058 U	0.0055 U	0.005 U
Isopropylbenzene	mg/kg	9,900	0.0048 U	0.0053 U	0.005 U	**0.023**	**0.005 J**	**0.021**	0.0046 U	**0.069**	N/A	0.0051 U	0.0043 U	0.0064 U	0.0058 U	0.0055 U	0.005 U
Methyl Acetate	mg/kg	1,200,000	0.048 R	0.053 R	0.05 U	0.04 U	0.055 U	0.055 U	0.046 R	0.043 R	N/A	0.051 R	0.043 R	0.064 R	0.058 R	0.055 R	0.05 R
Methyl tert-butyl ether (MTBE)	mg/kg	210	0.0048 U	0.0053 U	0.005 U	0.004 U	0.0055 U	0.0055 U	0.0046 U	0.0043 U	N/A	0.0051 U	0.0043 U	0.0064 U	0.0058 U	0.0055 U	0.005 U
Methylene Chloride	mg/kg	1,000	0.0048 U	0.0053 U	0.005 U	0.004 U	0.0055 U	0.0055 U	0.0046 UJ	0.0043 UJ	N/A	0.0051 U	0.0043 U	**0.034 J**	**0.011 J**	0.0055 U	0.005 U
Tetrachloroethene	mg/kg	100	0.0048 U	0.0053 U	0.005 U	0.004 U	0.0055 U	0.0055 U	0.0046 U	0.0043 U	N/A	0.0051 U	0.0043 U	0.0064 U	0.0058 U	0.0055 U	0.005 U
Toluene	mg/kg	47,000	0.0048 U	0.0053 U	0.005 U	0.004 U	0.0055 U	0.0055 U	0.0046 U	0.0043 U	N/A	0.0051 U	0.0043 U	0.0064 U	0.0058 U	0.0055 U	0.005 U
Xylenes	mg/kg	2,800	0.014 U	0.016 U	0.015 U	**0.02**	**0.0034 J**	**0.0075 J**	0.014 U	**0.11**	N/A	0.015 U	0.013 U	0.019 U	0.017 U	0.017 U	0.015 U
Semi-Volatile Organic Compounds^																	
1,1-Biphenyl	mg/kg	200	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.4 U	0.4 U	0.4 U	N/A	0.078 U	0.078 U	**0.025 J**	0.082 U	0.067 UJ	0.08 U
2,3,4,6-Tetrachlorophenol	mg/kg	25,000	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.4 U	0.4 U	0.4 U	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
2,4,5-Trichlorophenol	mg/kg	82,000	0.18 U	0.2 U	0.21 U	0.2 U	0.21 U	0.99 U	1 U	1 U	N/A	0.19 U	0.2 U	0.19 U	0.21 U	0.17 U	0.2 U
2,4-Dimethylphenol	mg/kg	16,000	0.073 U	0.079 U	0.083 U	**0.24**	**0.21**	**0.49**	**0.59**	0.4 U	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
2-Chloronaphthalene	mg/kg	60,000	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.4 U	0.4 U	0.4 U	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
2-Methylnaphthalene	mg/kg	3,000	0.37 U	0.0079 U	0.0082 U	**1.4**	**2.6**	**5.5**	**0.11**	**12.6**	N/A	**0.0021 J**	0.0078 U	**0.053 J**	0.0081 U	0.066 U	0.0081 U
2-Methylphenol	mg/kg	41,000	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.079 U	0.08 U	0.4 U	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
2-Nitroaniline	mg/kg	8,000	0.18 U	0.2 U	0.21 U	0.2 U	0.21 U	0.99 U	1 U	1 U	N/A	0.19 U	0.2 U	0.19 U	0.21 U	0.17 U	0.2 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.15 U	0.16 U	0.17 U	0.16 U	0.16 U	0.16 U	0.16 U	0.8 U	N/A	0.15 U	0.16 U	0.15 U	0.16 U	0.13 U	0.16 U
Acenaphthene	mg/kg	45,000	0.37 U	0.0079 U	0.0082 U	**0.14**	**0.23**	**0.43**	**0.056 J**	**0.35**	N/A	0.0077 U	0.0078 U	**0.019 J**	0.0081 U	0.066 U	0.0081 U
Acenaphthylene	mg/kg	45,000	0.37 U	0.0079 U	0.0082 U	**0.063**	**0.079 J**	**0.13**	**0.094**	**0.26**	N/A	0.0077 U	0.0078 U	**0.053 J**	0.0081 U	0.066 U	0.0081 U
Acetophenone	mg/kg	120,000	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	**0.54**	0.08 U	0.4 U	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
Anthracene	mg/kg	230,000	0.37 U	0.0079 U	0.0082 U	**0.15**	**0.13**	**0.21**	**0.074 J**	**0.41**	N/A	**0.001 J**	0.0078 U	**0.09**	**0.0014 J**	0.066 U	0.0081 U
Benz[a]anthracene	mg/kg	21	0.37 U	0.0079 U	**0.0021 J**	0.0079 U	0.083 U	0.079 U	0.081 U	0.081 U	N/A	**0.0056 J**	0.0078 U	**0.33**	**0.0031 J**	**0.017 J**	**0.0016 J**
Benzaldehyde	mg/kg	120,000	0.073 UJ	0.079 UJ	0.083 U	0.078 U	0.082 U	0.079 U	0.08 R	0.4 UJ	N/A	0.078 UJ	0.078 UJ	**0.02 J**	0.082 UJ	0.067 UJ	0.08 UJ
Benzo[a]pyrene	mg/kg	2.1	**0.046 J**	0.0079 U	0.0082 U	0.0079 U	0.083 U	0.079 U	0.081 U	0.081 U	N/A	**0.0052 J**	0.0078 U	**0.29**	**0.0017 J**	**0.0087 J**	0.0081 U
Benzo[b]fluoranthene	mg/kg	21	**0.15 J**	**0.0011 J**	**0.0048 J**	0.0079 U	0.083 U	0.079 U	**0.0083 J**	0.081 U	N/A	**0.012**	0.0078 U	**0.59**	**0.0044 J**	**0.015 J**	**0.0011 J**
Benzo[g,h,i]perylene	mg/kg		**0.045 J**	0.0079 U	0.0082 U	0.0079 U	0.083 U	0.079 U	0.081 U	0.081 U	N/A	**0.0043 J**	0.0078 U	**0.18**	0.0081 U	0.066 U	0.0081 U
Benzo[k]fluoranthene	mg/kg	210	**0.14 J**	0.0079 U	**0.0043 J**	0.0079 U	0.083 U	0.079 U	0.081 U	0.081 U	N/A	**0.011**	0.0078 U	**0.52**	**0.0038 J**	0.066 U	0.0081 U
bis(2-Ethylhexyl)phthalate	mg/kg	160	**0.053 J**	0.079 UJ	0.083 U	0.078 U	0.082 U	**0.021 J**	0.08 U	0.08 U	N/A	0.078 UJ	0.078 UJ	0.016 B	0.082 U	0.067 UJ	0.08 UJ
Carbazole	mg/kg		0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.079 U	0.4 UJ	0.4 UJ	N/A	0.078 U	0.078 U	**0.053 J**	0.082 U	0.067 U	0.08 U
Chrysene	mg/kg	2,100	**0.069 J**	0.0079 U	**0.0058 J**	0.0079 U	0.083 U	0.079 U	0.081 U	0.081 U	N/A	**0.005 J**	0.0078 U	**0.28**	**0.0024 J**	**0.0088 J**	**0.00083 J**
Dibenz[a,h]anthracene	mg/kg	2.1	0.37 U	0.0079 U	0.0082 U	0.0079 U	0.083 U	0.079 U	0.081 U	0.081 U	N/A	**0.0014 J**	0.0078 U	**0.065 J**	0.0081 U	0.066 U	0.0081 U
Di-n-butylphthalate	mg/kg	82,000	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.079 U	0.4 U	0.4 UJ	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
Fluoranthene	mg/kg	30,000	**0.077 J**	**0.00086 J**	**0.0026 J**	**0.0043 J**	**0.009 J**	**0.015 J**	**0.012 J**	**0.014 J**	N/A	**0.007 J**	0.0078 U	**0.46**	**0.0046 J**	**0.017 J**	**0.0018 J**
Fluorene	mg/kg	30,000	0.37 U	0.0079 U	0.0082 U	**0.26**	**0.46**	**0.78**	**0.056 J**	**1.6**	N/A	0.0077 U	0.0078 U	**0.019 J**	0.0081 U	0.066 U	0.0081 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.37 U	0.0079 U	0.0082 U	0.0079 U	0.083 U	0.079 U	0.081 U	0.081 U	N/A	**0.0038 J**	0.0078 U	**0.17**	0.0081 U	0.066 U	0.0081 U
Naphthalene	mg/kg	8.6	0.37 U	0.0079 U	0.0082 U	**0.34**	**0.31**	**0.75**	**0.06 J**	**2.4**	N/A	0.0021 B	0.0078 U	**0.26**	0.0081 U	0.066 U	0.0081 U
N-Nitrosodiphenylamine	mg/kg	470	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.079 U	0.4 U	0.4 U	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
Pentachlorophenol	mg/kg	4	0.18 U	0.2 U	0.21 U	0.2 U	0.21 U	0.2 U	1 U	1 U	N/A	0.19 U	0.2 U	0.19 U	0.21 U	0.17 U	0.2 U
Phenanthrene	mg/kg		**0.041 J**	**0.00091 J**	**0.00079 J**	**0.59**	**0.5**	**0.98**	**0.11**	**2**	N/A	**0.004 J**	0.0078 U	**0.18**	**0.0027 J**	**0.0092 J**	**0.0021 J**
Phenol	mg/kg	250,000	0.073 U	0.079 U	0.083 U	0.078 U	0.082 U	0.079 U	0.08 U	0.4 U	N/A	0.078 U	0.078 U	0.077 U	0.082 U	0.067 U	0.08 U
Pyrene	mg/kg	23,000	**0.14 J**	0.0079 U	**0.0022 J**	**0.013**	**0.017 J**	**0.022 J**	**0.028 J**	**0.041 J**	N/A	**0.0063 J**	0.0078 U	**0.45**	**0.0036 J**	**0.018 J**	**0.0015 J**
PCBs																	
Aroclor 1242	mg/kg	0.97	0.0561 U	N/A	0.0609 U	N/A	0.0606 U	N/A	0.0599 U	N/A	N/A	0.0568 U	N/A	0.0585 U	N/A	0.0693 U	N/A
Aroclor 1248	mg/kg	0.94	0.0561 U	N/A	0.0609 U	N/A	0.0606 U	N/A	0.0599 U	N/A	N/A	0.0568 U	N/A	0.0585 U	N/A	0.0693 U	N/A
Aroclor 1254	mg/kg	0.97	0.0561 U	N/A	0.0609 U	N/A	0.0606 U	N/A	0.0599 U	N/A	N/A	0.0568 U	N/A	**0.0559 J**	N/A	0.0693 U	N/A
Aroclor 1260	mg/kg	0.99	0.0561 U	N/A	0.0609 U	N/A	0.0606 U	N/A	0.0599 U	N/A	N/A	0.0568 U	N/A	0.0585 U	N/A	0.0693 U	N/A
Aroclor 1268	mg/kg		0.0561 U	N/A	0.0609 U	N/A	0.0606 U	N/A	0.0599 U	N/A	N/A	0.0568 U	N/A	**0.0633**	N/A	0.0693 U	N/A
PCBs (total)	mg/kg	0.97	0.0561 U	N/A	0.0609 U	N/A	0.0606 U	N/A	0.0599 U	N/A	N/A	0.0568 U	N/A	**0.1192**	N/A	0.0693 U	N/A
TPH																	
Diesel Range Organics	mg/kg	6,200	**284 J**	**6.2 J**	**353**	**3,200**	**4,890**	**4,840**	**2,510 J**	**6,000 J**	**914 J**	**3.6 J**	7.7 UJ	**164 J**	**4.2 J**	**38.5 J**	**4.5 J**
Gasoline Range Organics	mg/kg	6,200	10.4 U	10.5 U	**8.1 J**	**28**	**22.2**	**16.2**	**40.4**	**118**	N/A	10.2 U	9.4 U	12.2 U	9.6 U	9.5 U	9.9 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
^ PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value repesents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1 - Sub-Parcel A10-1
Summary of Organics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-022-SB-2	A10-022-SB-4	A10-023-SB-1	A10-023-SB-4	A10-024-SB-1*	A10-024-SB-5*	A10-025-SB-1*	A10-025-SB-4*	A10-026-SB-1	A10-026-SB-5	A10-027-SB-1	A10-027-SB-4	A10-027-SB-10*
			07/11/2016	07/11/2016	07/08/2016	07/08/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/08/2016	07/08/2016	07/08/2016	07/08/2016	07/08/2016
Volatile Organic Compounds															
1,2,3-Trichlorobenzene	mg/kg	930	0.0046 UJ	0.0049 UJ	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	0.0057 U	0.0055 U	0.0082 U	0.005 U	N/A
2-Butanone (MEK)	mg/kg	190,000	0.0091 U	0.0098 U	0.015 U	0.015 U	0.012 U	0.075 U	0.012 U	0.011 U	0.011 U	0.011 U	0.016 U	0.01 U	N/A
Acetone	mg/kg	670,000	0.0091 U	0.0098 U	0.015 UJ	**0.17 J**	**0.0082 J**	**0.23**	0.012 U	0.011 U	**0.017 J**	**0.07 J**	0.016 UJ	**0.02 J**	N/A
Benzene	mg/kg	5.1	**0.015**	**0.0058**	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	0.0057 U	0.0055 U	0.0082 U	0.005 U	N/A
Carbon disulfide	mg/kg	3,500	**0.0062**	0.0049 U	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	**0.0039 J**	0.0055 U	0.0082 U	0.005 U	N/A
Cyclohexane	mg/kg	27,000	0.0091 U	0.0098 U	0.015 UJ	0.015 UJ	0.012 U	0.075 U	0.012 U	0.011 U	0.011 UJ	0.011 UJ	0.016 UJ	0.01 UJ	N/A
Ethylbenzene	mg/kg	25	**0.47**	**0.008**	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	0.0057 U	0.0055 U	0.0082 U	0.005 U	N/A
Isopropylbenzene	mg/kg	9,900	**0.094**	0.0049 U	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	0.0057 U	0.0055 U	0.0082 U	0.005 U	N/A
Methyl Acetate	mg/kg	1,200,000	0.046 R	0.049 R	0.075 R	0.075 R	0.06 U	0.38 U	**0.012 J**	0.054 U	0.057 R	0.055 R	0.082 R	0.05 R	N/A
Methyl tert-butyl ether (MTBE)	mg/kg	210	**0.004 J**	**0.015**	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	0.0057 U	0.0055 U	0.0082 U	0.005 U	N/A
Methylene Chloride	mg/kg	1,000	0.0046 U	0.0049 U	**0.049 J**	**0.19 J**	0.006 U	**0.23**	0.006 U	0.0054 U	**0.026 J**	**0.0097 J**	**0.039 J**	**0.025 J**	N/A
Tetrachloroethene	mg/kg	100	0.0046 U	0.0049 U	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	0.0057 U	0.0055 U	0.0082 U	0.005 U	N/A
Toluene	mg/kg	47,000	**0.12**	**0.0054**	0.0075 U	0.0075 U	0.006 U	0.038 U	0.006 U	0.0054 U	0.0057 U	0.0055 U	0.0082 U	**0.0025 J**	N/A
Xylenes	mg/kg	2,800	**0.72 J**	**0.03**	0.022 U	0.022 U	0.018 U	0.11 U	0.018 U	0.016 U	0.017 U	0.017 U	0.025 U	0.015 U	N/A
Semi-Volatile Organic Compounds^															
1,1-Biphenyl	mg/kg	200	0.08 U	0.082 U	**0.036 J**	0.092 U	0.075 U	**0.15 J**	0.08 U	0.081 U	0.073 U	0.076 U	**0.035 J**	**0.03 J**	N/A
2,3,4,6-Tetrachlorophenol	mg/kg	25,000	0.08 U	0.082 U	0.075 U	0.092 U	0.075 U	**0.15 J**	0.08 U	0.081 U	0.073 U	0.076 R	0.073 U	0.074 U	N/A
2,4,5-Trichlorophenol	mg/kg	82,000	0.2 U	0.21 U	0.19 U	0.23 U	0.19 U	**0.042 J**	0.2 U	0.2 U	0.18 U	0.19 R	0.18 U	0.19 U	N/A
2,4-Dimethylphenol	mg/kg	16,000	0.08 U	0.082 U	0.075 U	0.092 U	0.075 U	**1.9**	0.08 U	0.081 U	0.073 U	0.076 R	0.073 U	0.074 U	N/A
2-Chloronaphthalene	mg/kg	60,000	0.08 U	0.082 U	**0.054 J**	0.092 U	0.075 U	0.17 U	0.08 U	0.081 U	0.073 U	0.076 U	0.073 U	0.074 U	N/A
2-Methylnaphthalene	mg/kg	3,000	**0.1**	0.0082 U	**0.12**	**0.0051 J**	**0.035 J**	**0.43**	0.079 U	0.0083 U	**0.036 J**	**0.0081**	**0.13**	**0.14**	N/A
2-Methylphenol	mg/kg	41,000	0.08 U	0.082 U	**0.015 J**	0.092 U	0.075 U	**2.2**	0.08 U	0.081 U	0.073 U	0.076 R	0.073 U	0.074 U	N/A
2-Nitroaniline	mg/kg	8,000	0.2 U	0.21 U	0.19 U	0.23 U	0.19 U	**0.34 J**	0.2 U	0.2 U	0.18 U	0.19 U	0.18 U	0.19 U	N/A
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.16 U	0.16 U	**0.046 J**	0.18 U	0.15 U	**5.8**	0.16 U	0.16 U	0.15 U	0.15 R	0.15 U	0.15 U	N/A
Acenaphthene	mg/kg	45,000	**0.009 J**	0.0082 U	**0.012 J**	**0.0017 J**	0.076 U	**0.12 J**	0.079 U	0.0083 U	**0.0067 J**	0.0076 U	**0.021 J**	**0.037 J**	N/A
Acenaphthylene	mg/kg	45,000	**0.0069 J**	0.0082 U	**0.48**	**0.053**	**0.017 J**	**0.23**	**0.02 J**	0.0083 U	**0.12**	**0.002 J**	**0.35**	**0.13**	N/A
Acetophenone	mg/kg	120,000	0.08 U	0.082 U	0.075 U	0.092 U	0.075 U	**0.44**	0.08 U	0.081 U	0.073 U	0.076 U	0.073 U	0.074 U	N/A
Anthracene	mg/kg	230,000	**0.021 J**	0.0082 U	**0.38**	**0.038**	**0.024 J**	**0.11 J**	**0.024 J**	0.0083 U	**0.11**	**0.0035 J**	**0.31**	**0.26**	N/A
Benz[a]anthracene	mg/kg	21	**0.037 J**	0.0082 U	**0.89**	**0.19**	**0.13**	**0.1 J**	**0.082**	0.0083 U	**0.38**	**0.011**	**1.2**	**1**	N/A
Benzaldehyde	mg/kg	120,000	0.08 UJ	0.082 UJ	**0.059 J**	0.092 UJ	**0.052 J**	**1**	0.08 U	0.081 U	0.073 UJ	0.076 UJ	**0.022 J**	**0.041 J**	N/A
Benzo[a]pyrene	mg/kg	2.1	**0.036 J**	0.0082 U	**1.2**	**0.15**	**0.1**	**0.055 J**	**0.071 J**	0.0083 U	**0.4**	**0.0079**	**1.5**	**1.1**	**0.0032 J**
Benzo[b]fluoranthene	mg/kg	21	**0.09**	0.0082 U	**3.3**	**0.29**	**0.26**	**0.12 J**	**0.19**	0.0083 U	**0.91**	**0.021**	**2.6**	**1.7**	**0.0098**
Benzo[g,h,i]perylene	mg/kg		**0.046 J**	0.0082 U	**1**	**0.085**	**0.084**	**0.051 J**	**0.055 J**	0.0083 U	**0.32**	**0.0066 J**	**1.2**	**0.82**	N/A
Benzo[k]fluoranthene	mg/kg	210	**0.084**	0.0082 U	**2.9**	**0.26**	**0.22**	**0.1 J**	**0.16**	0.0083 U	**0.79**	**0.018**	**0.93**	**0.64**	N/A
bis(2-Ethylhexyl)phthalate	mg/kg	160	**0.041 J**	0.082 UJ	0.053 B	0.092 U	**0.055 J**	**0.21**	0.08 U	0.081 U	0.073 UJ	0.076 U	**0.16 J**	**0.11 J**	N/A
Carbazole	mg/kg		0.08 U	0.082 U	**0.1**	0.092 U	0.075 U	0.17 U	0.08 U	0.081 U	0.073 U	0.076 U	**0.09 J**	**0.074 J**	N/A
Chrysene	mg/kg	2,100	**0.056 J**	0.0082 U	**1.2**	**0.17**	**0.12**	**0.069 J**	**0.081**	0.0083 U	**0.3**	**0.0096**	**1.4**	**0.99**	N/A
Dibenz[a,h]anthracene	mg/kg	2.1	0.082 U	0.0082 U	**0.33**	**0.03**	**0.03 J**	0.17 U	**0.019 J**	0.0083 U	**0.1**	**0.0021 J**	**0.37**	**0.27**	N/A
Di-n-butylphthalate	mg/kg	82,000	0.08 U	0.082 U	0.075 U	0.092 U	0.075 U	**0.17 J**	0.08 U	0.081 U	0.073 U	0.076 U	**0.075**	0.074 U	N/A
Fluoranthene	mg/kg	30,000	**0.082**	0.0082 U	**1**	**0.35**	**0.17**	**0.25**	**0.12**	**0.00067 J**	**0.42**	**0.017**	**1.6**	**1.5**	N/A
Fluorene	mg/kg	30,000	**0.02 J**	0.0082 U	**0.023 J**	**0.0061 J**	0.076 U	**0.19**	0.079 U	0.0083 U	**0.009 J**	0.0076 U	**0.023 J**	**0.021 J**	N/A
Indeno[1,2,3-c,d]pyrene	mg/kg	21	**0.034 J**	0.0082 U	**0.93**	**0.086**	**0.08**	**0.033 J**	**0.052 J**	0.0083 U	**0.28**	**0.0062 J**	**1.1**	**0.73**	N/A
Naphthalene	mg/kg	8.6	**0.6**	0.0082 U	**0.24**	**0.026**	**0.045 J**	**1.1**	0.079 U	0.0083 U	0.048 B	0.0068 B	**0.13**	**0.14**	N/A
N-Nitrosodiphenylamine	mg/kg	470	0.08 U	0.082 U	0.075 U	0.092 U	0.075 U	0.17 U	0.08 U	0.081 U	0.073 U	0.076 U	0.073 U	**0.015 J**	N/A
Pentachlorophenol	mg/kg	4	0.2 U	0.21 U	0.19 U	0.23 U	0.19 U	**0.34 J**	0.2 U	0.2 U	0.18 U	0.19 R	0.18 U	0.19 U	N/A
Phenanthrene	mg/kg		**0.078 J**	0.0082 U	**0.45**	**0.076**	**0.077**	**0.51**	**0.073 J**	**0.00098 J**	**0.15**	**0.0096**	**0.41**	**0.68**	N/A
Phenol	mg/kg	250,000	0.08 U	0.082 U	**0.025 J**	0.092 U	0.075 U	**2.2**	0.08 U	0.081 U	0.073 U	0.076 R	0.073 U	0.074 U	N/A
Pyrene	mg/kg	23,000	**0.086**	0.0082 U	**1.1**	**0.28**	**0.16**	**0.23**	**0.1**	0.0083 U	**0.42**	**0.012**	**1.6**	**1.4**	N/A
PCBs															
Aroclor 1242	mg/kg	0.97	0.0593 U	N/A	0.0536 U	N/A	0.0556 U	N/A	0.058 U	N/A	**0.0598**	N/A	0.0557 U	N/A	N/A
Aroclor 1248	mg/kg	0.94	0.0593 U	N/A	0.0536 U	N/A	0.0556 U	N/A	0.058 U	N/A	0.0538 U	N/A	**0.334**	N/A	N/A
Aroclor 1254	mg/kg	0.97	0.0593 U	N/A	0.0536 U	N/A	**0.0652**	N/A	0.058 U	N/A	0.0538 U	N/A	**0.508**	N/A	N/A
Aroclor 1260	mg/kg	0.99	0.0593 U	N/A	0.0536 U	N/A	0.0556 U	N/A	0.058 U	N/A	**0.066**	N/A	**0.279**	N/A	N/A
Aroclor 1268	mg/kg		0.0593 U	N/A	**0.0458 J**	N/A	0.0556 U	N/A	0.058 U	N/A	0.0538 U	N/A	0.0557 U	N/A	N/A
PCBs (total)	mg/kg	0.97	0.0593 U	N/A	**0.0458 J**	N/A	**0.0652**	N/A	0.058 U	N/A	**0.1258**	N/A	**1.121**	N/A	N/A
TPH															
Diesel Range Organics	mg/kg	6,200	**872 J**	**4.6 J**	**94.2 J**	**12.1 J**	**67**	**768**	**7.5 J**	**3 J**	**53.4 J**	**7.5 J**	**143 J**	**82.7 J**	N/A
Gasoline Range Organics	mg/kg	6,200	**182**	9.3 U	12 U	22.3 U	12 U	45.2 U	12.9 U	10.3 U	10.5 U	14.2 U	10.3 U	11.2 U	N/A

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
^ PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 1 - Sub-Parcel A10-1
Summary of Organics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-028-SB-1	A10-028-SB-6	A10-029-SB-1	A10-029-SB-4	A10-030-SB-1	A10-030-SB-7	A10-031-SB-1.5	A10-031-SB-8	A10-032-SB-1*	A10-032-SB-5*	A10-033-SB-1	A10-033-SB-4
			07/11/2016	07/11/2016	07/12/2016	07/12/2016	07/12/2016	07/12/2016	07/08/2016	07/08/2016	07/07/2016	07/07/2016	07/06/2016	07/06/2016
Volatile Organic Compounds														
1,2,3-Trichlorobenzene	mg/kg	930	0.0052 UJ	0.0053 UJ	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 U	0.0053 U
2-Butanone (MEK)	mg/kg	190,000	0.01 U	0.011 U	0.0092 U	0.0091 U	0.01 U	0.0099 U	0.0099 U	0.0092 U	0.015 U	0.012 U	0.01 UJ	0.011 UJ
Acetone	mg/kg	670,000	0.01 U	0.011 U	0.0092 UJ	0.0091 UJ	0.01 UJ	0.0099 UJ	0.0099 UJ	0.0092 UJ	0.015 U	0.012 U	0.01 U	0.011 U
Benzene	mg/kg	5.1	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 U	0.0053 U
Carbon disulfide	mg/kg	3,500	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 UJ	0.0053 UJ
Cyclohexane	mg/kg	27,000	0.01 U	0.011 U	0.0092 UJ	0.0091 UJ	0.01 UJ	0.0099 UJ	**0.015 J**	0.0092 UJ	0.015 U	0.012 U	0.01 U	0.011 U
Ethylbenzene	mg/kg	25	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 U	0.0053 U
Isopropylbenzene	mg/kg	9,900	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 U	0.0053 U
Methyl Acetate	mg/kg	1,200,000	0.052 R	0.053 R	0.046 R	0.046 R	0.052 R	0.049 R	0.049 R	0.046 R	0.074 U	0.062 U	0.052 U	0.053 U
Methyl tert-butyl ether (MTBE)	mg/kg	210	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 U	0.0053 U
Methylene Chloride	mg/kg	1,000	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 UJ	0.0053 UJ
Tetrachloroethene	mg/kg	100	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	0.0049 U	0.0046 U	0.0074 U	0.0062 U	0.0052 U	0.0053 U
Toluene	mg/kg	47,000	0.0052 U	0.0053 U	0.0046 U	0.0046 U	0.0052 U	0.0049 U	**0.0037 J**	0.0046 U	0.0074 U	**0.002 J**	0.0052 U	0.0053 U
Xylenes	mg/kg	2,800	0.016 U	0.016 U	0.014 U	0.014 U	0.016 U	0.015 U	0.015 U	0.014 U	0.022 U	0.019 U	0.016 U	0.016 U
Semi-Volatile Organic Compounds^														
1,1-Biphenyl	mg/kg	200	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	**0.042 J**	0.076 U	0.079 U	0.081 U
2,3,4,6-Tetrachlorophenol	mg/kg	25,000	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
2,4,5-Trichlorophenol	mg/kg	82,000	0.2 U	0.2 U	0.17 U	0.2 U	0.18 U	0.21 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U
2,4-Dimethylphenol	mg/kg	16,000	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
2-Chloronaphthalene	mg/kg	60,000	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
2-Methylnaphthalene	mg/kg	3,000	0.008 U	0.008 U	**0.0042 J**	0.0081 U	**0.1**	0.0085 U	**0.054**	0.0082 U	**0.59**	0.0075 U	0.008 U	0.081 U
2-Methylphenol	mg/kg	41,000	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
2-Nitroaniline	mg/kg	8,000	0.2 U	0.2 U	0.17 U	0.2 U	0.18 U	0.21 U	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.16 U	0.16 U	0.14 U	0.16 U	0.15 U	0.17 U	0.16 U	0.16 U	0.15 U	0.15 U	0.16 U	0.16 U
Acenaphthene	mg/kg	45,000	0.008 U	0.008 U	**0.00053 J**	0.0081 U	**0.016**	0.0085 U	**0.014**	0.0082 U	**0.017**	0.0075 U	0.008 U	0.081 U
Acenaphthylene	mg/kg	45,000	0.008 U	0.008 U	**0.0025 J**	0.0081 U	**0.014**	0.0085 U	**0.013**	0.0082 U	**0.019**	0.0075 U	0.008 U	0.081 U
Acetophenone	mg/kg	120,000	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
Anthracene	mg/kg	230,000	0.008 U	0.008 U	**0.0019 J**	0.0081 UJ	**0.062**	0.0085 U	**0.075**	0.0082 U	**0.034**	0.0075 U	0.008 U	0.081 U
Benz[a]anthracene	mg/kg	21	0.008 U	0.008 U	**0.0073**	0.0081 UJ	**0.14**	0.0085 U	**0.38**	**0.0013 J**	**0.11**	**0.0021 J**	0.008 U	0.081 U
Benzaldehyde	mg/kg	120,000	0.079 UJ	0.081 UJ	0.069 UJ	0.08 UJ	**0.028 J**	0.084 UJ	0.081 UJ	0.081 UJ	**0.064 J**	0.076 U	0.079 UJ	0.081 UJ
Benzo[a]pyrene	mg/kg	2.1	0.008 U	0.008 U	**0.011**	0.0081 UJ	**0.18**	0.0085 U	**0.41**	0.0082 U	**0.088**	**0.0015 J**	0.008 U	0.081 U
Benzo[b]fluoranthene	mg/kg	21	0.008 U	0.008 U	**0.023**	**0.0014 J**	**0.27**	0.0085 U	**0.89**	**0.00078 J**	**0.19**	**0.0025 J**	**0.00078 J**	0.081 U
Benzo[g,h,i]perylene	mg/kg		0.008 U	0.008 U	**0.0096**	0.0081 U	**0.13**	0.0085 U	**0.3**	0.0082 U	**0.063**	**0.0011 J**	0.008 U	0.081 U
Benzo[k]fluoranthene	mg/kg	210	0.008 U	0.008 U	**0.021**	0.0081 U	**0.084**	0.0085 U	**0.78**	0.0082 U	**0.17**	0.0075 U	0.008 U	0.081 U
bis(2-Ethylhexyl)phthalate	mg/kg	160	0.079 UJ	0.081 UJ	0.069 UJ	0.08 U	**0.017 J**	0.084 U	0.064 B	0.081 U	0.077 U	0.076 U	0.079 U	**0.04 J**
Carbazole	mg/kg		0.079 U	0.081 U	0.069 U	0.08 U	**0.017 J**	0.084 U	**0.038 J**	0.081 U	**0.028 J**	0.076 U	0.079 U	0.081 U
Chrysene	mg/kg	2,100	0.008 U	0.008 U	**0.011**	0.0081 UJ	**0.19**	0.0085 U	**0.4**	0.0082 U	**0.17**	**0.0013 J**	0.008 U	0.081 U
Dibenz[a,h]anthracene	mg/kg	2.1	0.008 U	0.008 U	**0.0029 J**	0.0081 UJ	**0.034**	0.0085 U	**0.12**	0.0082 U	**0.033**	0.0075 U	0.008 U	0.081 U
Di-n-butylphthalate	mg/kg	82,000	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
Fluoranthene	mg/kg	30,000	0.008 U	0.008 U	**0.0099**	0.0081 UJ	**0.22**	0.0085 U	**0.56**	**0.00093 J**	**0.18**	**0.0028 J**	**0.00094 J**	**0.0055 J**
Fluorene	mg/kg	30,000	0.008 U	0.008 U	**0.00084 J**	0.0081 U	**0.0096**	0.0085 U	**0.011**	0.0082 U	**0.026**	0.0075 U	0.008 U	0.081 U
Indeno[1,2,3-c,d]pyrene	mg/kg	21	0.008 U	0.008 U	**0.0077**	0.0081 UJ	**0.11**	0.0085 U	**0.3**	0.0082 U	**0.058**	**0.0011 J**	0.008 U	0.081 U
Naphthalene	mg/kg	8.6	0.008 U	0.008 U	0.0035 B	0.0081 U	**0.064**	0.0085 U	**0.075**	0.0082 U	**0.36**	0.0075 U	0.008 U	0.081 U
N-Nitrosodiphenylamine	mg/kg	470	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
Pentachlorophenol	mg/kg	4	0.2 U	0.2 U	0.17 UJ	0.2 UJ	0.18 UJ	0.21 UJ	0.2 U	0.2 U	0.19 U	0.19 U	0.2 U	0.2 U
Phenanthrene	mg/kg		0.008 U	0.008 U	0.0068 B	0.0081 U	**0.33**	0.0085 U	**0.29**	**0.00091 J**	**0.42**	**0.0015 J**	0.008 U	0.081 U
Phenol	mg/kg	250,000	0.079 U	0.081 U	0.069 U	0.08 U	0.073 U	0.084 U	0.081 U	0.081 U	0.077 U	0.076 U	0.079 U	0.081 U
Pyrene	mg/kg	23,000	0.008 U	0.008 U	**0.011**	0.0081 UJ	**0.22**	0.0085 U	**0.47**	**0.00078 J**	**0.16**	**0.0017 J**	**0.00081 J**	0.081 U
PCBs														
Aroclor 1242	mg/kg	0.97	0.0561 U	N/A	0.0592 U	N/A	0.0589 U	N/A	0.0606 U	N/A	0.0577 U	N/A	0.0616 U	N/A
Aroclor 1248	mg/kg	0.94	0.0561 U	N/A	0.0592 U	N/A	0.0589 U	N/A	0.0606 U	N/A	0.0577 U	N/A	0.0616 U	N/A
Aroclor 1254	mg/kg	0.97	0.0561 U	N/A	0.0592 U	N/A	0.0589 U	N/A	0.0606 U	N/A	**0.0751**	N/A	0.0616 U	N/A
Aroclor 1260	mg/kg	0.99	0.0561 U	N/A	0.0592 U	N/A	0.0589 U	N/A	0.0606 U	N/A	0.0577 U	N/A	0.0616 U	N/A
Aroclor 1268	mg/kg		0.0561 U	N/A	0.0592 U	N/A	0.0589 U	N/A	0.0606 U	N/A	0.0577 U	N/A	0.0616 U	N/A
PCBs (total)	mg/kg	0.97	0.0561 U	N/A	0.0592 U	N/A	0.0589 U	N/A	0.0606 U	N/A	**0.0751**	N/A	0.0616 U	N/A
TPH														
Diesel Range Organics	mg/kg	6,200	**3.6 J**	**8.8 J**	**6.3 J**	7.9 UJ	**58.5 J**	**5.2 J**	**84.6 J**	**4.9 J**	**55.1**	7.5 U	**4.1 J**	**30.2 J**
Gasoline Range Organics	mg/kg	6,200	10.3 U	9.3 U	9.7 U	9.9 U	11.2 U	11.2 U	10.2 U	9.8 U	12.2 U	11.8 U	10.2 U	11.4 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
^ PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value repesents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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.
R: The result for this analyte is unreliable. Additional data is needed to confirm or disprove the presence of this compound/analyte in the sample.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-001-SB-1	A10-001-SB-5	A10-002-SB-1	A10-002-SB-5	A10-002-SB-10*	A10-003-SB-1*	A10-003-SB-9*	A10-004-SB-1*
			07/06/2016	07/06/2016	07/06/2016	07/06/2016	07/06/2016	07/07/2016	07/07/2016	07/07/2016
Metals										
Aluminum	mg/kg	1,100,000	**18,300**	**16,900**	**17,800**	**19,200**	N/A	**11,500**	**12,200**	**19,400**
Antimony	mg/kg	470	2.8 U	2.9 U	2.9 U	3.1 U	N/A	3.1 U	3 U	2.7 U
Arsenic	mg/kg	3	**4.1**	**3.7**	**4**	**4.3**	**4.2**	2.6 U	**13.3**	**16.7**
Barium	mg/kg	220,000	**54.4**	**73.1**	**73.6**	**117**	N/A	**115**	**179**	**429**
Beryllium	mg/kg	2,300	**0.67 J**	**0.57 J**	**0.81 J**	**0.96 J**	N/A	1 U	**0.85 J**	**1.9**
Cadmium	mg/kg	980	1.4 U	1.4 U	1.4 U	1.5 U	N/A	0.86 B	0.98 B	**4.3**
Chromium	mg/kg	120,000	**21**	**19.5**	**24.4**	**28.7**	N/A	**2,300**	**73.7**	**408**
Chromium VI	mg/kg	6.3	0.39 B	0.35 B	0.4 B	0.3 B	N/A	0.52 B	0.43 B	0.45 B
Cobalt	mg/kg	350	**4.4 J**	**3.9 J**	**9.9**	**5.4**	N/A	**5.1 J**	**16.7**	**23**
Copper	mg/kg	47,000	**7.4**	**7.2**	**10.5**	**12**	N/A	**106**	**93.4**	**170**
Iron	mg/kg	820,000	**25,400**	**21,500**	**22,500**	**23,400**	N/A	**126,000**	**117,000**	**116,000**
Lead	mg/kg	800	**14.3**	**11.9**	**15**	**13.2**	N/A	**143**	**397**	**1,580**
Manganese	mg/kg	26,000	**76.7**	**62.7**	**161**	**53.2**	N/A	**50,200**	**3,420**	**10,700**
Mercury	mg/kg	350	**0.0093 J**	**0.0088 J**	**0.039 J**	**0.022 J**	N/A	**0.037 J**	**0.018 J**	**0.78**
Nickel	mg/kg	22,000	**9.5**	**9.6**	**13.1**	**13.3**	N/A	**26.1**	**36**	**80.8**
Selenium	mg/kg	5,800	3.7 U	3.8 U	3.8 U	4.1 U	N/A	4.2 U	4 U	2.3 B
Silver	mg/kg	5,800	2.8 U	2.9 U	2.9 U	3.1 U	N/A	3.1 U	3 U	2.7 U
Thallium	mg/kg	12	9.3 U	9.5 U	9.6 U	10.3 U	N/A	**102**	**7.1 J**	**21.2**
Vanadium	mg/kg	5,800	**31.1**	**27.8**	**31.5**	**38**	N/A	**7,590**	**414**	**1,610**
Zinc	mg/kg	350,000	**27.7**	**26.5**	**67.2**	**48**	N/A	**31.4**	**543**	**1,420**
Other										
Cyanide	mg/kg	150	**0.05 J**	0.59 U	0.61 U	0.73 U	N/A	**1.6**	**2.1**	**6.9**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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 low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-004-SB-4* 07/07/2016	A10-004-SB-10* 07/07/2016	A10-005-SB-1* 07/07/2016	A10-005-SB-5* 07/07/2016	A10-006-SB-1* 07/07/2016	A10-006-SB-7* 07/07/2016	A10-007-SB-1 07/08/2016	A10-007-SB-4 07/08/2016
Metals										
Aluminum	mg/kg	1,100,000	**8,240**	N/A	**30,500**	**7,300**	**12,600**	**13,700**	**44,300**	**7,750**
Antimony	mg/kg	470	2.6 U	N/A	2.2 U	2.4 U	3.2 U	2.7 U	2.4 UJ	2.5 UJ
Arsenic	mg/kg	3	**6**	**5.9**	**16.5**	**4.3**	**71.2**	**6.6**	**3.1**	**5.7**
Barium	mg/kg	220,000	**102**	N/A	**643**	**82.6**	**96.2**	**62.6**	**731 J**	**85.9 J**
Beryllium	mg/kg	2,300	0.85 U	N/A	**2.6**	**0.23 J**	**0.61 J**	**0.61 J**	**5.3**	**0.15 J**
Cadmium	mg/kg	980	0.71 B	N/A	0.39 B	1.4 B	1.6 U	0.82 B	**0.32 J**	**0.77 J**
Chromium	mg/kg	120,000	**1,440**	N/A	**359**	**1,840**	**26.7**	**112**	**71**	**830**
Chromium VI	mg/kg	6.3	1.3 B	N/A	0.48 B	1.4 B	0.48 B	0.87 B	0.35 B	0.46 B
Cobalt	mg/kg	350	**15.4**	N/A	**2.2 J**	**4.7**	**4.8 J**	**6.1**	**3.4 J**	**3.6 J**
Copper	mg/kg	47,000	**116**	N/A	**17.2**	**64**	**23**	**447**	**20 J**	**32 J**
Iron	mg/kg	820,000	**183,000**	N/A	**37,800**	**96,900**	**18,800**	**29,100**	**28,000**	**83,600**
Lead	mg/kg	800	**73.4**	N/A	**15.9**	**543**	**83.1**	**1,030**	**9.5 J**	**21.5 J**
Manganese	mg/kg	26,000	**32,000**	**56,000**	**17,600**	**28,800**	**604**	**1,880**	**7,980**	**94,000**
Mercury	mg/kg	350	**0.05 J**	N/A	**0.16**	**0.057 J**	**0.024 J**	**0.024 J**	**0.0027 J**	**0.053 J**
Nickel	mg/kg	22,000	**42.9**	N/A	**5.2 J**	**13.6**	**13.1**	**12.4**	**13.9**	**25.2**
Selenium	mg/kg	5,800	3.4 U	N/A	2.9 U	3.3 U	4.3 U	3.6 U	**2.9 J**	3.3 U
Silver	mg/kg	5,800	2.6 U	N/A	2.2 U	2.4 U	3.2 U	2.7 U	2.4 U	**3.2**
Thallium	mg/kg	12	**81.1**	**36.4**	**19**	**67.7**	10.7 U	**6.4 J**	8 U	**23.9**
Vanadium	mg/kg	5,800	**7,200**	**10,600**	**1,850**	**5,810**	**44.8**	**460**	**91.2**	**1,580**
Zinc	mg/kg	350,000	**65.5**	N/A	**60.3**	**401**	**91.6**	**99.5**	**12.4 J**	**101 J**
Other										
Cyanide	mg/kg	150	**2.8**	N/A	**0.9**	**4.5**	**0.26 J**	**0.19 J**	**0.61 J**	**0.16 J**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
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U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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 low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-008-SB-1	A10-008-SB-4	A10-008-SB-10*	A10-009A-SB-1*	A10-009-SB-1.5*	A10-009-SB-5*	A10-010-SB-1	A10-010-SB-8
			07/08/2016	07/08/2016	07/08/2016	07/21/2016	07/21/2016	07/21/2016	07/11/2016	07/11/2016
Metals										
Aluminum	mg/kg	1,100,000	**42,100**	**15,300**	N/A	**32,300**	**16,600**	**16,500**	**16,900**	**15,800**
Antimony	mg/kg	470	2.8 UJ	2.6 UJ	N/A	2.5 U	2.6 U	3.3 U	2.6 UJ	2.5 UJ
Arsenic	mg/kg	3	**3.8**	**9.5**	**9.5**	2.1 U	**2.6**	**6**	**20.5**	**12.3**
Barium	mg/kg	220,000	**652 J**	**93.8 J**	N/A	**495**	**195**	**47.3**	**213 J**	**43.4 J**
Beryllium	mg/kg	2,300	**4.8**	**0.76 J**	N/A	**2.7**	**1.6**	**0.41 J**	**1.5**	**0.96**
Cadmium	mg/kg	980	**0.4 J**	**2.3**	N/A	0.46 B	0.42 B	0.19 B	0.58 B	1.2 U
Chromium	mg/kg	120,000	**34.5**	**35.8**	N/A	**12.8**	**136**	**17.8**	**138**	**23.7**
Chromium VI	mg/kg	6.3	0.41 B	0.51 B	N/A	0.25 B	0.43 B	0.23 B	0.37 B	0.31 B
Cobalt	mg/kg	350	**1.5 J**	**9.2**	N/A	**0.94 J**	**4.2 J**	**3 J**	**5.5**	**8**
Copper	mg/kg	47,000	**12.9 J**	**32.3 J**	N/A	**5.8**	**16**	**4.8 J**	**23.3**	**11.9**
Iron	mg/kg	820,000	**8,550**	**35,100**	N/A	**5,600**	**24,100**	**21,300**	**32,700**	**29,400**
Lead	mg/kg	800	**17.1 J**	**65.7 J**	N/A	**7.3**	**15.9**	**10.2**	**25 J**	**68 J**
Manganese	mg/kg	26,000	**5,510**	**721**	N/A	**8,220**	**6,500**	**51**	**2,710 J**	**483 J**
Mercury	mg/kg	350	0.11 U	**0.081 J**	N/A	0.1 U	0.11 U	0.11 U	**0.032 J**	**0.012 J**
Nickel	mg/kg	22,000	**3.6 J**	**16.3**	N/A	4.6 B	**12.6**	**8.6 J**	**19.4 J**	**10.5 J**
Selenium	mg/kg	5,800	**4.5**	3.5 U	N/A	3.4 U	3.5 U	4.4 U	3.5 U	3.3 U
Silver	mg/kg	5,800	2.8 U	2.6 U	N/A	2.5 U	2.6 U	3.3 U	2.6 U	2.5 U
Thallium	mg/kg	12	9.3 U	8.7 U	N/A	8.4 U	8.7 U	10.9 U	8.8 U	8.2 U
Vanadium	mg/kg	5,800	**74.6**	**47.4**	N/A	**147**	**197**	**24.6**	**203 J**	**91 J**
Zinc	mg/kg	350,000	**33.2 J**	**2,290 J**	N/A	**17.8**	**56.9**	**21.8**	**47.9**	**41.6**
Other										
Cyanide	mg/kg	150	**0.59**	**0.16 J**	N/A	**0.41 J**	**0.41 J**	0.65 U	**0.19 J**	0.71 U

Detections in bold

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UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.

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 low.

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

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-010-SB-10	A10-011-SB-1	A10-011-SB-7	A10-011-SB-10*	A10-012-SB-1	A10-012-SB-4	A10-013-SB-1	A10-013-SB-4
			07/11/2016	07/12/2016	07/12/2016	07/12/2016	07/12/2016	07/12/2016	07/11/2016	07/11/2016
Metals										
Aluminum	mg/kg	1,100,000	N/A	**8,140**	**16,100**	N/A	**37,500**	**9,940**	**14,400**	**28,700**
Antimony	mg/kg	470	N/A	2.5 UJ	2.6 UJ	N/A	2.4 UJ	2.9 UJ	3 UJ	2.5 UJ
Arsenic	mg/kg	3	**24.3**	2.1 U	**14.4**	**14.7**	2 U	**4.7**	**4.7**	**5.4**
Barium	mg/kg	220,000	N/A	**19.2 J**	**63.6 J**	N/A	**273 J**	**30.6 J**	**70.5 J**	**102 J**
Beryllium	mg/kg	2,300	N/A	**0.19 J**	**1.1**	N/A	**3.5**	**0.32 J**	**0.48 J**	**0.96**
Cadmium	mg/kg	980	N/A	1.2 U	1.3 U	N/A	0.29 B	1.5 U	0.43 B	0.35 B
Chromium	mg/kg	120,000	N/A	**10.1**	**31.6**	N/A	**764**	**12.5**	**26.5**	**63.6**
Chromium VI	mg/kg	6.3	N/A	0.39 B	0.56 B	N/A	0.47 B	0.42 B	0.37 B	0.46 B
Cobalt	mg/kg	350	N/A	**2.7 J**	**7**	N/A	3.9 U	**2.7 J**	**4.8 J**	**2.8 J**
Copper	mg/kg	47,000	N/A	**4.4**	**13.1**	N/A	**44.5**	**2.8 J**	**18.6**	**39.4**
Iron	mg/kg	820,000	N/A	**8,310**	**22,500**	N/A	**75,700**	**12,800**	**18,800**	**43,200**
Lead	mg/kg	800	N/A	**5.8**	**17**	N/A	**13.6**	**6.3**	**70.9 J**	**44.9 J**
Manganese	mg/kg	26,000	N/A	**49.7**	**95.8**	N/A	**38,500**	**84.6**	**247 J**	**72.1 J**
Mercury	mg/kg	350	N/A	**0.02 J**	**0.011 J**	N/A	0.1 U	0.11 U	**0.12**	**0.0064 J**
Nickel	mg/kg	22,000	N/A	**8.5**	**14.7**	N/A	**5.6 J**	**7.1 J**	**10.7 J**	**22.5 J**
Selenium	mg/kg	5,800	N/A	3.3 U	3.5 U	N/A	3.1 U	3.9 U	4.1 U	3.3 U
Silver	mg/kg	5,800	N/A	2.5 U	2.6 U	N/A	2.4 U	2.9 U	3 U	2.5 U
Thallium	mg/kg	12	N/A	8.3 U	8.8 U	N/A	7.8 U	9.7 U	10.1 U	8.3 U
Vanadium	mg/kg	5,800	N/A	**11.2 J**	**46.3 J**	N/A	**10,000 J**	**28.1 J**	**32.4 J**	**107 J**
Zinc	mg/kg	350,000	N/A	**25.6 J**	**54 J**	N/A	**32 J**	**14.8 J**	**118**	**284**
Other										
Cyanide	mg/kg	150	N/A	0.74 U	0.63 U	N/A	**1.4**	0.69 U	0.6 U	0.64 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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 low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-014-SB-2*	A10-014-SB-5*	A10-015-SB-1	A10-015-SB-5	A10-016-SB-1*	A10-016-SB-6*	A10-017-SB-1*	A10-017-SB-4*
			07/21/2016	07/21/2016	07/11/2016	07/11/2016	07/21/2016	07/21/2016	07/21/2016	07/21/2016
Metals										
Aluminum	mg/kg	1,100,000	**17,000**	**17,900**	**23,700**	**14,300**	**15,400**	**15,200**	**14,800**	**15,500**
Antimony	mg/kg	470	2.6 U	2.5 U	2.6 UJ	2.9 UJ	2.8 U	2.4 U	3.1 U	2.8 U
Arsenic	mg/kg	3	**4.2**	**4.3**	**3.2**	**9.8**	**3.5**	2 U	2.6 U	**3.6**
Barium	mg/kg	220,000	**127**	**149**	**210 J**	**46.6 J**	**73.5**	**38.8**	**38.1**	**37.5**
Beryllium	mg/kg	2,300	**1.3**	**0.63 J**	**2.4**	**0.54 J**	**0.61 J**	**0.32 J**	**0.29 J**	**0.31 J**
Cadmium	mg/kg	980	0.59 B	0.28 B	0.45 B	1.4 U	0.19 B	1.2 U	0.22 B	1.4 U
Chromium	mg/kg	120,000	**76.4**	**21.8**	**269**	**26.1**	**21.4**	**16.2**	**15.9**	**15.6**
Chromium VI	mg/kg	6.3	0.33 B	0.33 B	0.35 B	0.37 B	0.3 B	0.23 B	0.25 B	0.38 B
Cobalt	mg/kg	350	**7.5**	**2.6 J**	**4.3**	**2.1 J**	**10.7**	**3.2 J**	**3.5 J**	**3.4 J**
Copper	mg/kg	47,000	**21.4**	**8.6**	**47.3**	**8.1**	**11**	**5.9**	**5.2**	**4.2 J**
Iron	mg/kg	820,000	**17,900**	**17,000**	**50,000**	**28,800**	**18,300**	**11,500**	**9,000**	**10,400**
Lead	mg/kg	800	**77.3**	**22.4**	**13.9 J**	**8.2 J**	**23.5**	**10.4**	**11.9**	**10.9**
Manganese	mg/kg	26,000	**1,350**	**1,210**	**3,590 J**	**158 J**	**168**	**69.2**	**38.3**	**39.9**
Mercury	mg/kg	350	**0.069 J**	**0.034 J**	**0.029 J**	**0.0084 J**	**0.019 J**	**0.057 J**	**0.029 J**	**0.05 J**
Nickel	mg/kg	22,000	**12.3**	8.9 B	**18.8 J**	**7.8 J**	**14.8**	8.1 B	**6.6 J**	**8.8 J**
Selenium	mg/kg	5,800	3.4 U	3.3 U	3.4 U	3.9 U	3.7 U	3.2 U	4.1 U	3.8 U
Silver	mg/kg	5,800	2.6 U	2.5 U	2.6 U	2.9 U	2.8 U	2.4 U	3.1 U	2.8 U
Thallium	mg/kg	12	8.6 U	8.4 U	**4 J**	9.6 U	9.3 U	8.1 U	10.3 U	9.4 U
Vanadium	mg/kg	5,800	**197**	**45**	**322 J**	**50.8 J**	**29.5**	**23**	**21.5**	**19.6**
Zinc	mg/kg	350,000	**156**	**39.4**	**42.4**	**24.5**	**69.1**	**27.7**	**24.9**	**24.6**
Other										
Cyanide	mg/kg	150	**0.2 J**	0.69 U	**0.16 J**	0.62 U	0.69 U	0.62 U	**0.067 J**	**0.043 J**

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
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U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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 low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-018-SB-1	A10-018-SB-5	A10-018-SB-10	A10-019-SB-1	A10-019-SB-4	A10-020-SB-1.5	A10-020-SB-7	A10-020-SB-10*
			07/14/2016	07/14/2016	07/14/2016	07/11/2016	07/11/2016	07/08/2016	07/08/2016	07/08/2016
Metals										
Aluminum	mg/kg	1,100,000	**15,100**	**16,500**	N/A	**28,200**	**12,800**	**11,900**	**19,300**	N/A
Antimony	mg/kg	470	3 UJ	2.6 UJ	N/A	2.3 UJ	2.5 UJ	3.4 UJ	3.3 UJ	N/A
Arsenic	mg/kg	3	**6**	**4.8**	**13.4**	**4.8**	2.1 U	**6.7**	**6.8**	**5.1**
Barium	mg/kg	220,000	**71.8 J**	**40.9 J**	N/A	**254 J**	**50.6 J**	**223 J**	**70 J**	N/A
Beryllium	mg/kg	2,300	**0.8 J**	**0.38 J**	N/A	**4.2**	**0.44 J**	**0.23 J**	**1.1**	N/A
Cadmium	mg/kg	980	0.27 B	1.3 U	N/A	0.24 B	0.13 B	**1.8**	1.7 U	N/A
Chromium	mg/kg	120,000	**23**	**22.1**	N/A	**15.4**	**15.9**	**749**	**31.4**	N/A
Chromium VI	mg/kg	6.3	0.33 B	0.38 B	N/A	0.32 B	0.37 B	0.45 B	0.63 B	N/A
Cobalt	mg/kg	350	**8**	**3.3 J**	N/A	**3.8 J**	**3.8 J**	**6.6**	**4.6 J**	N/A
Copper	mg/kg	47,000	**14.4**	**7.8**	N/A	**7.5**	**7.1**	**90.1 J**	**10.2 J**	N/A
Iron	mg/kg	820,000	**23,100 J**	**15,200 J**	N/A	**13,300**	**9,830**	**139,000**	**14,900**	N/A
Lead	mg/kg	800	**23.6 J**	**10.6 J**	N/A	**12 J**	**10.4 J**	**418 J**	**15.7 J**	N/A
Manganese	mg/kg	26,000	**273**	**67.2**	N/A	**1,320 J**	**39.2 J**	**17,200**	**35.7**	N/A
Mercury	mg/kg	350	**0.075 J-**	**0.024 J-**	N/A	**0.029 J**	**0.0023 J**	0.12 U	**0.007 J**	N/A
Nickel	mg/kg	22,000	**16.9**	**8.3 J**	N/A	**7.9 J**	**10.8 J**	**24.1**	**15.6**	N/A
Selenium	mg/kg	5,800	4 U	2.7 B	N/A	3.1 U	3.3 U	4.6 U	4.4 U	N/A
Silver	mg/kg	5,800	3 U	2.6 U	N/A	2.3 U	2.5 U	3.4 U	3.3 U	N/A
Thallium	mg/kg	12	9.9 U	8.6 U	N/A	7.7 U	8.3 U	**34.9**	11.1 U	N/A
Vanadium	mg/kg	5,800	**33.2**	**27.2**	N/A	**28.4 J**	**18.2 J**	**3,320**	**32**	N/A
Zinc	mg/kg	350,000	**89.1 J**	**22.2 J**	N/A	**24.2**	**29.5**	**437 J**	**23.1 J**	N/A
Other										
Cyanide	mg/kg	150	**0.052 J**	0.66 U	N/A	0.64 U	0.57 U	**0.45 J**	**0.11 J**	N/A

Detections in bold
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N/A indicates that the parameter was not analyzed for this sample
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U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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 low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-021-SB-2	A10-021-SB-4	A10-021-SB-10	A10-022-SB-2	A10-022-SB-4	A10-023-SB-1	A10-023-SB-4	A10-024-SB-1*
			07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/11/2016	07/08/2016	07/08/2016	07/07/2016
Metals										
Aluminum	mg/kg	1,100,000	**27,200**	**19,400**	N/A	**28,200**	**17,100**	**7,730**	**35,700**	**33,300**
Antimony	mg/kg	470	2.6 UJ	2.6 UJ	N/A	3 UJ	2.9 UJ	2.6 UJ	2.8 UJ	2.6 U
Arsenic	mg/kg	3	2.2 U	**5.7**	**13.1**	**5.9**	**5.1**	**7.7**	**3.7**	**4.4**
Barium	mg/kg	220,000	**275 J**	**129 J**	N/A	**219 J**	**83.3 J**	**175 J**	**739 J**	**409**
Beryllium	mg/kg	2,300	**5**	**1.2**	N/A	**2.7**	**0.76 J**	**0.88**	**3.3**	**4.5**
Cadmium	mg/kg	980	0.28 B	1.3 U	N/A	0.66 B	1.5 U	**0.61 J**	**9.4**	1.2 B
Chromium	mg/kg	120,000	**23.7**	**21.4**	N/A	**29.2**	**24.1**	**293**	**152**	**26.5**
Chromium VI	mg/kg	6.3	0.37 B	0.38 B	N/A	0.53 B	0.38 B	0.4 B	0.44 B	0.31 B
Cobalt	mg/kg	350	**2.4 J**	**7**	N/A	**7.3**	**7.9**	**8.7**	**2.1 J**	**3.2 J**
Copper	mg/kg	47,000	**5.7**	**13.3**	N/A	**14.6**	**9.5**	**78.3 J**	**17.1 J**	**34.7**
Iron	mg/kg	820,000	**11,900**	**14,000**	N/A	**20,500**	**20,900**	**66,500**	**29,800**	**21,900**
Lead	mg/kg	800	**8.4 J**	**18.3 J**	N/A	**25.7 J**	**13.2 J**	**46.9 J**	**37.5 J**	**121**
Manganese	mg/kg	26,000	**1,390 J**	**79.5 J**	N/A	**1,050 J**	**88.9 J**	**9,600**	**9,550**	**1,880**
Mercury	mg/kg	350	**0.0043 J**	**0.0082 J**	N/A	**0.0029 J**	0.12 U	**0.056 J**	**0.0045 J**	**0.023 J**
Nickel	mg/kg	22,000	**5 J**	**15.9 J**	N/A	**14.4 J**	**17.4 J**	**30.9**	**5.4 J**	**11.8**
Selenium	mg/kg	5,800	3.5 U	3.4 U	N/A	**2.3 J**	3.9 U	3.5 U	**3.2 J**	2.8 B
Silver	mg/kg	5,800	2.6 U	2.6 U	N/A	3 U	2.9 U	**0.73 J**	2.8 U	2.6 U
Thallium	mg/kg	12	8.8 U	8.6 U	N/A	9.9 U	9.7 U	**4.9 J**	**5.2 J**	8.7 U
Vanadium	mg/kg	5,800	**54.7 J**	**26.9 J**	N/A	**39.9 J**	**30.7 J**	**325**	**313**	**39.4**
Zinc	mg/kg	350,000	**19.3**	**35.8**	N/A	**79.7**	**42.3**	**134 J**	**1,070 J**	**210**
Other										
Cyanide	mg/kg	150	**0.046 J**	0.64 U	N/A	**0.91**	0.68 U	**0.96**	**0.26 J**	**0.57 J**

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

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-024-SB-5*	A10-025-SB-1*	A10-025-SB-4*	A10-025-SB-10*	A10-026-SB-1	A10-026-SB-5	A10-027-SB-1	A10-027-SB-4
			07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/08/2016	07/08/2016	07/08/2016	07/08/2016
Metals										
Aluminum	mg/kg	1,100,000	**7,000**	**14,700**	**11,900**	N/A	**28,800**	**16,900**	**23,600**	**9,410**
Antimony	mg/kg	470	6 U	2.4 U	2.9 U	N/A	2.6 UJ	2.6 UJ	2.8 UJ	**5 J**
Arsenic	mg/kg	3	**5.2**	**7.1**	**17.1**	**12**	**5.7**	2.2 UJ	**5.5**	**21.3**
Barium	mg/kg	220,000	**160**	**52.2**	**22.4**	N/A	**363 J**	**387 J**	**218 J**	**202 J**
Beryllium	mg/kg	2,300	**0.61 J**	**0.65 J**	**0.28 J**	N/A	**2.4**	0.87 U	**3.1**	**0.88**
Cadmium	mg/kg	980	0.51 B	0.13 B	1.4 U	N/A	**0.96 J**	**0.56 J**	**1.1 J**	**2.7**
Chromium	mg/kg	120,000	**43**	**21.5**	**29.7**	N/A	**486**	**1,960**	**199**	**172**
Chromium VI	mg/kg	6.3	**0.71 J**	0.34 B	0.39 B	N/A	0.43 B	1.1 B	0.48 B	0.44 B
Cobalt	mg/kg	350	**5.9 J**	**4.9**	**2.3 J**	N/A	**7**	**0.91 J**	**5.8**	**27.9**
Copper	mg/kg	47,000	**56.9**	**14.2**	**9.6**	N/A	**63.6 J**	**34.4 J**	**72.2 J**	**375 J**
Iron	mg/kg	820,000	**56,000**	**14,900**	**17,500**	N/A	**84,400**	**89,700**	**71,700**	**156,000**
Lead	mg/kg	800	**113**	**17.6**	**10.2**	N/A	**230 J**	**3 J**	**95.3 J**	**241 J**
Manganese	mg/kg	26,000	**1,340**	**236**	**42.4**	N/A	**13,100**	**46,100**	**6,230**	**4,630**
Mercury	mg/kg	350	**0.0065 J**	**0.0033 J**	**0.16**	N/A	0.11 U	0.11 U	**0.18**	**0.37**
Nickel	mg/kg	22,000	**20.6**	**12.2**	**7.1 J**	N/A	**26.6**	**8.8**	**25.8**	**91.5**
Selenium	mg/kg	5,800	8 U	3.2 U	3.8 U	N/A	3.5 U	3.5 U	3.8 U	3.2 U
Silver	mg/kg	5,800	6 U	2.4 U	2.9 U	N/A	2.6 U	**1.7 J**	2.8 U	**1.9 J**
Thallium	mg/kg	12	8 U	7.9 U	9.5 U	N/A	**10.1**	**88**	9.5 U	8.1 U
Vanadium	mg/kg	5,800	**73.9**	**41.1**	**49**	N/A	**843**	**7,200**	**178**	**208**
Zinc	mg/kg	350,000	**164**	**49.8**	**24.4**	N/A	**191 J**	**7.5 J**	**250 J**	**830 J**
Other										
Cyanide	mg/kg	150	**0.14 J**	**0.37 J**	0.74 U	N/A	**0.65**	**0.42 J**	**1.6**	**0.46 J**

Detections in bold
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J: The positive result reported for this analyte is a quantitative estimate.
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B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-027-SB-10*	A10-028-SB-1	A10-028-SB-6	A10-029-SB-1	A10-029-SB-4	A10-030-SB-1	A10-030-SB-7
			07/08/2016	07/11/2016	07/11/2016	07/12/2016	07/12/2016	07/12/2016	07/12/2016
Metals									
Aluminum	mg/kg	1,100,000	N/A	**20,700**	**11,400**	**5,780**	**16,500**	**36,000**	**13,100**
Antimony	mg/kg	470	N/A	2.9 UJ	3.1 UJ	2.7 UJ	2.6 UJ	2.3 UJ	2.9 UJ
Arsenic	mg/kg	3	**13.1**	**5.5**	**2.8**	**6.9**	2.1 U	1.9 U	**4.4**
Barium	mg/kg	220,000	N/A	**65.4 J**	**35.7 J**	**36.2 J**	**62.3 J**	**265 J**	**36.3 J**
Beryllium	mg/kg	2,300	N/A	**0.61 J**	**0.39 J**	**0.42 J**	**0.61 J**	**5.6**	**0.67 J**
Cadmium	mg/kg	980	N/A	0.16 B	1.5 U	1.4 U	1.3 U	0.61 B	1.4 U
Chromium	mg/kg	120,000	N/A	**31.1**	**14.1**	**17.5**	**18.4**	**145**	**14.8**
Chromium VI	mg/kg	6.3	N/A	0.42 B	0.38 B	0.38 B	0.38 B	0.26 B	0.5 B
Cobalt	mg/kg	350	N/A	**5.5**	**3.7 J**	**1.2 J**	**4.7**	**2.8 J**	**6.1**
Copper	mg/kg	47,000	N/A	**11.4**	**6.7**	**9.5**	**5**	**18**	**6.8**
Iron	mg/kg	820,000	N/A	**28,700**	**19,200**	**14,700**	**14,300**	**49,200**	**27,000**
Lead	mg/kg	800	N/A	**12.3 J**	**9.1 J**	**14.3**	**10.7**	**42.7**	**8.4**
Manganese	mg/kg	26,000	N/A	**105 J**	**104 J**	**347**	**466**	**4,930**	**77**
Mercury	mg/kg	350	N/A	**0.0038 J**	**0.02 J**	**0.025 J**	**0.015 J**	0.11 U	**0.0072 J**
Nickel	mg/kg	22,000	N/A	**14.2 J**	**9.3 J**	**3.8 J**	**12.7**	**8.7**	**13.1**
Selenium	mg/kg	5,800	N/A	3.9 U	4.1 U	**2.8 J**	3.4 U	3.1 U	3.9 U
Silver	mg/kg	5,800	N/A	2.9 U	3.1 U	2.7 U	2.6 U	2.3 U	2.9 U
Thallium	mg/kg	12	N/A	9.7 U	10.3 U	9.1 U	8.5 U	7.7 U	9.6 U
Vanadium	mg/kg	5,800	N/A	**39 J**	**18.5 J**	**35.7 J**	**30.3 J**	**234 J**	**22.2 J**
Zinc	mg/kg	350,000	N/A	**45.8**	**27.8**	**22.5 J**	**29.5 J**	**68.5 J**	**31.3 J**
Other									
Cyanide	mg/kg	150	N/A	0.72 U	0.61 U	**0.067 J**	0.72 U	**0.77**	**0.036 J**

Detections in bold
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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 low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 2 - Sub-Parcel A10-1
Summary of Inorganics Detected in Soil (Phase II Investigation)

Parameter	Units	PAL	A10-031-SB-1.5	A10-031-SB-8	A10-031-SB-10*	A10-032-SB-1*	A10-032-SB-5*	A10-033-SB-1	A10-033-SB-4
			07/08/2016	07/08/2016	07/08/2016	07/07/2016	07/07/2016	07/06/2016	07/06/2016
Metals									
Aluminum	mg/kg	1,100,000	**12,900**	**14,800**	N/A	**13,000**	**3,440**	**15,500**	**10,700**
Antimony	mg/kg	470	2.6 UJ	2.6 UJ	N/A	2.8 U	2.6 U	2.7 U	2.9 U
Arsenic	mg/kg	3	**10.6**	**15.9**	**4**	**8.4**	**18.5**	**5.9**	**3.4**
Barium	mg/kg	220,000	**73 J**	**50.6 J**	N/A	**204**	**63.8**	**62.8**	**78.6**
Beryllium	mg/kg	2,300	**0.7 J**	**0.98**	N/A	**1.5**	0.88 U	**0.69 J**	**0.61 J**
Cadmium	mg/kg	980	**1.2 J**	1.3 U	N/A	**4**	0.66 B	1.4 U	1.4 U
Chromium	mg/kg	120,000	**105**	**42.8**	N/A	**256**	**1,340**	**23.1**	**17.9**
Chromium VI	mg/kg	6.3	0.47 B	0.92 B	N/A	1.3 B	0.76 B	0.43 B	0.39 B
Cobalt	mg/kg	350	**43.1**	**5.9**	N/A	**14.6**	**50.2**	**4.7**	**7.8**
Copper	mg/kg	47,000	**142 J**	**13.2 J**	N/A	**138**	**355**	**9.6**	**13.6**
Iron	mg/kg	820,000	**60,100**	**27,700**	N/A	**62,300**	**361,000**	**19,300**	**12,300**
Lead	mg/kg	800	**98.2 J**	**19.2 J**	N/A	**1,020**	**6.2**	**9**	**47.2**
Manganese	mg/kg	26,000	**1,500**	**72**	N/A	**6,850**	**31,900**	**108**	**179**
Mercury	mg/kg	350	**0.1 J**	**0.0029 J**	N/A	**0.051 J**	0.11 U	**0.011 J**	**0.045 J**
Nickel	mg/kg	22,000	**40**	**16.2**	N/A	**52.7**	**111**	**12.7**	**11**
Selenium	mg/kg	5,800	3.5 U	3.5 U	N/A	3.8 U	3.5 U	3.6 U	3.8 U
Silver	mg/kg	5,800	**0.64 J**	2.6 U	N/A	2.8 U	2.6 U	2.7 U	2.9 U
Thallium	mg/kg	12	8.6 U	8.6 U	N/A	**20.2**	**78.6**	9 U	9.5 U
Vanadium	mg/kg	5,800	**173**	**39.4**	N/A	**1,640**	**5,610**	**29.7**	**23.1**
Zinc	mg/kg	350,000	**278 J**	**48.7 J**	N/A	**1,560**	4.4 U	**38.7**	**64.8**
Other									
Cyanide	mg/kg	150	**1.2**	0.59 U	N/A	**4.3**	**0.38 J**	0.66 U	0.74 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
N/A indicates that the parameter was not analyzed for this sample
* indicates non-validated data
U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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 low.
B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank.

Table 3 - Sub-Parcel A10-1
Summary of Organics Detected in Groundwater (Phase II Investigation)

Parameter	Units	PAL	A10-002-PZ* Perched 07/18/2016	A10-010-PZ Shallow 07/20/2016	A10-015-PZ Perched 07/20/2016	A10-018-PZ Shallow 07/20/2016	A10-020-PZ* Shallow 07/18/2016	A10-021-PZ Shallow 07/19/2016	A10-024-PZ* Shallow 07/18/2016	A10-025-PZ* Shallow 07/18/2016	A10-027-PZ Shallow 07/19/2016	A10-029-PZ Perched 07/19/2016	A10-034-PZ Shallow 07/19/2016	SG06-PDM001 Shallow 07/20/2016
Volatile Organics Compounds														
1,1-Dichloroethane	µg/L	2.7	1 U	**0.49 J**	1 U	1 U	**0.64 J**	1 U	1 U	1 U	1 U	1 U	**0.23 J**	1 U
1,1-Dichloroethene	µg/L	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1.2**	1 U	1 U	**0.28 J**	1 U
1,2-Dichlorobenzene	µg/L	600	1 U	**3.1**	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	**1.5 J**	2 U	**0.82 J**	**1 J**	2 U	2 U	**190**	**8.5**	**1.3 J**	**10.2**	2 U
Benzene	µg/L	5	1 U	1 U	1 U	**0.68 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	µg/L	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**6.2**	1 U	1 U	1 U	1 U
Chlorobenzene	µg/L	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1.1**	1 U	1 U	**0.21 J**	1 U
Chloroform	µg/L	0.22	1 U	1 U	1 U	1 U	**0.53 J**	**12.3**	1 U	**1.7**	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	µg/L	70	1 U	**1.5**	1 U	**0.82 J**	**1**	1 U	1 U	**188**	**8.5**	**1.3**	**10.1**	1 U
Cyclohexane	µg/L	13,000	10 U	10 U	10 U	**0.46 J**	10 U	10 UJ	10 U	10 U	10 UJ	10 UJ	10 UJ	10 U
Isopropylbenzene	µg/L	450	1 U	1 U	1 U	**1.1**	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	**2.7**	1 U	1 U	1 U	1 U	1 U	**0.61 J**	1 U
Tetrachloroethene	µg/L	5	1 U	**14.2**	1 U	**1.7**	**3.9**	1 U	1 U	**1,010**	**123**	**4.6**	**34.2**	1 U
trans-1,2-Dichloroethene	µg/L	100	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1.4**	1 U	1 U	1 U	1 U
Trichloroethene	µg/L	5	1 U	**7.6**	1 U	**3.5**	**3.3**	1 U	1 U	**494**	**255**	**5**	**33.5**	1 U
Vinyl chloride	µg/L	2	1 U	**0.35 J**	1 U	1 U	1 U	1 U	1 U	**22.6**	**0.24 J**	1 U	**1.4**	1 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 U	1.1 U	1 U
1,4-Dioxane	µg/L	0.46	0.1 U	**0.55**	0.1 U	**0.05 J**	**0.31**	0.1 U	0.1 U	0.1 U	0.1 U	**0.084 J**	**0.27**	0.1 U
2-Methylnaphthalene	µg/L	36	0.1 U	0.11 U	0.1 U	**18.3**	0.1 U	0.1 U	0.1 U	**0.041 J**	0.1 U	0.1 U	0.1 U	0.1 U
Acenaphthene	µg/L	530	0.1 U	0.11 U	0.1 U	**0.45**	0.1 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	0.11 U	0.1 U	**0.12**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Anthracene	µg/L	1,800	0.1 U	0.11 U	**0.015 J**	**0.047 J**	0.1 U	0.1 U	0.1 U	0.1 U	**0.013 J**	0.1 U	0.1 U	**0.025 J**
Benz[a]anthracene	µg/L	0.03	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.018 J**	**0.032 J**	0.1 U	0.1 U	0.1 U
Benzaldehyde	µg/L	1,900	1 U	1 U	1 U	**1.1**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U	1 U
Benzo[a]pyrene	µg/L	0.2	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.011 J**	**0.022 J**	0.1 U	0.1 U	0.1 U
Benzo[b]fluoranthene	µg/L	0.25	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.029 J**	**0.039 J**	0.1 U	0.1 U	0.1 U
Benzo[g,h,i]perylene	µg/L		0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.02 J**	0.1 U	0.1 U	0.1 U
Benzo[k]fluoranthene	µg/L	2.5	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.027 J**	**0.021 J**	0.1 U	0.1 U	0.1 U
Caprolactam	µg/L	9,900	**0.17 J**	2.5 U	2.5 U	2.6 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 U	2.6 U	2.7 U	2.6 U
Chrysene	µg/L	25	0.1 U	0.11 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	**0.011 J**	**0.018 J**	0.1 U	0.1 U	0.1 U
Diethylphthalate	µg/L	15,000	**0.24 J**	1 U	1 U	**2.5**	1 U	1 U	**0.47 J**	1 U	1 U	1 U	1.1 U	1 U
Fluoranthene	µg/L	800	0.1 U	0.11 U	0.1 U	**0.013 J**	**0.013 J**	0.1 U	0.1 U	**0.013 J**	**0.025 J**	**0.015 J**	0.1 U	0.1 U
Fluorene	µg/L	290	0.1 U	0.11 U	0.1 U	**1.2**	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	0.12	**0.018 J**	0.11 U	0.018 B	**8.2**	0.1 U	0.1 U	0.1 U	**1.1**	0.025 B	0.021 B	0.1 U	0.1 U
Phenanthrene	µg/L		0.1 U	0.11 U	0.1 U	**1.2**	**0.019 J**	0.1 U	0.1 U	0.1 U	**0.017 J**	**0.022 J**	0.1 U	0.1 U
Pyrene	µg/L	120	0.1 U	0.11 U	0.1 U	**0.016 J**	0.1 U	0.1 U	0.1 U	**0.013 J**	**0.025 J**	0.1 U	0.1 U	0.1 U
TPH														
Diesel Range Organics	µg/L	47	105 U	**68.2 J**	**407 J**	**1,130 J**	**65.1 J**	105 UJ	**62.2 J**	**110**	104 UJ	**53.2 J**	**52.6 J**	**81.5 J**
Gasoline Range Organics	µg/L	47	200 U	200 U	200 U	200 U	200 U	200 U	200 U	**565**	**146 J**	200 U	200 U	200 U

Detections in bold
Values in red indicate an exceedance of the Project Action Limit (PAL)
* indicates non-validated data
^ PAH compounds were analyzed via SIM

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.
UJ: This analyte was not detected in the sample. The actual quantitation/detection limit may be higher than reported.
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.

Table 4 - Sub-Parcel A10-1
Summary of Inorganics Detected in Groundwater (Phase II Investigation)

Parameter	Units	PAL	A10-002-PZ* Perched 07/18/2016	A10-010-PZ Shallow 07/20/2016	A10-015-PZ Perched 07/20/2016	A10-018-PZ Shallow 07/20/2016	A10-020-PZ* Shallow 07/18/2016	A10-021-PZ Shallow 07/19/2016	A10-024-PZ* Shallow 07/18/2016	A10-025-PZ* Shallow 07/18/2016	A10-027-PZ Shallow 07/19/2016	A10-029-PZ Perched 07/19/2016	A10-034-PZ Shallow 07/19/2016	SG06-PDM001 Shallow 07/20/2016
Metals														
Chromium VI, Dissolved	µg/L	0.035	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10,000 U	**75**
Aluminum, Dissolved	µg/L	20,000	**1,020**	**410**	**120**	**245**	**87**	**20.3 J**	50 U	**73.7**	**51**	**79.8**	**80.6**	**51.7**
Arsenic, Dissolved	µg/L	10	5 U	5 U	**3.3 J**	**10.7**	5 U	5 U	**9.8**	5 U	5 U	**4.6 J**	5 U	5 U
Barium, Dissolved	µg/L	2,000	**32.5**	**36**	**14.4**	**68.6**	**33.4**	**18.4**	**57.7**	**38**	**15.8**	**21.9**	**45.4**	**11.8**
Beryllium, Dissolved	µg/L	4	**1.4**	1 U	1 U	1 U	**0.39 J**	1 U	1 U	1 U	1 U	1 U	**0.59 J**	1 U
Cadmium, Dissolved	µg/L	5	**0.59 J**	3 U	3 U	3 U	**0.75 J**	**0.5 J**	3 U	3 U	**0.53 J**	**0.61 J**	**0.75 J**	3 U
Chromium, Dissolved	µg/L	100	**0.82 J**	**1.3 J**	5 U	**1.5 J**	**2 J**	5 U	5 U	**1.2 J**	**0.93 J**	**2.4 J**	**3.8 J**	**87.1**
Cobalt, Dissolved	µg/L	6	**30.6**	**23.3**	**11.2**	**83.8**	**55**	**1.5 J**	**53.2**	**124**	**18**	**41.8**	**60.1**	5 U
Copper, Dissolved	µg/L	1,300	**2.4 J**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**1.6 J**
Iron, Dissolved	µg/L	14,000	**184**	**49,100**	**3,740**	**52,200**	**4,360**	**2,090**	**64,600**	**3,910**	**1,900**	**2,760**	**8,430**	**13.7 J**
Lead, Dissolved	µg/L	15	**2.8 J**	5 U	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	**395**	**4,740**	**527**	**7,920**	**822**	**446 J**	**3,060**	**1,580**	**673 J**	**460 J**	**1,090 J**	5 U
Nickel, Dissolved	µg/L	390	**23.9**	**23**	**23.6**	**11.4**	**57.4**	**7.1 J**	**14.7**	**93.2**	**24.4 J**	**47.9 J**	**68.9 J**	10 U
Selenium, Dissolved	µg/L	50	**7.8 J**	8 U	8 U	8 U	8 U	**5.4 J**	8 U	8 U	8 U	**5.7 J**	**4.2 J**	**4.8 J**
Silver, Dissolved	µg/L	94	6 U	6 U	6 U	**0.6 J**	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	10 U	10 U	10 U	10 U	10 U	10 U	**5.8 J**
Vanadium, Dissolved	µg/L	86	**0.9 J**	**2.6 J**	**1.4 J**	**2.5 J**	**0.98 J**	**0.89 J**	**2.6 J**	**1.3 J**	**0.88 J**	**0.9 J**	**1.2 J**	**977**
Zinc, Dissolved	µg/L	6,000	**39.3**	**19.4**	**19**	**10**	**52.1**	2.6 B	**15.4**	**74.8**	**26.2**	**49**	**77.8**	10 U
Other														
Cyanide	µg/L	200	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**4.3 J**	**2.4 J**	10 U

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

Table 5 - Sub-Parcel A10-1
Summary of VOCs Detected in Groundwater (CVOC Supplemental Investigation)

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

Detections in bold

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

Dataset from CVOC Supplemental Investigation is non-validated.

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

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

Table 5 - Sub-Parcel A10-1
Summary of VOCs Detected in Groundwater (CVOC Supplemental Investigation)

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

Detections in bold

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

Dataset from CVOC Supplemental Investigation is non-validated.

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

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

Table 5 - Sub-Parcel A10-1
Summary of VOCs Detected in Groundwater (CVOC Supplemental Investigation)

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

Detections in bold

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

Dataset from CVOC Supplemental Investigation is non-validated.

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

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

Table 5 - Sub-Parcel A10-1
Summary of VOCs Detected in Groundwater (CVOC Supplemental Investigation)

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

Detections in bold

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

Dataset from CVOC Supplemental Investigation is non-validated.

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

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

Table 6 - Sub-Parcel A10-1
Cumulative Vapor Intrusion Comparison

				A10-002(P)-PZ		A10-002(S)-PZ		A10-015(P)-PZ		A10-015(S)-PZ		A10-024(S)-PZ		A10-025(S)-PZ		A10-027(S)-PZ		A10-029(P)-PZ		A10-029(S)-PZ	
				Perched		Shallow		Perched		Shallow		Shallow		Shallow		Shallow		Perched		Shallow	
				10/11/2019		10/15/2019		10/11/2019		10/10/2019		10/11/2019		10/15/2019		10/9/2019		10/11/2019		10/15/2019	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																					
1,4-Dioxane	SVOC		130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	SVOC		200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	VOC			1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1.2	1.1E-07	1 U	0	1 U	0	1 U	0
Benzene	VOC			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
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.94 J	5.2E-07	1 U	0	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	2.1	5.8E-07	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	1 U	0	2.3	1.2E-09	1 U	0	1.7	8.5E-10	1 U	0	1 U	0	1 U	0	1 U	0	1.4	7.0E-10
Tetrachloroethene	VOC		650	1 U	0	11.9	1.8E-07	1 U	0	8	1.2E-07	1 U	0	284	4.4E-06	44.8	6.9E-07	1 U	0	1 U	0
Trichloroethene	VOC		74	1 U	0	2.7	3.6E-07	1 U	0	5.3	7.2E-07	1 U	0	256	3.5E-05	218	2.9E-05	1 U	0	1 U	0
Vinyl chloride	VOC		25	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	18.6	7.4E-06	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Cancer Risk					0		5E-07		0		8E-07		0		5E-05		3E-05		0		7E-10
Non-Cancer Hazard																					
Tetrachloroethene	VOC	Nervous; Ocular	240	1 U	0	11.9	0.05	1 U	0	8	0.03	1 U	0	284	1	44.8	0.2	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		0		1		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	1 U	0	2.7	0.1	1 U	0	5.3	0.2	1 U	0	256	12	218	10	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		0		0		12		10		0		0

Highlighted values indicate exceedances of the cumulative vapor intrusion crtieria: TCR>1E-05 or THI>1
Conc. = Concentration
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.
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Table 6 - Sub-Parcel A10-1
Cumulative Vapor Intrusion Comparison

				A10-034(S)-PZ		A10-035(S)-PZ		A10-036(P)-PZ		A10-036(S)-PZ		A10-037(P)-PZ		A10-037(S)-PZ		A10-038(P)-PZ		A10-038(S)-PZ		A10-039(P)-PZ	
				Shallow		Shallow		Perched		Shallow		Perched		Shallow		Perched		Shallow		Perched	
				10/15/2019		10/11/2019		10/11/2019		10/10/2019		10/11/2019		10/10/2019		10/11/2019		10/11/2019		10/11/2019	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																					
1,4-Dioxane	SVOC		130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	SVOC		200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	VOC			1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Benzene	VOC			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
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Chloroform	VOC		36	1 U	0	0.76 J	2.1E-07	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	1.3	6.5E-10	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Tetrachloroethene	VOC		650	160	2.5E-06	285	4.4E-06	1 U	0	1.5	2.3E-08	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Trichloroethene	VOC		74	134	1.8E-05	1,670	2.3E-04	1 U	0	4.4	5.9E-07	1 U	0	1.3	1.8E-07	1 U	0	1 U	0	1 U	0
Vinyl chloride	VOC		25	5.8	2.3E-06	0.59 J	2.4E-07	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Cancer Risk					2E-05		2E-04		0		6E-07		0		2E-07		0		0		0
Non-Cancer Hazard																					
Tetrachloroethene	VOC	Nervous; Ocular	240	160	0.7	285	1	1 U	0	1.5	0.006	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					1		1		0		0		0		0		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	134	6	1,670	76	1 U	0	4.4	0.2	1 U	0	1.3	0.06	1 U	0	1 U	0	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					6		76		0		0		0		0		0		0		0

Highlighted values indicate exceedances of the cumulative vapor intrusion crtieria: TCR>1E-05 or THI>1
Conc. = Concentration
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.
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Table 6 - Sub-Parcel A10-1
Cumulative Vapor Intrusion Comparison

				A10-039(S)-PZ		A10-040(P)-PZ		A10-040(S)-PZ		A10-041(P)-PZ		A10-041(S)-PZ		A10-002-PZ		A10-010-PZ		A10-015-PZ		A10-018-PZ	
				Shallow		Perched		Shallow		Perched		Shallow		Perched		Shallow		Perched		Shallow	
				10/15/2019		10/11/2019		10/15/2019		10/10/2019		10/15/2019		7/18/2016		7/20/2016		7/20/2016		7/20/2016	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																					
1,4-Dioxane	SVOC		130,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U	0	0.55	4.2E-11	0.1 U	0	0.05 J	3.8E-12
Naphthalene	SVOC		200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.018 J	9.0E-10	0.11 U	0	0.018 B	0	8.2	4.1E-07
1,1-Dichloroethane	VOC			1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.49 J	1.5E-08	1 U	0	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Benzene	VOC			1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.68 J	9.9E-08
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Chloroform	VOC		36	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	0.78 J	3.9E-10	1 U	0	1.2	6.0E-10	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Tetrachloroethene	VOC		650	232	3.6E-06	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	14.2	2.2E-07	1 U	0	1.7	2.6E-08
Trichloroethene	VOC		74	663	9.0E-05	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	7.6	1.0E-06	1 U	0	3.5	4.7E-07
Vinyl chloride	VOC		25	3.2	1.3E-06	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.35 J	1.4E-07	1 U	0	1 U	0
Cumulative Vapor Intrusion Cancer Risk					9E-05		0		6E-10		0		0		9E-10		1E-06		0		1E-06
Non-Cancer Hazard																					
Tetrachloroethene	VOC	Nervous; Ocular	240	232	1	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	14.2	0.06	1 U	0	1.7	0.007
Cumulative Vapor Intrusion Non-Cancer Hazard					1		0		0		0		0		0		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	663	30	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	7.6	0.3	1 U	0	3.5	0.2
Cumulative Vapor Intrusion Non-Cancer Hazard					30		0		0		0		0		0		0		0		0

Highlighted values indicate exceedances of the cumulative vapor intrusion crtieria: TCR>1E-05 or THI>1
Conc. = Concentration
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Table 6 - Sub-Parcel A10-1
Cumulative Vapor Intrusion Comparison

				A10-020-PZ		A10-021-PZ		A10-024-PZ		A10-025-PZ		A10-027-PZ		A10-029-PZ		A10-034-PZ		SG06-PDM001	
				Shallow		Shallow		Shallow		Shallow		Shallow		Perched		Shallow		Shallow	
				7/18/2016		7/19/2016		7/18/2016		7/18/2016		7/19/2016		7/19/2016		7/19/2016		7/20/2016	
Parameter	Type	Organ System	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk																			
1,4-Dioxane	SVOC		130,000	0.31	2.4E-11	0.1 U	0	0.1 U	0	0.1 U	0	0.1 U	0	0.084 J	6.5E-12	0.27	2.1E-11	0.1 U	0
Naphthalene	SVOC		200	0.1 U	0	0.1 U	0	0.1 U	0	1.1	5.5E-08	0.025 B	0	0.025 B	0	0.1 U	0	0.1 U	0
1,1-Dichloroethane	VOC			0.64 J	1.9E-08	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.23 J	7.0E-09	1 U	0
1,4-Dichlorobenzene	VOC		110	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Benzene	VOC			1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0
Carbon tetrachloride	VOC		18	1 U	0	1 U	0	1 U	0	6.2	3.4E-06	1 U	0	1 U	0	1 U	0	1 U	0
Chloroform	VOC		36	0.53 J	1.5E-07	12.3	3.4E-06	1 U	0	1.7	4.7E-07	1 U	0	1 U	0	1 U	0	1 U	0
Methyl tert-butyl ether	VOC		20,000	2.7	1.4E-09	1 U	0	1 U	0	1 U	0	1 U	0	1 U	0	0.61 J	3.1E-10	1 U	0
Tetrachloroethene	VOC		650	3.9	6.0E-08	1 U	0	1 U	0	1,010	1.6E-05	123	1.9E-06	4.6	7.1E-08	34.2	5.3E-07	1 U	0
Trichloroethene	VOC		74	3.3	4.5E-07	1 U	0	1 U	0	494	6.7E-05	255	3.4E-05	5	6.8E-07	33.5	4.5E-06	1 U	0
Vinyl chloride	VOC		25	1 U	0	1 U	0	1 U	0	22.6	9.0E-06	0.24 J	9.6E-08	1 U	0	1.4	5.6E-07	1 U	0
Cumulative Vapor Intrusion Cancer Risk					7E-07		3E-06		0		1E-04		4E-05		7E-07		6E-06		0
Non-Cancer Hazard																			
Tetrachloroethene	VOC	Nervous; Ocular	240	3.9	0.02	1 U	0	1 U	0	1,010	4	123	0.5	4.6	0.02	34.2	0.1	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		4		1		0		0		0
Trichloroethene	VOC	Cardiovascular; Developmental; Immune	22	3.3	0.2	1 U	0	1 U	0	494	22	255	12	5	0.2	33.5	2	1 U	0
Cumulative Vapor Intrusion Non-Cancer Hazard					0		0		0		22		12		0		2		0

Highlighted values indicate exceedances of the cumulative vapor intrusion crtieria: TCR>1E-05 or THI>1
Conc. = Concentration
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.
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Table 7 - Sub-Parcel A10-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
1,1-Biphenyl	92-52-4	A10-024-SB-5	0.15	J	0.017	0.04	67	16.42	410	20	no
1,2,3-Trichlorobenzene	87-61-6	A10-018-SB-1	0.0035	J	0.0035	0.004	67	1.49		93	no
2,3,4,6-Tetrachlorophenol	58-90-2	A10-024-SB-5	0.15	J	0.15	0.15	66	1.52		2,500	no
2,4,5-Trichlorophenol	95-95-4	A10-024-SB-5	0.042	J	0.042	0.04	66	1.52		8,200	no
2,4-Dimethylphenol	105-67-9	A10-024-SB-5	1.9		0.018	0.44	66	12.12		1,600	no
2-Butanone (MEK)	78-93-3	A10-008-SB-4	0.012		0.012	0.01	67	1.49		19,000	no
2-Chloronaphthalene	91-58-7	A10-023-SB-1	0.054	J	0.054	0.05	67	1.49		6,000	no
2-Methylnaphthalene	91-57-6	A10-018-SB-5	12.6		0.0021	0.65	68	58.82		300	no
2-Methylphenol	95-48-7	A10-024-SB-5	2.2		0.015	1.11	66	3.03		4,100	no
2-Nitroaniline	88-74-4	A10-024-SB-5	0.34	J	0.34	0.34	67	1.49		800	no
Acenaphthene	83-32-9	A10-008-SB-4	4.2		0.00053	0.18	68	51.47		4,500	no
Acenaphthylene	208-96-8	A10-003-SB-1	0.63		0.002	0.10	68	54.41			no
Acetone	67-64-1	A10-024-SB-5	0.23		0.0061	0.05	67	43.28		67,000	no
Acetophenone	98-86-2	A10-017-SB-4	0.54		0.025	0.34	67	4.48		12,000	no
Aluminum	7429-90-5	A10-007-SB-1	44,300		3,440	17,945	67	100.00		110,000	no
Anthracene	120-12-7	A10-008-SB-4	9.1		0.001	0.35	68	61.76		23,000	no
Antimony	7440-36-0	A10-027-SB-4	5	J	5	5.00	67	1.49		47	no
Aroclor 1242	53469-21-9	A10-026-SB-1	0.0598		0.0598	0.06	34	2.94	0.95		no
Aroclor 1248	12672-29-6	A10-027-SB-1	0.334		0.141	0.24	34	5.88	0.95		no
Aroclor 1254	11097-69-1	A10-027-SB-1	0.508		0.0559	0.18	34	11.76	0.97	1.5	no
Aroclor 1260	11096-82-5	A10-027-SB-1	0.279		0.066	0.18	34	8.82	0.99		no
Arsenic	7440-38-2	A10-006-SB-1	71.2		2.6	8.91	78	85.90	3	48	YES (C/NC)
Barium	7440-39-3	A10-023-SB-4	739	J	19.2	165	67	100.00		22,000	no
Benz[a]anthracene	56-55-3	A10-008-SB-4	20.8		0.0013	0.72	68	64.71	21		no
Benzaldehyde	100-52-7	A10-024-SB-5	1		0.02	0.12	66	19.70	820	12,000	no
Benzene	71-43-2	A10-022-SB-2	0.015		0.0028	0.008	67	4.48	5.1	42	no
Benzo[a]pyrene	50-32-8	A10-008-SB-4	13.6		0.0011	0.62	69	60.87	2.1	22	YES (C)
Benzo[b]fluoranthene	205-99-2	A10-008-SB-4	33.9		0.00078	1.08	69	76.81	21		YES (C)
Benzo[g,h,i]perylene	191-24-2	A10-008-SB-4	7.2		0.0011	0.53	68	54.41			no
Benzo[k]fluoranthene	207-08-9	A10-008-SB-4	7.5		0.0038	0.58	68	55.88	210		no
Beryllium	7440-41-7	A10-030-SB-1	5.6		0.15	1.38	67	94.03	6,900	230	no
bis(2-Ethylhexyl)phthalate	117-81-7	A10-006-SB-1	0.68		0.017	0.10	67	25.37	160	1,600	no
Cadmium	7440-43-9	A10-023-SB-4	9.4		0.32	2.17	67	20.90	9,300	98	no
Carbazole	86-74-8	A10-008-SB-4	0.67		0.017	0.11	67	23.88			no
Carbon disulfide	75-15-0	A10-008-SB-1	0.0066		0.0039	0.005	67	10.45		350	no
Chromium	7440-47-3	A10-003-SB-1	2,300		10.1	234	67	100.00		180,000	no
Chromium VI	18540-29-9	A10-024-SB-5	0.71	J	0.71	0.71	67	1.49	6.3	350	no
Chrysene	218-01-9	A10-008-SB-4	18		0.00083	0.72	68	66.18	2,100		no
Cobalt	7440-48-4	A10-032-SB-5	50.2		0.91	7.15	67	98.51	1,900	35	YES (NC)
Copper	7440-50-8	A10-006-SB-7	447		2.8	46.7	67	100.00		4,700	no

Table 7 - Sub-Parcel A10-1
COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
Cyanide	57-12-5	A10-004-SB-1	6.9		0.036	0.91	67	61.19		120	no
Cyclohexane	110-82-7	A10-018-SB-5	0.051	J	0.015	0.03	67	4.48		2,700	no
Dibenz[a,h]anthracene	53-70-3	A10-008-SB-4	3.2		0.0014	0.21	68	47.06	2.1		YES (C)
Di-n-butylphthalate	84-74-2	A10-024-SB-5	0.17	J	0.07	0.11	67	4.48		8,200	no
Ethylbenzene	100-41-4	A10-022-SB-2	0.47		0.0029	0.10	67	8.96	25	2,000	no
Fluoranthene	206-44-0	A10-008-SB-4	53.8		0.00067	1.23	68	85.29		3,000	no
Fluorene	86-73-7	A10-008-SB-4	4.8		0.00084	0.25	68	52.94		3,000	no
Indeno[1,2,3-c,d]pyrene	193-39-5	A10-008-SB-4	7.5		0.0011	0.48	68	52.94	21		no
Iron	7439-89-6	A10-032-SB-5	361,000		5,600	45,027	67	100.00		82,000	YES (NC)
Isopropylbenzene	98-82-8	A10-022-SB-2	0.094		0.0019	0.03	67	10.45		990	no
Lead^	7439-92-1	A10-004-SB-1	1,580		3	108	67	100.00		800	YES (NC)
Manganese	7439-96-5	A10-007-SB-4	94,000		35.7	7,857	68	100.00		2,600	YES (NC)
Mercury	7439-97-6	A10-004-SB-1	0.78		0.0023	0.06	67	82.09		35	no
Methyl Acetate	79-20-9	A10-025-SB-1	0.012	J	0.012	0.01	29	3.45		120,000	no
Methyl tert-butyl ether (MTBE)	1634-04-4	A10-022-SB-4	0.015		0.004	0.01	67	2.99	210	6,400	no
Methylene Chloride	75-09-2	A10-024-SB-5	0.23		0.0089	0.05	67	19.40	1,000	320	no
Naphthalene	91-20-3	A10-018-SB-5	2.4		0.0036	0.32	68	47.06	8.6	59	no
Nickel	7440-02-0	A10-032-SB-5	111		3.6	18.8	67	95.52	64,000	2,200	no
N-Nitrosodiphenylamine	86-30-6	A10-027-SB-4	0.015	J	0.015	0.02	67	1.49	470		no
PCBs (total)*	1336-36-3	A10-027-SB-1	1.121		0.0458	0.24	34	23.53	0.94		YES (C)
Pentachlorophenol	87-86-5	A10-024-SB-5	0.34	J	0.34	0.34	66	1.52	4	280	no
Phenanthrene	85-01-8	A10-008-SB-4	43.7		0.00077	1.12	68	79.41			no
Phenol	108-95-2	A10-024-SB-5	2.2		0.025	1.11	66	3.03		25,000	no
Pyrene	129-00-0	A10-008-SB-4	39.9		0.00078	1.04	68	79.41		2,300	no
Selenium	7782-49-2	A10-008-SB-1	4.5		2.3	3.14	67	7.46		580	no
Silver	7440-22-4	A10-007-SB-4	3.2		0.64	1.63	67	7.46		580	no
Tetrachloroethene	127-18-4	A10-009-SB-1.5	0.01		0.01	0.01	67	1.49	100	39	no
Thallium	7440-28-0	A10-003-SB-1	102		4	35.9	68	25.00		1.2	YES (NC)
Toluene	108-88-3	A10-022-SB-2	0.12		0.002	0.02	67	8.96		4,700	no
Vanadium	7440-62-2	A10-004-SB-10	10,600		11.2	1,028	68	100.00		580	YES (NC)
Xylenes	1330-20-7	A10-022-SB-2	0.72	J	0.0034	0.13	67	10.45		250	no
Zinc	7440-66-6	A10-008-SB-4	2,290	J	7.5	188	67	98.51		35,000	no

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

COPC = Constituent of Potential Concern
TR = Target Risk
HQ = Hazard Quotient

C = Compound was identified as a cancer COPC
NC = Compound was identified as a non-cancer COPC

*PCBs (total) include the sum of all detected aroclor mixtures, including those without regional screening levels (e.g. Aroclor 1262, Aroclor 1268) which are not displayed.
^The COPC screening level for lead was not adjusted to the HQ=0.1 because lead is not assessed in the SLRA. The 800 mg/kg PAL is relevant to the Adult Lead Model procedure.

Table 8 - Sub-Parcel A10-1
Assessment of Lead

Exposure Unit	**Surface/Sub-Surface**	**Arithmetic Mean (mg/kg)**
EU1 & EU1-EXP (29.4 ac. & 30.1 ac.)	Surface	132
	Sub-Surface	91.6
	Pooled	108

Adult Lead Model (ALM) Risk Levels	
Soil Concentration (mg/kg)	Probability of Blood Concentration of 10 ug/dL
2,518 mg/kg	5%
3,216 mg/kg	10%

Table 9 - Sub-Parcel A10-1
Soil Exposure Point Concentrations

			EU1 & EU1-EXP (29.4 ac. & 30.1 ac.)					
			EPCs - Surface Soils		EPCs - Sub-Surface Soils		EPCs - Pooled Soils	
Parameter	Cancer COPC Screening Level (mg/kg)	Non-Cancer COPC Screening Level (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)
Arsenic	3.00	48.0	95% KM (BCA) UCL	**13.1**	95% KM (Chebyshev) UCL	**11.1**	95% KM (BCA) UCL	**9.74**
Cobalt	1,900	35.0	95% KM (Chebyshev) UCL	9.47	95% Chebyshev (Mean, Sd) UCL	15.3	95% KM (Chebyshev) UCL	11.6
Iron		82,000	95% Adjusted Gamma UCL	50,965	95% Chebyshev (Mean, Sd) UCL	**96,518**	95% Chebyshev (Mean, Sd) UCL	74,338
Manganese		2,600	95% Adjusted Gamma UCL	**12,645**	97.5% Chebyshev (Mean, Sd) UCL	**27,617**	95% Chebyshev (Mean, Sd) UCL	**16,578**
Thallium		1.20	95% Adjusted Gamma KM-UCL	**20.7**	95% KM (t) UCL	**21.7**	95% Approximate Gamma KM-UCL	**18.7**
Vanadium		580	95% Chebyshev (Mean, Sd) UCL	**2,816**	95% Chebyshev (Mean, Sd) UCL	**2,840**	95% Chebyshev (Mean, Sd) UCL	**2,305**
PCBs (total)	0.94		95% Adjusted Gamma KM-UCL	0.22	Maximum Value	0.12	95% KM (% Bootstrap) UCL	0.15
Benzo[a]pyrene	2.10	22.0	95% KM (Chebyshev) UCL	0.92	99% KM (Chebyshev) UCL	**3.74**	97.5% KM (Chebyshev) UCL	1.65
Benzo[b]fluoranthene	21.0		95% KM (Chebyshev) UCL	1.67	99% KM (Chebyshev) UCL	9.24	97.5% KM (Chebyshev) UCL	3.95
Dibenz[a,h]anthracene	2.10		95% Adjusted Gamma KM-UCL	0.34	95% KM (Chebyshev) UCL	0.46	95% KM (Chebyshev) UCL	0.33

Bold indicates EPC higher than lowest COPC Screening Level
COPC = Constituent of Potential Concern

Table 10 - Sub-Parcel A10-1
Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	Site-Wide EU1 (29.4 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	13.1	3.00	480	4.4E-06	0.03
Cobalt	**Thyroid**	9.47	1,900	350	5.0E-09	0.03
Iron	**Gastrointestinal**	50,965		820,000		0.06
Manganese	**Nervous**	12,645		26,000		0.5
Thallium	**Dermal**	20.7		12.0		2
Vanadium	**Dermal**	2,816		5,800		0.5
PCBs (Total)		0.22	0.94		2.3E-07	
Benzo(a)pyrene	**Developmental**	0.92	2.10	220	4.4E-07	0.004
Benzo(b)fluoranthene		1.67	21.0		8.0E-08	
Dibenz(a,h)anthracene		0.34	2.10		1.6E-07	
					5E-06	↓

RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	2
	Thyroid	0
	Gastrointestinal	0
	Nervous	0
	Developmental	0

Table 11 - Sub-Parcel A10-1
Sub-Surface Soils
Composite Worker Risk Ratios

Parameter	Target Organs	Site-Wide EU1 (29.4 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	11.1	3.00	480	3.7E-06	0.02
Cobalt	**Thyroid**	15.3	1,900	350	8.1E-09	0.04
Iron	**Gastrointestinal**	96,518		820,000		0.1
Manganese	**Nervous**	27,617		26,000		1
Thallium	**Dermal**	21.7		12.0		2
Vanadium	**Dermal**	2,840		5,800		0.5
PCBs (Total)		**0.12**	0.94		1.3E-07	
Benzo(a)pyrene	**Developmental**	3.74	2.10	220	1.8E-06	0.02
Benzo(b)fluoranthene		9.24	21.0		4.4E-07	
Dibenz(a,h)anthracene		0.46	2.10		2.2E-07	
					6E-06	↓

Bold indicates maximum value is used
RSLs were obtained from the EPA Regional Screening Levels at
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	2
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

Table 12 - Sub-Parcel A10-1
Pooled Soils
Composite Worker Risk Ratios

Parameter	Target Organs	Site-Wide EU1 (29.4 ac.)				
			Composite Worker			
			RSLs (mg/kg)		Risk Ratios	
		EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	9.74	3.00	480	3.2E-06	0.02
Cobalt	**Thyroid**	11.6	1,900	350	6.1E-09	0.03
Iron	**Gastrointestinal**	74,338		820,000		0.09
Manganese	**Nervous**	16,578		26,000		0.6
Thallium	**Dermal**	18.7		12.0		2
Vanadium	**Dermal**	2,305		5,800		0.4
PCBs (Total)		0.15	0.94		1.6E-07	
Benzo(a)pyrene	**Developmental**	1.65	2.10	220	7.9E-07	0.008
Benzo(b)fluoranthene		3.95	21.0		1.9E-07	
Dibenz(a,h)anthracene		0.33	2.10		1.6E-07	
					5E-06	↓

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

Total HI	Cardiovascular	0
	Dermal	2
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

Table 13 - Sub-Parcel A10-1
Surface Soils
Construction Worker Risk Ratios

55 Day		Site-Wide EU1-EXP (30.1 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	13.1	68.8	438	1.9E-07	0.03
Cobalt	Thyroid	9.47	19,505	4,285	4.9E-10	0.002
Iron	Gastrointestinal	50,965		1,093,370		0.05
Manganese	Nervous	12,645		18,762		0.7
Thallium	Dermal	20.7		62.5		0.3
Vanadium	Dermal	2,816		7,253		0.4
PCBs (Total)		0.22	17.8		1.2E-08	
Benzo(a)pyrene	Developmental	0.92	76.4	21.8	1.2E-08	0.04
Benzo(b)fluoranthene		1.67	760		2.2E-09	
Dibenz(a,h)anthracene		0.34	79.0		4.3E-09	
					2E-07	↓

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002

Guidance Equation Input Assumptions:

5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness

Total HI	Cardiovascular	0
	Dermal	1
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

Table 14 - Sub-Parcel A10-1
Sub-Surface Soils
Construction Worker Risk Ratios

55 Day		Site-Wide EU1-EXP (30.1 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	**Cardiovascular; Dermal**	11.1	68.8	438	1.6E-07	0.03
Cobalt	**Thyroid**	15.3	19,505	4,285	7.8E-10	0.004
Iron	**Gastrointestinal**	96,518		1,093,370		0.09
Manganese	**Nervous**	27,617		18,762		1
Thallium	**Dermal**	21.7		62.5		0.3
Vanadium	**Dermal**	2,840		7,253		0.4
PCBs (Total)		**0.12**	17.8		6.7E-09	
Benzo(a)pyrene	**Developmental**	3.74	76.4	21.8	4.9E-08	0.2
Benzo(b)fluoranthene		9.24	760		1.2E-08	
Dibenz(a,h)anthracene		0.46	79.0		5.8E-09	
					2E-07	↓

Bold indicates maximum value is used
SSLs calculated using equations in the EPA Supplemental Guidance dated 2002
Guidance Equation Input Assumptions:
5 cars/day (2 tons/car)
5 trucks/day (20 tons/truck)
3 meter source depth thickness

Total HI	Cardiovascular	0
	Dermal	1
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

Table 15 - Sub-Parcel A10-1
Pooled Soils
Construction Worker Risk Ratios

55 Day		Site-Wide EU1-EXP (30.1 ac.)				
			Construction Worker			
			SSLs (mg/kg)		Risk Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ
Arsenic	Cardiovascular; Dermal	9.74	68.8	438	1.4E-07	0.02
Cobalt	Thyroid	11.6	19,505	4,285	5.9E-10	0.003
Iron	Gastrointestinal	74,338		1,093,370		0.07
Manganese	Nervous	16,578		18,762		0.9
Thallium	Dermal	18.7		62.5		0.3
Vanadium	Dermal	2,305		7,253		0.3
PCBs (Total)		0.15	17.8		8.4E-09	
Benzo(a)pyrene	Developmental	1.65	76.4	21.8	2.2E-08	0.08
Benzo(b)fluoranthene		3.95	760		5.2E-09	
Dibenz(a,h)anthracene		0.33	79.0		4.2E-09	
					2E-07	↓

SSLs calculated using equations in the EPA Supplemental Guidance dated 2002

Guidance Equation Input Assumptions:

5 cars/day (2 tons/car)

5 trucks/day (20 tons/truck)

3 meter source depth thickness

Total HI	Cardiovascular	0
	Dermal	1
	Thyroid	0
	Gastrointestinal	0
	Nervous	1
	Developmental	0

APPENDIX A

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

February 3, 2020

Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD, 21230

Attention: Ms. Barbara Brown

Subject: Request to Enter Temporary CHS Review
Tradepoint Atlantic Parcel A10

Dear Ms. Brown:

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- 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).

On September 11, 2014, Tradepoint Atlantic submitted an application to the Maryland Department of the Environment's (Department) Voluntary Cleanup Program (VCP).

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Parcel A10 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the

TRADEPOINT
ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219

submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic or other entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this work plan are implemented and a No Further Action letter is issued by the Department pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the work plan, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this work plan.

Engineering and institutional controls approved as part of this Site Response and Development Work Plan shall be described in documentation submitted to the Department demonstrating that the exposure pathways on the sub-parcel are addressed in a manner that protects public health and the environment. This information shall support Tradepoint Atlantic's request for the issuance of a COC for the larger parcel.

Please do not hesitate to contact Tradepoint Atlantic for further information.

Thank you,

Peter Haid

Vice President Environmental
TRADEPOINT ATLANTIC
1600 Sparrows Point Boulevard
Baltimore, Maryland 21219
T 443.649.5055 C 732.841.7935
phaid@tradepointatlantic.com

APPENDIX B

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel A10-1

Description	Variable	Value
Days worked per week	DW	5
Exposure duration (yr)	ED	1
Hours worked per day	ET	8
A/constant (unitless) - particulate emission factor	Aconst	12.9351
B/constant (unitless) - particulate emission factor	Bconst	5.7383
C/constant (unitless) - particulate emission factor	Cconst	71.7711
Dispersion correction factor (unitless)	FD	0.185
Days per year with at least .01" precipitation	P	130
Target hazard quotient (unitless)	THQ	1
Body weight (kg)	BW	80
Averaging time - noncancer (yr)	ATnc	1
Soil ingestion rate (mg/d)	IR	330
Skin-soil adherence factor (mg/cm2)	AF	0.3
Skin surface exposed (cm2)	SA	3300
Event frequency (ev/day)	EV	1
Target cancer risk (unitless)	TR	01E-06
Averaging time - cancer (yr)	ATc	70
A/constant (unitless) - volatilization	Aconstv	2.4538
B/constant (unitless) - volatilization	Bconstv	17.566
C/constant (unitless) - volatilization	Cconstv	189.0426
Dry soil bulk density (kg/L)	Pb	1.5
Average source depth (m)	ds	3
Soil particle density (g/cm3)	Ps	2.65
Total soil porosity	Lpore/Lsoil	0.43
Air-filled soil porosity	Lair/Lsoil	0.28

Construction Worker Soil Screening Levels
Maximum Allowable Work Day Exposure
Calculation Spreadsheet - Sub-Parcel A10-1

Area of site (ac)	Ac	30.1 → EU1-EXP
Overall duration of construction (wk/yr)	EW	11
Exposure frequency (day/yr)	EF	**55**
Cars per day	Ca	5
Tons per car	CaT	2
Trucks per day	Tru	5
Tons per truck	TrT	20
Mean vehicle weight (tons)	w	**11**
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	**14.0**
Overall duration of traffic (s)	Tt	**1,584,000**
Surface area (m2)	AR	**121,810**
Length (m)	LR	**349**
Distance traveled (km)	ΣVKT	**192**
Particulate emission factor (m3/kg)	PEFsc	**125,959,782**
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	**7.09**
Total time of construction (s)	Tcv	**1,584,000**

Input
Calculation

Chemical	RfD & RfC Sources	^Ingestion SF $(mg/kg\text{-}day)^{-1}$	^Inhalation Unit Risk $(ug/m^3)^{-1}$	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m^3)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Koc	DA	Volatilization Factor - Unlimited Reservoir (m^3/kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non-Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non-Carcinogenic Inhalation SL (SLinh)	Non-Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				68.9	40,824	68.8	443	37,616	438
Cobalt	P	-	9.00E-03	3.00E-03	2.00E-05	1	3.00E-03	**0.01**	1			-	4.50E+01					19,505	19,505	4,686	50,155	4,285
Iron	P	-	-	7.00E-01	-	1	7.00E-01	**0.01**	1			-	2.50E+01							1,093,370		1,093,370
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	**0.01**	1			-	6.50E+01							22,064	125,387	18,762
Thallium (Soluble Salts)	P	-	-	4.00E-05	-	1	4.00E-05	**0.01**	1			-	7.10E+01							62.5		62.5
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	**0.01**	1			-	1.00E+03							7,470	250,774	7,253
PCB Total	I	2.00E+00	5.71E-04	-	-	1		0.14	1	2.40E-02	6.30E-06	1.70E-02	4.68E+02	7.80E+04	4.66E-08	1.32E+04	39.7	32.2	17.8			
Benzo[a]pyrene	I	1.00E+00	6.00E-04	3.00E-04	2.00E-06	1	3.00E-04	0.13	1	4.80E-02	5.60E-06	1.87E-05	3.54E+03	5.90E+05	2.37E-11	5.85E+05	81.0	1,354	76.4	347	23.2	21.8
Benzo[b]fluoranthene	I	1.00E-01	6.00E-05	-	-	1		0.13	1	4.80E-02	5.60E-06	2.69E-05	3.60E+03	6.00E+05	2.91E-11	5.28E+05	810	12,208	760			
Dibenz[a,h]anthracene	I	1.00E+00	6.00E-04	-	-	1		0.13	1	4.50E-02	5.20E-06	5.76E-06	1.14E+04	1.90E+06	4.13E-12	1.40E+06	81.0	3,219	79.0			

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls
^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search
I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris
C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk
A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf
P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php

APPENDIX C

Sparrows Point Development - PPE Standard Operational Procedure, Revision 3

Planning, Tracking/Supervision, Enforcement, and Documentation

Planning

- Response and Development Work Plan (RDWP) for each individual redevelopment sub-parcel identifies and documents site conditions.
- RDWP is reviewed and approved by regulators.
- Contractor HASP to address site-specific conditions and PPE requirements:
    - Contractor H&S professional to sign-off on PPE requirements for site workers;
    - Job Safety Analysis (JSA) to be performed for ground intrusive work.
- Project Environmental Professional (EP) assigned to each construction project – monitors project during environmentally sensitive project phases and is available to construction contractor on an as needed basis. EP responsibilities include the following:
    - Dust monitoring
    - Routine ground intrusive breathing space air monitoring
    - Soil tracking
    - Water handling oversight
    - Ground intrusive work observation
    - Notification for unexpected conditions
- Pre-construction meeting identifies EP roles and responsibilities and reviews site conditions.
- Contractor to perform job-site HazCom. HazCom to be addressed in Contractor HASP and include:
    - PPE requirements,
    - Exposure time limits,
    - Identification of chemicals of concern and potential effects of over-exposure (adverse reactions),
    - Methods and routes of potential exposure.
- All personnel that will be performing ground intrusive work within impacted soils shall sign-off on HazCom.
- If, based on a thorough review of Site conditions, it is expected that construction workers will have the potential to encounter materials considered hazardous waste under RCRA or DOT regulations, HAZWOPER-trained personnel will be utilized.

Tracking/Supervision

- Contractor to record any day that there is ground intrusive work and confirm that proper PPE is being worn.
- EP will note ground intrusive work on daily work sheets and perform at least one spot check per day.
- EP will log on daily work sheets PPE compliance for all intrusive work areas at least once per day.

- EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically.

Work Zones Delineation

- Exclusion Zone – The Exclusion Zones will include the areas proposed for excavation or with active trenches, excavations, or ground intrusive work, at a minimum. Personnel working within the exclusion zone will be required to wear Modified Level D PPE as described in this SOP. EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically. The Exclusion Zones will be identified each work day.
- Contamination Reduction Zone – This work zone is located outside of the exclusion zone, but inside of the limits of development (LOD). The Contamination Reduction Zone will be located adjacent to the Exclusion Zone, and all personal decontamination including removal of all disposable PPE/removal of soil from boots will be completed in the Contamination Reduction Zone.

Documentation

- Contractor HASP and HazCom.
- Contractor ground intrusive tracking record.
- HASP and HazCom sign-in sheets.
- EP pre-con memos.
- EP daily work sheets.
- Records documenting intrusive work and proper PPE use to be provided in completion report.

Enforcement

- Non-compliance of PPE requirements will result in disciplinary action up to and including prohibition from working on Sparrows Point.

Unknown and/or Unexpected Conditions

If unknown and/or unexpected conditions are encountered during the project that the EP determines to have a reasonable potential to significantly impact construction worker health and safety, the following will be initiated:

1. Job stoppage,
2. TPA and MDE notification,
3. Re-assessment of conditions.

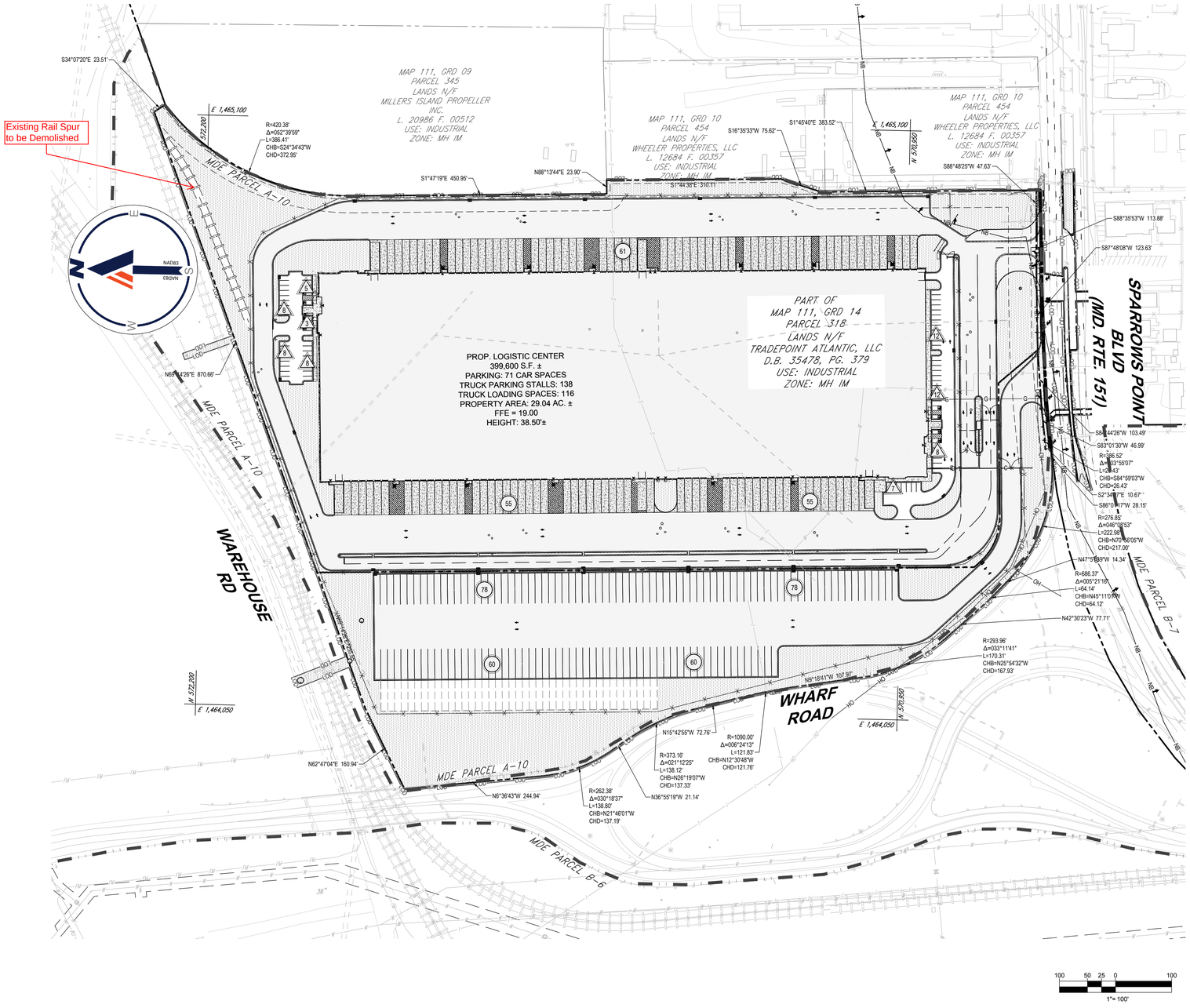
Work will not continue until EP has cleared the area. If hazardous waste is identified, a HAZWOPER contractor will be brought in to address. The approved contingency plan will be implemented, where appropriate.

Modified Level D PPE

Modified Level D PPE will include, at a minimum, overalls such as polyethylene-coated Tyvek or clean washable cloth overalls, latex (or similar) disposable gloves (when working in wet/chemical surroundings) or work gloves, steel-toe/steel-shank high ankle work boots with taped chemical-protective over-boots (as necessary), dust mask, hard hat, safety glasses with

side shields, and hearing protection (as necessary). If chemical-protective over-boots create increased slip/trip/fall hazardous, then standard leather or rubber work boots could be used, but visible soils from the sides and bottoms of the boots must be removed upon exiting the Exclusion Zone.

APPENDIX D



LEGEND

- CONCRETE SIDEWALK
- STANDARD DUTY ASPHALT PAVEMENT
- HEAVY DUTY CONCRETE PAVEMENT
- PROPOSED AREA TO BE LANDSCAPED
- NB CRITICAL AREA BUFFER

NOTES

1. APPROXIMATE CUT = 39,015 CY
   APPROXIMATE FILL = 44,350 CY
2. EXCAVATED MATERIAL TO BE REUSED ON-SITE IF DEEMED SUITABLE FOR REUSE.

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

TRACKING # DRC-2019-00154; DRC# 111919B; DIST 15C7

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PROJECT No.:	MD1922491
DRAWN BY:	MJG
CHECKED BY:	MJG
DATE:	11/9/20
CAD I.D.:	MD1922491-SSP-0

PROJECT:

NELSON BOX

FOR

TRADEPOINT ATLANTIC

MDE ENVIRONMENTAL PLANS

2100 SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

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M.J. GESELL
PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097
PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO.: 44097, EXPIRATION DATE: 6/9/21

SHEET TITLE:

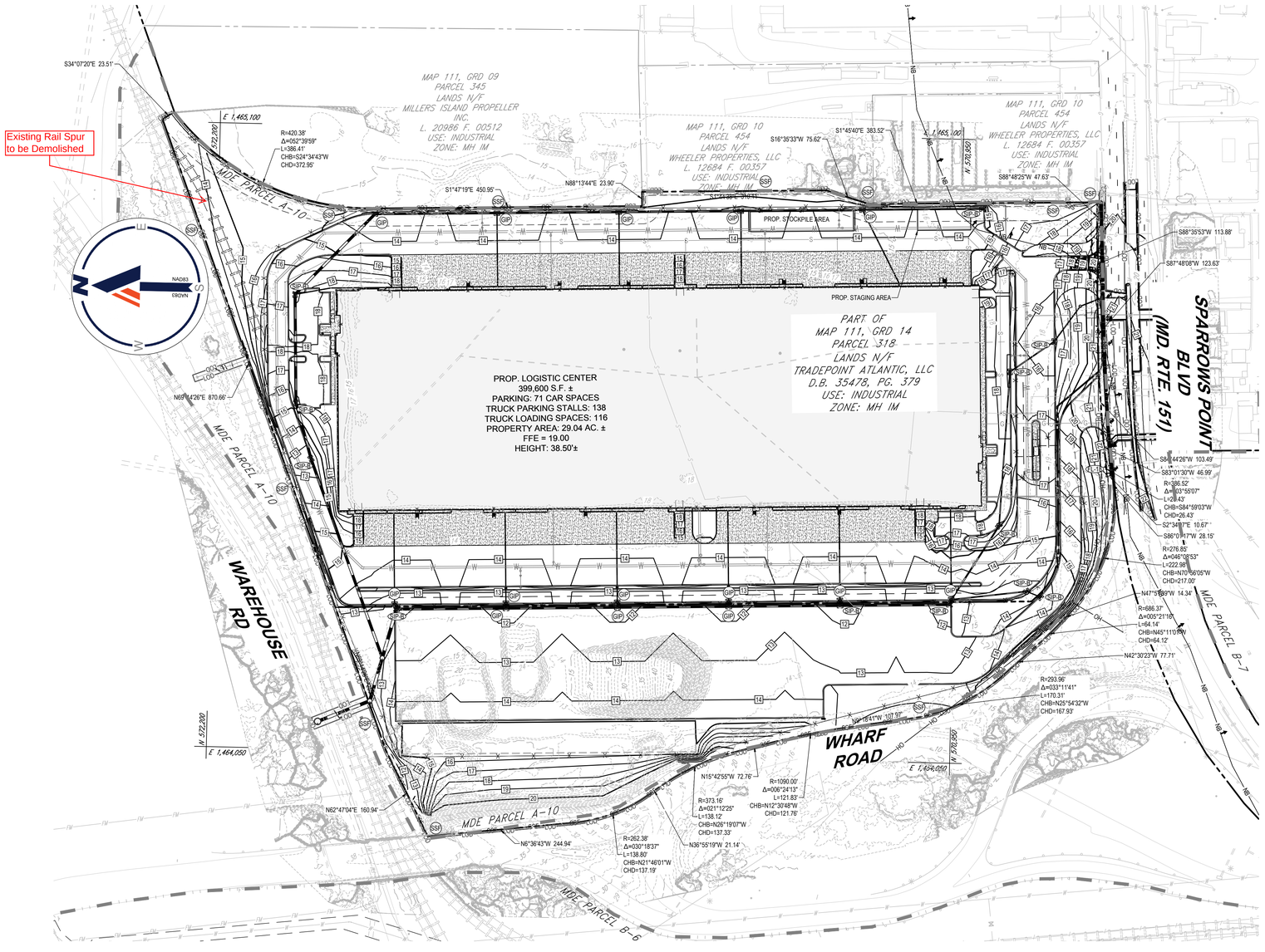
SITE PLAN

SHEET NUMBER:

1

ORG. DATE - 10/14/20

Dec 03, 2020
H:\19\MD1922491\DRAWINGS\PLAN SETS\MDE ENVIRONMENTAL PLANS\MD1922491-SSP-0-----LAYOUT: 1 - SITE PLAN



LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
198	CONTOURS	198
200		200
	SANITARY SEWER	SL FM S
W	WATER	W W
E	UNDERGROUND ELECTRIC	E E
OH	OVERHEAD ELECTRIC	OH OH
T	UNDERGROUND TELEPHONE	T T
G	UNDERGROUND GAS	G G
	STORMDRAIN	
	CURB AND GUTTER	
	SPILL CURB	

STANDARD SYMBOLS

FOR EROSION AND SEDIMENT CONTROL PRACTICES

TITLE	KEY	SYMBOL
STABILIZED STONE CONSTRUCTION ENTRANCE	SCE	
MOUNTABLE BERM	MB	MB
SUPER SILT FENCE	SSF	SSF
LIMITS OF DISTURBANCE		LOD
GABION INFLOW PROTECTION	GP	
PERMANENT SOIL STABILIZATION MATTING		
REMOVABLE PUMPING STATION	RPS	
TRASH RACK	TR	

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

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SHEET TITLE:

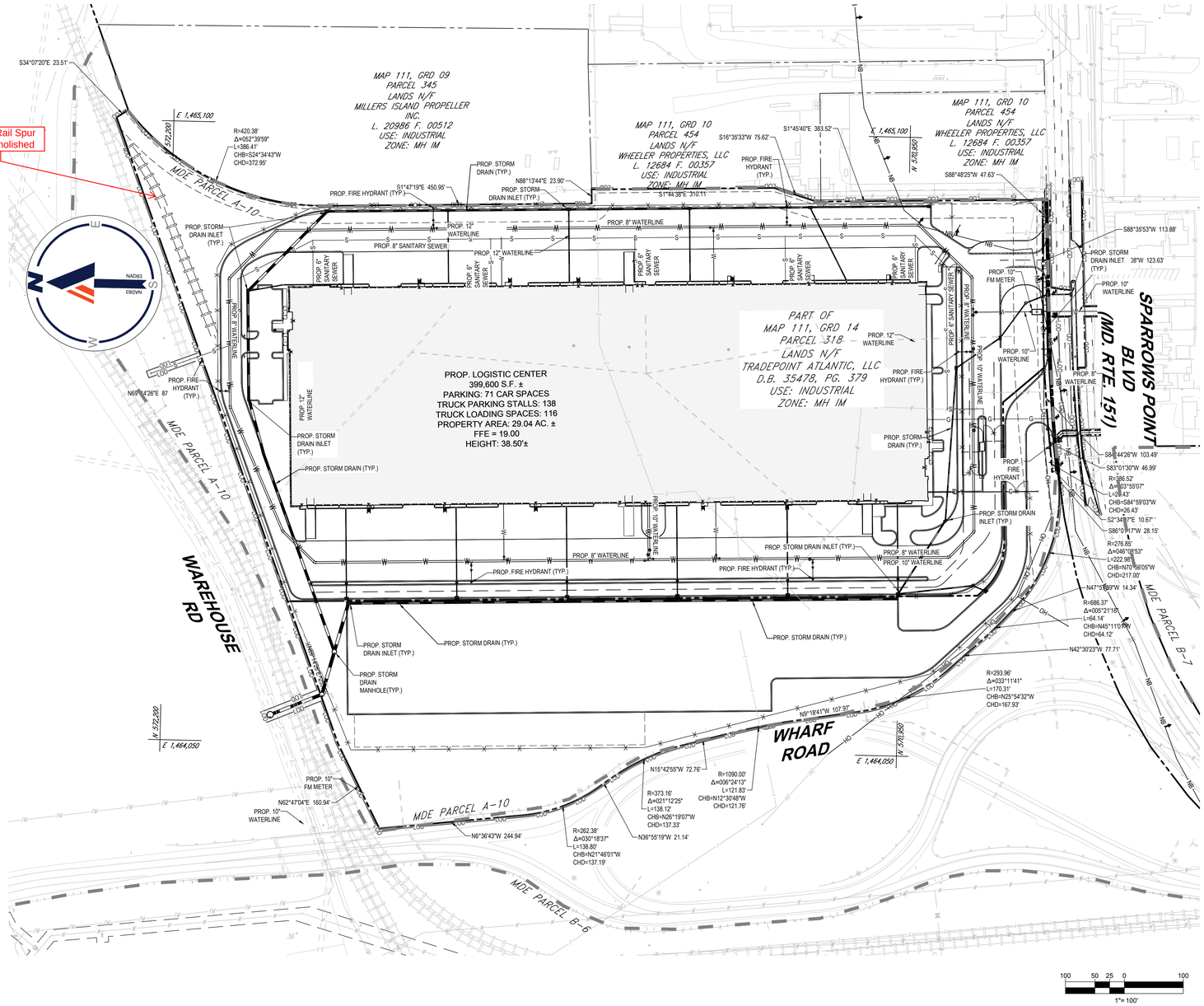
GRADING PLAN

SHEET NUMBER:

2

ORG. DATE - 10/14/20

Dec 03, 2020
H:\DM\1922491\DRAWINGS\PLAN SETS\MDE ENVIRONMENTAL PLAN\MD1922491-SSP-0---LAYOUT 2 - GRADING PLAN



LEGEND

W	PROPOSED WATERLINE	w	EXISTING WATERLINE
S	PROPOSED SANITARY SEWER	s	EXISTING SANITARY SEWER
	PROPOSED STORMDRAIN		EXISTING STORMDRAIN
E	PROPOSED ELECTRIC LINE	e	EXISTING ELECTRIC LINE
G	PROPOSED GAS LINE	g	EXISTING GAS LINE

APPROXIMATE UTILITY DEPTHS NOTE

1. WATER - BETWEEN 4' AND 7' BELOW GRADE
2. STORM DRAIN - BETWEEN 2' AND 15' BELOW GRADE
3. SANITARY SEWER - BETWEEN 4' AND 8' BELOW GRADE
4. GAS, ELECTRIC, AND TELEPHONE - BETWEEN 2.5' AND 4' BELOW GRADE

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

TRACKING # DRC-2019-00154; DRC# 111919B; DIST 15C7

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SHEET TITLE:

UTILITY PLAN

SHEET NUMBER:

3

ORG. DATE - 10/14/20

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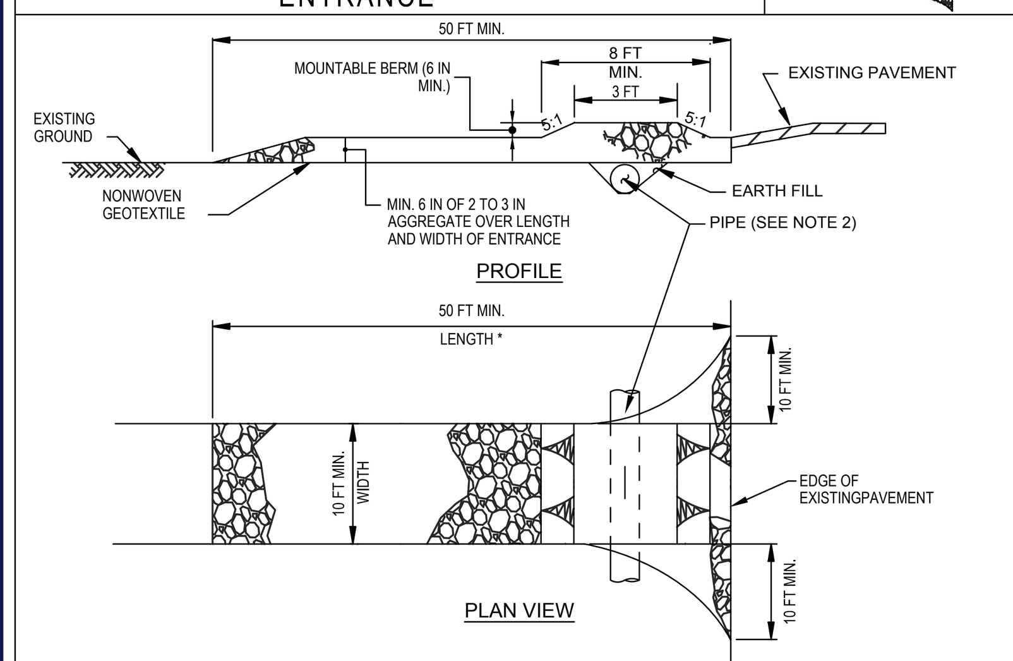
H:\PM\MD1922491\DRAWINGS\PLAN SETS\MDE ENVIRONMENTAL PLAN\MD1922491-SSP-0_----_LAYOUT 3 - UTILITY PLAN

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL SCE



CONSTRUCTION SPECIFICATIONS

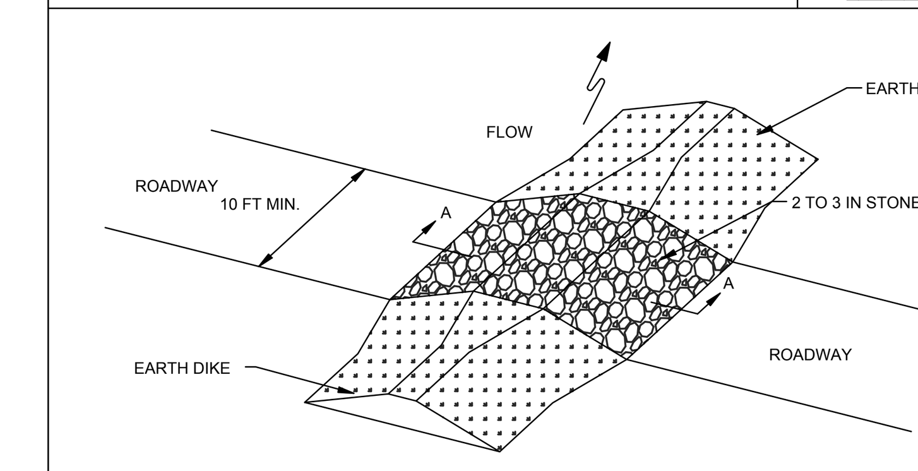
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

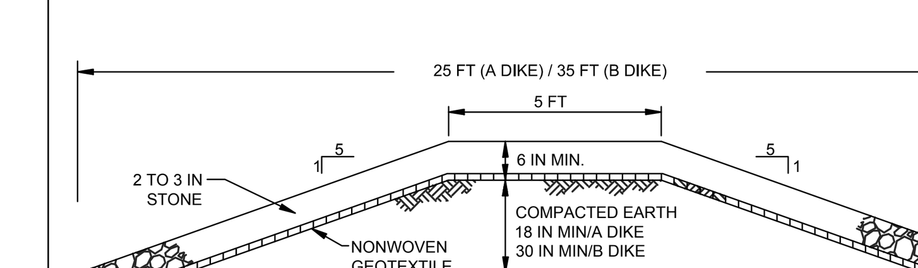
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL MB





CONSTRUCTION SPECIFICATIONS

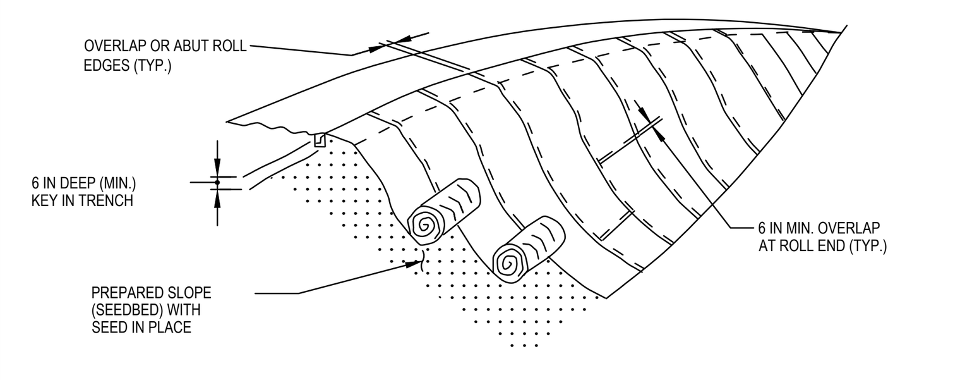
1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL TSSMS - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

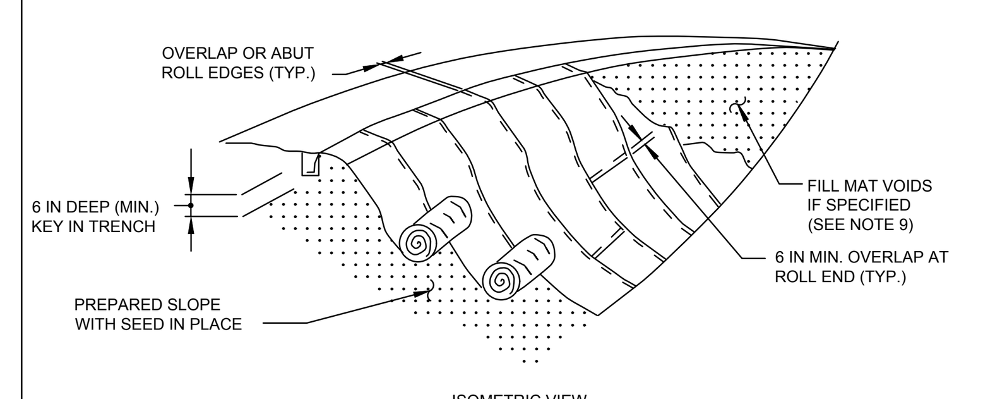
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL PSSMS - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

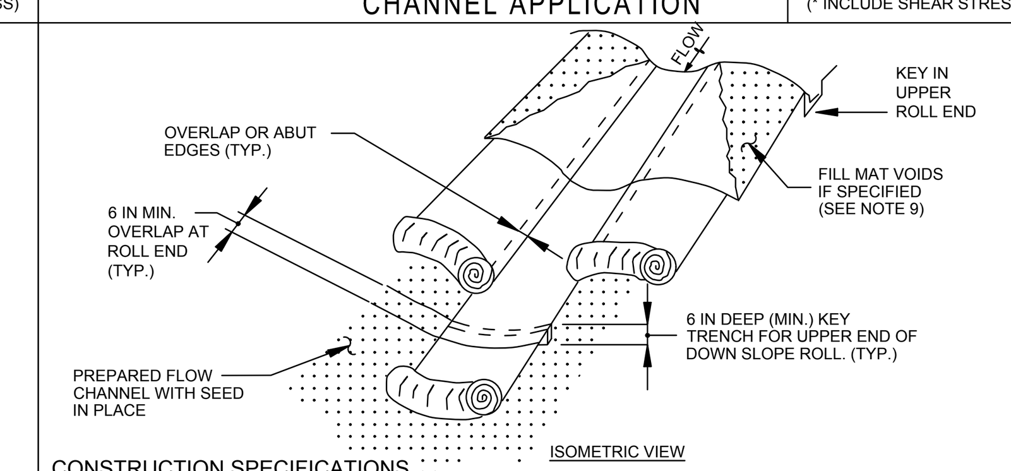
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL PSSMC - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

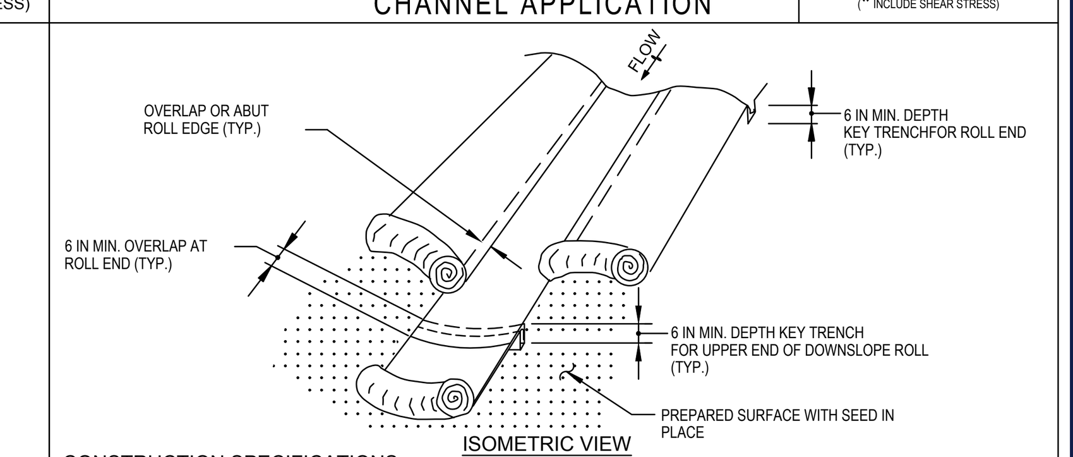
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL TSSMC - * 2.25 lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

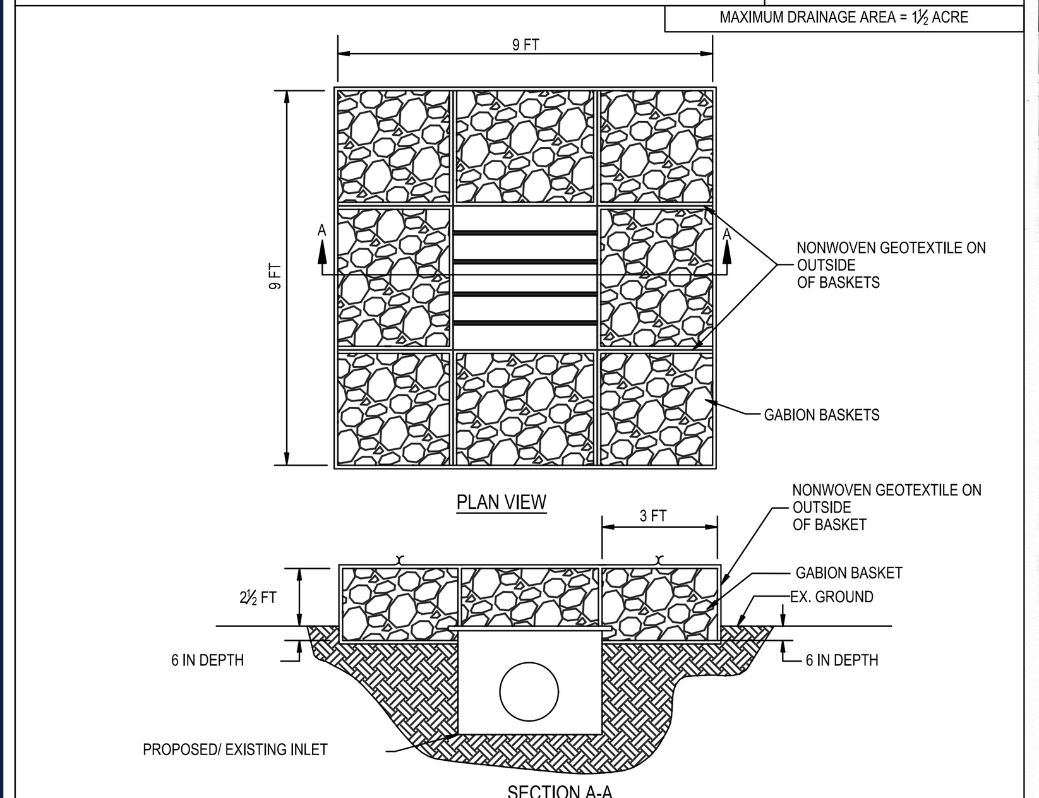
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-7 GABION INLET PROTECTION

STANDARD SYMBOL GIP

MAXIMUM DRAINAGE AREA = 1½ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
2. WRAP 3 FEET x 3 FEET GABION BASKETS (LENGTH VARIABLE) WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVERLAPPING AT THE TOP AND FASTEN THE GEOTEXTILE AT THE TOP OF THE BASKET WITH WIRE FASTENERS (HOG RINGS) AT A MAXIMUM OF 1 FOOT INTERVALS ALONG THE SEAM.
3. AVOID TEARING OR DAMAGING GEOTEXTILE.
4. ENTRENCH GABION BASKETS TO A DEPTH OF 6 INCHES.
5. PLACE AND INTERLOCK GABION BASKETS WITH NO GAPS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR MESH.
7. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

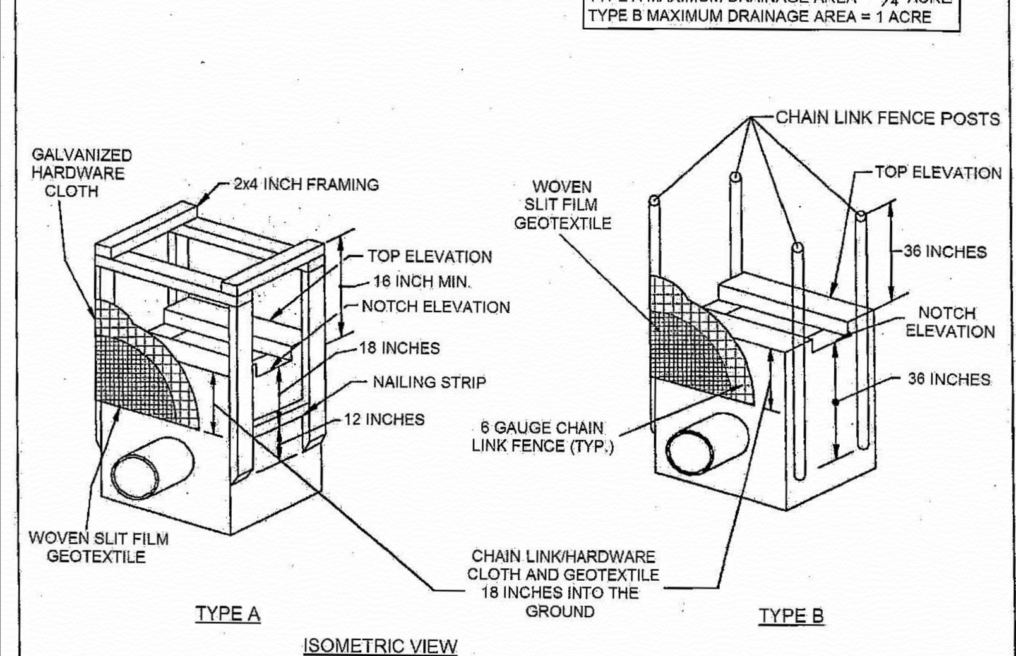
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

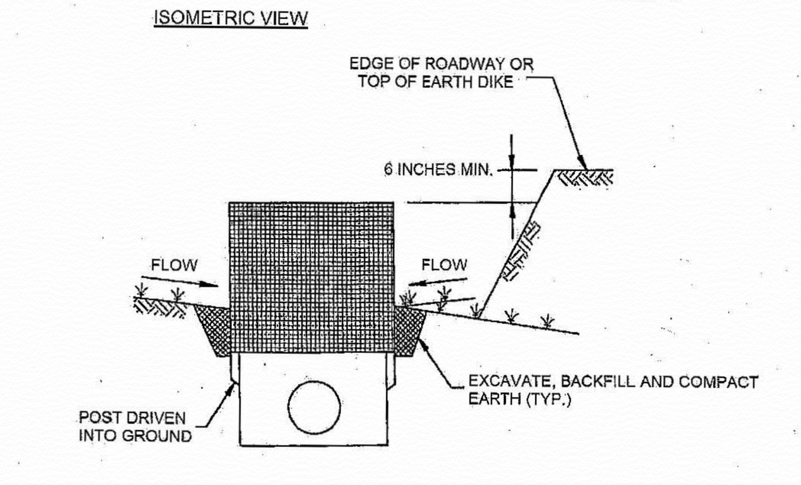
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE





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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MODIFIED FOR USE IN BALTIMORE COUNTY

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | MODIFIED - 2012 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL SIP

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN GEOTEXTILE (AS INDICATED ON THE STANDARD INLET PROTECTION DETAIL) AS SPECIFIED IN SECTION H - 1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2x4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2x4 INCH FRAME AS SHOWN. STRETCH ¼ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 6 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELVATION ON THE SIDES.
5. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE, REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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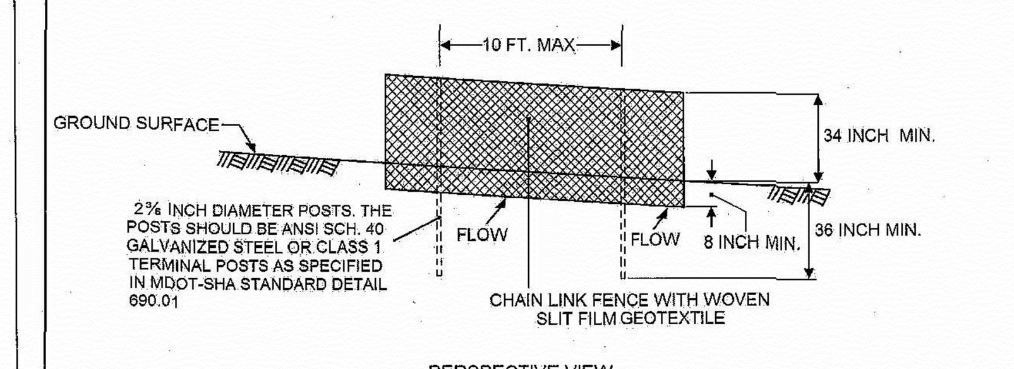
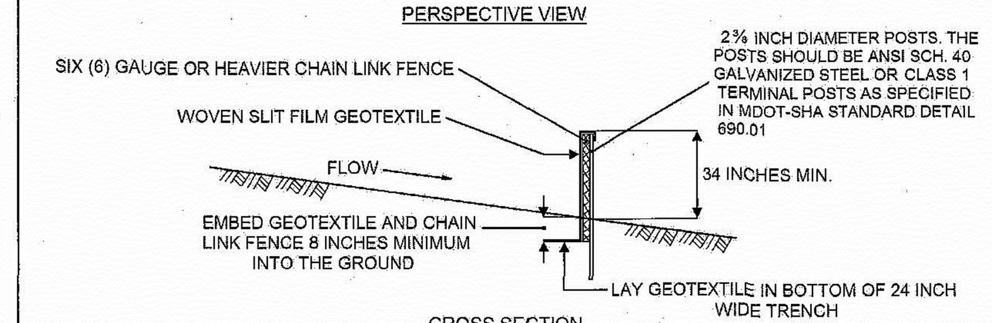
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MODIFIED FOR USE IN BALTIMORE COUNTY

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | MODIFIED - 2012 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL SSF



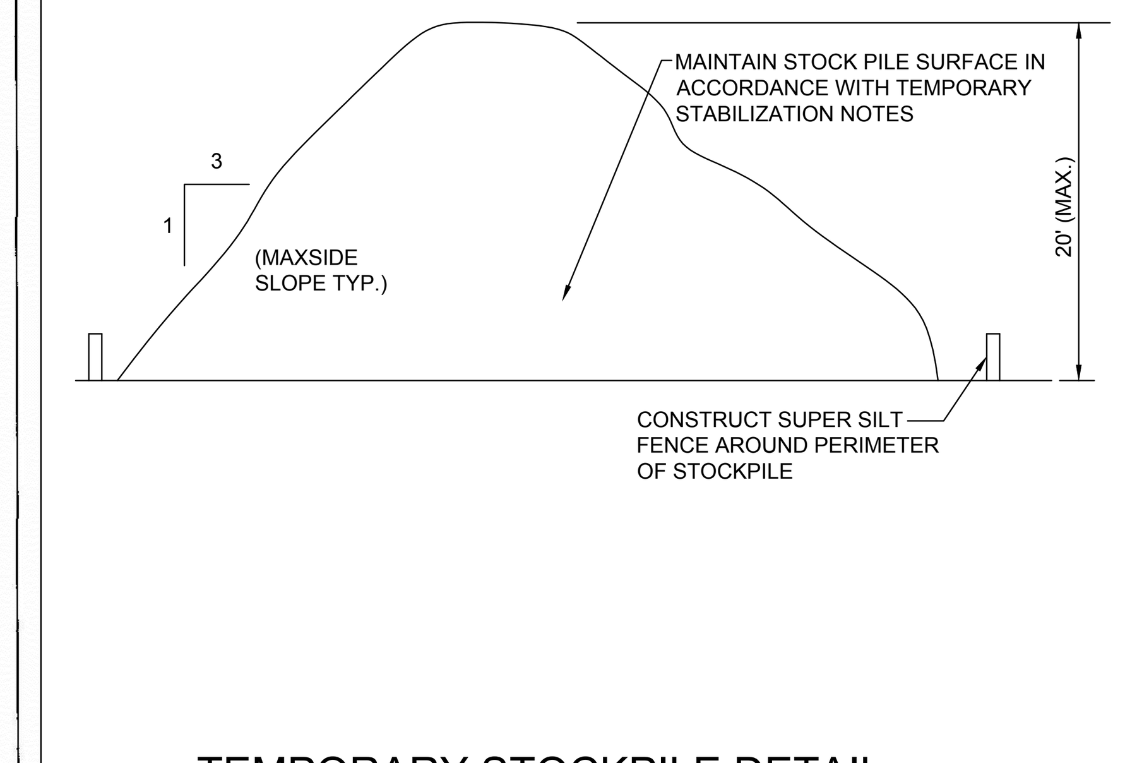


CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 6 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H -1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND. LAY THE GEOTEXTILE IN THE BOTTOM OF THE 24 INCH WIDE TRENCH.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BYPASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE UPHILL A MINIMUM OF 3 VERTICAL FEET TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURERS CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H - 1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF THE FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MODIFIED FOR USE IN BALTIMORE COUNTY

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | MODIFIED - 2012 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

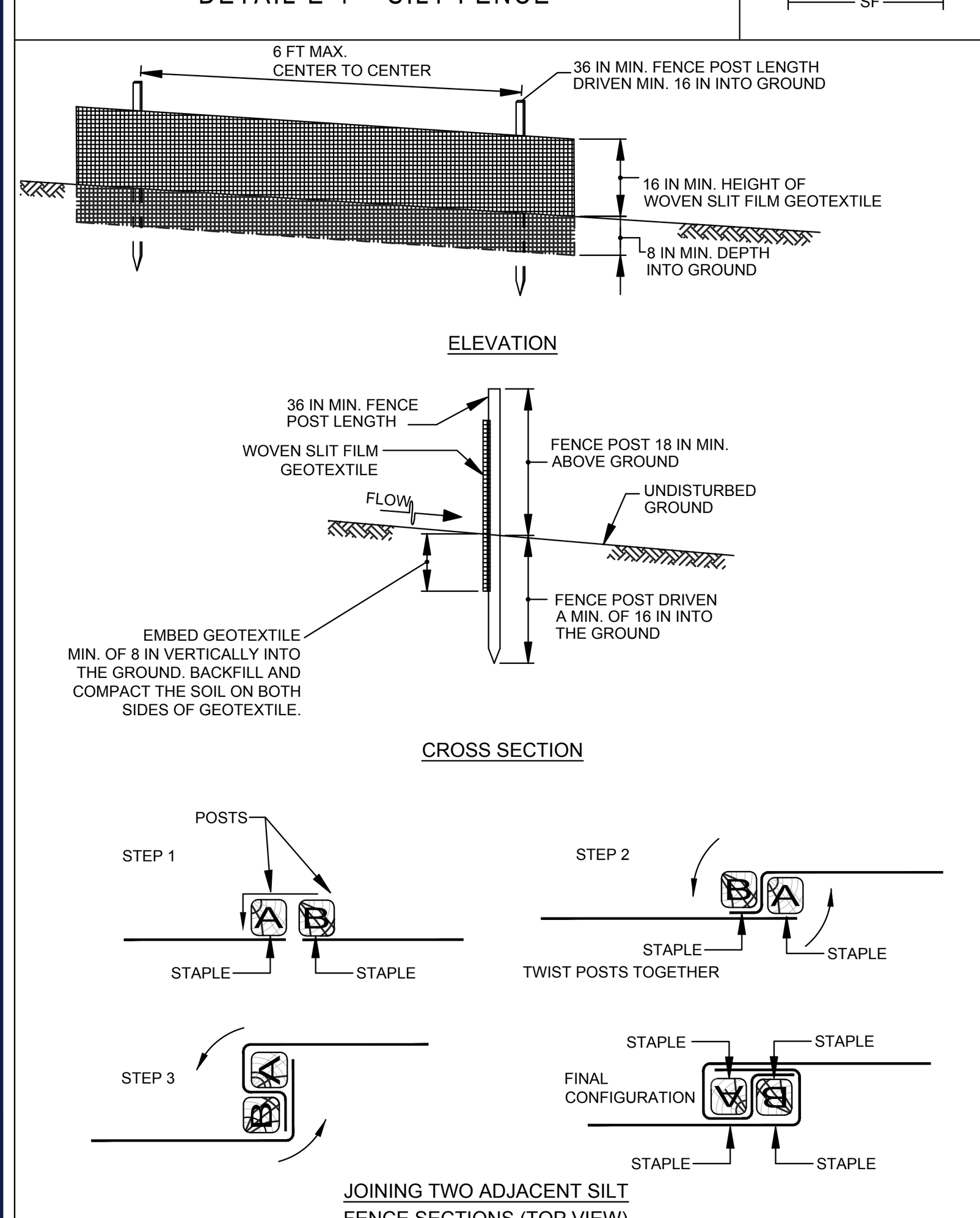


TEMPORARY STOCKPILE DETAIL

NOT TO SCALE

DETAIL E-1 SILT FENCE

STANDARD SYMBOL SF



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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± ¹⁄₁₆ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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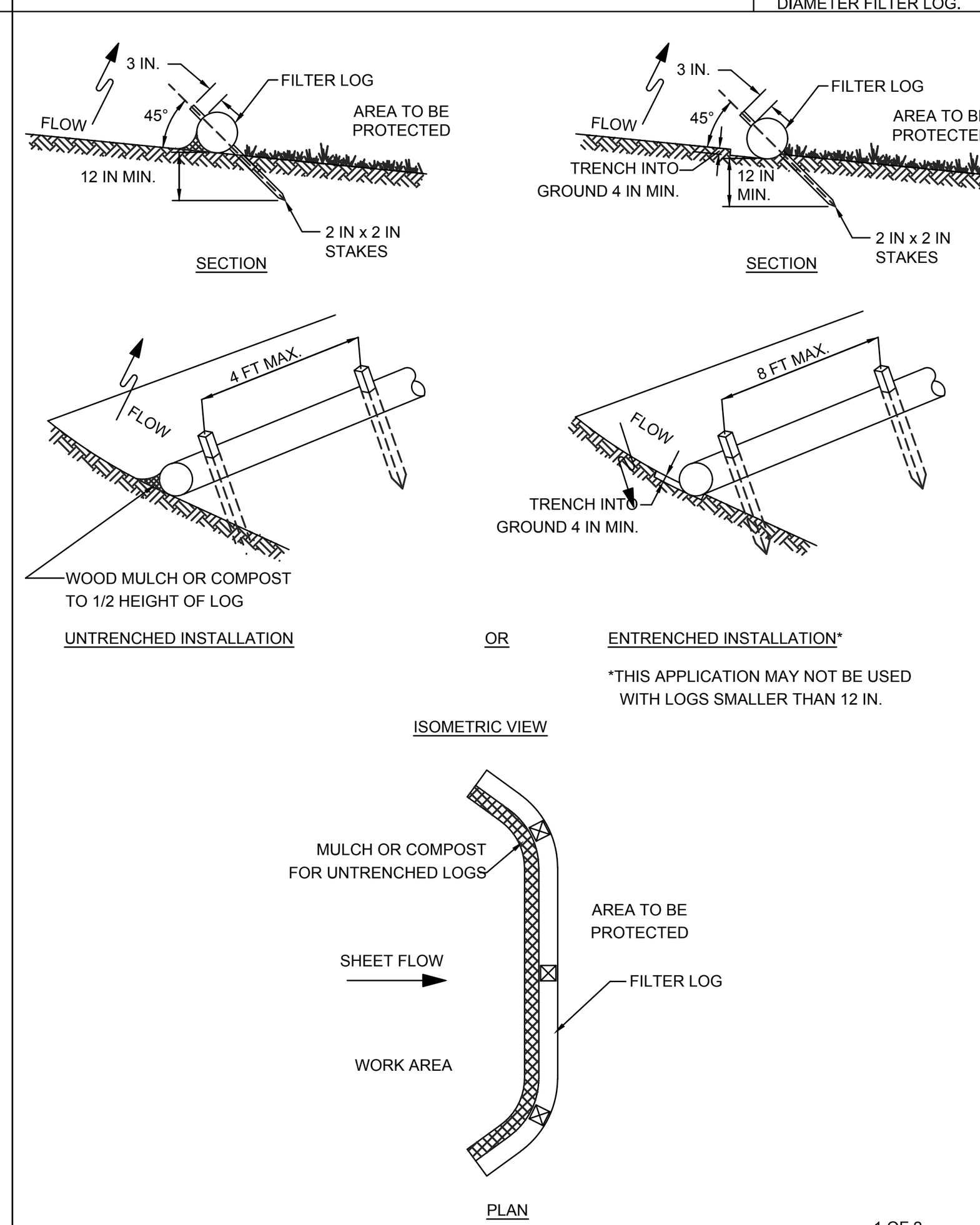
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL FL-18
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL FL-18
DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF ½ THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SEQUENCE OF CONSTRUCTION:

1. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL (410-887-3226) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK ON SITE. HIGH VISIBILITY ORANGE SAFETY FENCE SHALL BE MANUALLY INSTALLED ALONG THE LIMIT OF DISTURBANCE (LOD) WHEREVER THE LOD IS WITHIN 50 FEET OF ANY FOREST BUFFER OR FOREST CONSERVATION EASEMENT. THIS FENCE SHALL BE INSPECTED BY DEPS AT THE PRECONSTRUCTION MEETING.
2. STAKE OVERALL LIMIT OF DISTURBANCE PER THE APPROVED EROSION AND SEDIMENT CONTROL PLANS. INSTALL SAFETY FENCE AS NECESSARY.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM. INSTALL SUPER SILT FENCE. (WEEK 1)
4. NOTIFY BALTIMORE COUNTY DEPARTMENT OF PERMITS, APPROVALS, AND INSPECTIONS, SEDIMENT CONTROL UPON COMPLETION OF INSPECTION AND NECESSARY SEDIMENT CONTROL REPAIRS. (WEEK 2)
5. BEGIN GRADING THE SITE. BEGIN INSTALLATION OF PROPOSED UNDERGROUND UTILITIES. INSTALL INLET PROTECTION ON ALL PROPOSED INLETS UPON INSTALLATION. (WEEKS 3-7)
6. ONCE SUBGRADES ARE REACHED, BEGIN CONSTRUCTION OF CONCRETE CURB AND GUTTER. CONTINUE CONSTRUCTION OF UNDERGROUND UTILITIES. GRADES SHOULD BE CONSTRUCTED TO MAINTAIN POSITIVE DRAINAGE DURING CONSTRUCTION. (WEEKS 8-18)
7. COMPLETE FINE GRADING OF SITE. SITE SHALL BE BROUGHT TO GRADE AS SOON AS POSSIBLE AND STABILIZED WITH EITHER STONE SUBBASE OR PERMANENT SEED AND MULCH. AREAS WITH SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH PERMANENT SEED AND SOIL STABILIZATION MATTING. (WEEKS 19-23)
8. INSTALL ANY REMAINING STONE SUBBASE AND BEGIN PAVING (WEEKS 24-28)
9. FLUSH STORMDRAIN SYSTEM AND TAKE THE SPOIL TO A SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED SEDIMENT CONTROL PLAN (WEEK 29)
10. UPON STABILIZATION OF THE SITE WITH ESTABLISHED VEGETATION AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL MEASURES AND STABILIZE THOSE AREAS DISTURBED BY THIS PROCESS. (WEEK 30)

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

TRACKING # DRC-2019-00154; DRC# 111919B; DIST 15C7

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SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	MD1922491
DRAWN BY:	MJG
CHECKED BY:	MJG
DATE:	11/9/20
CAD I.D.:	MD1922491-SSP-0

PROJECT:

NELSON BOX

FOR

TRADEPOINT ATLANTIC

MDE ENVIRONMENTAL PLANS

2100 SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER
901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

M.J. GESELL

PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097
PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 44097, EXPIRATION DATE: 6/9/21

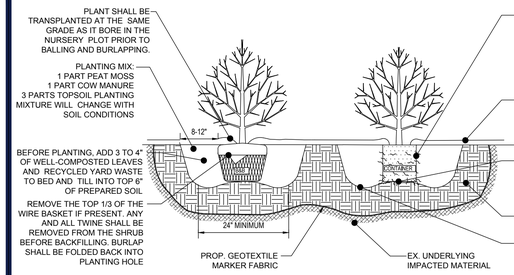
SHEET TITLE:

SECTIONS AND DETAILS

SHEET NUMBER:

4

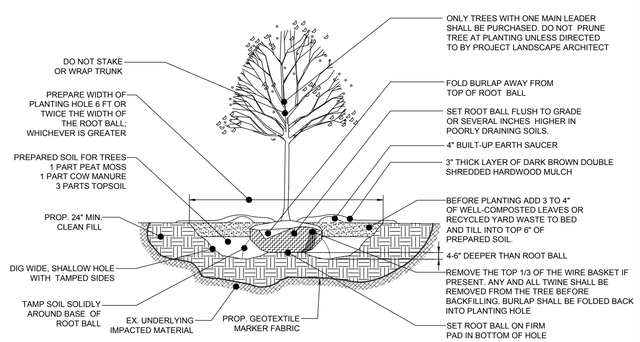
ORG. DATE - 10/14/20



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT

DECIDUOUS AND EVERGREEN SHRUB PLANTING DETAIL

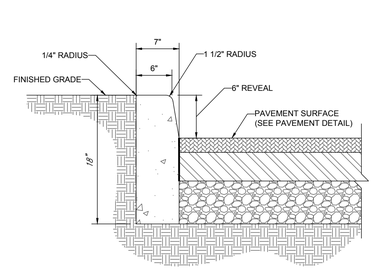
NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

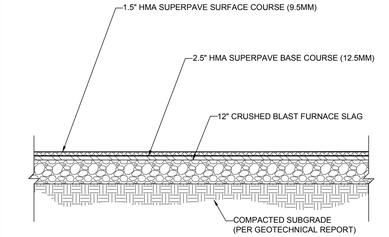


NOTES:

1. EXPANSION JOINTS TO BE INSTALLED AT 20' INTERVALS.
2. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
3. CONCRETE TO BE CLASS A3 IF CAST IN PLACE OR 4000 P.S.I. IF PRECAST.

HEADER CURB DETAIL

NOT TO SCALE

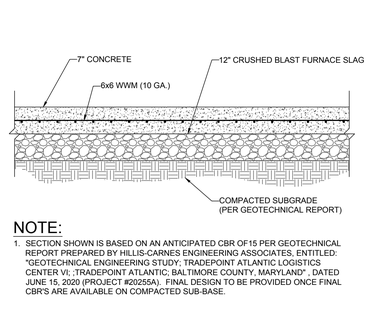


NOTE:

1. SECTION SHOWN IS BASED ON AN ANTICIPATED CBR OF15 PER GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, ENTITLED: "GEOTECHNICAL ENGINEERING STUDY; TRADEPOINT ATLANTIC LOGISTICS CENTER VI; ;TRADEPOINT ATLANTIC; BALTIMORE COUNTY, MARYLAND" , DATED JUNE 15, 2020 (PROJECT #20255A). FINAL DESIGN TO BE PROVIDED ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

STANDARD DUTY ASPHALT PAVEMENT SECTION

NOT TO SCALE



REFERENCE: ARCHITECTURAL GRAPHIC STANDARDS 1998 CUMULATIVE SUPPLEMENT.

EVERGREEN TREE PLANTING DETAIL

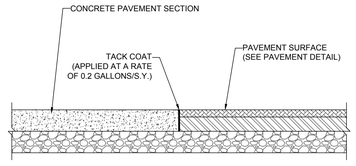
NOT TO SCALE

NOTE:

1. SECTION SHOWN IS BASED ON AN ANTICIPATED CBR OF15 PER GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, ENTITLED: "GEOTECHNICAL ENGINEERING STUDY; TRADEPOINT ATLANTIC LOGISTICS CENTER VI; ;TRADEPOINT ATLANTIC; BALTIMORE COUNTY, MARYLAND" , DATED JUNE 15, 2020 (PROJECT #20255A). FINAL DESIGN TO BE PROVIDED ONCE FINAL CBR'S ARE AVAILABLE ON COMPACTED SUB-BASE.

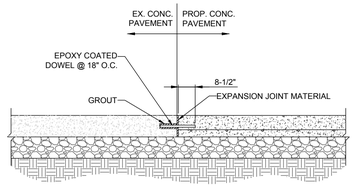
HEAVY DUTY CONCRETE SECTION

NOT TO SCALE



CONCRETE-TO-ASPHALT DETAIL

NOT TO SCALE

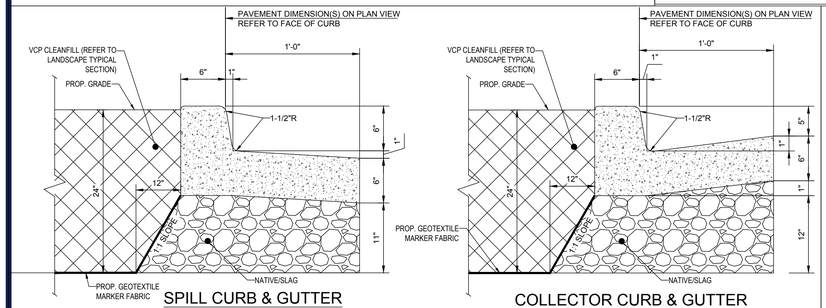


NOTE:

1. CONTRACTOR TO BLOW OUT DUST FROM DRILLED HOLES PRIOR TO APPLYING GROUT.

CONCRETE DOWELING DETAIL

NOT TO SCALE



SPILL CURB & GUTTER

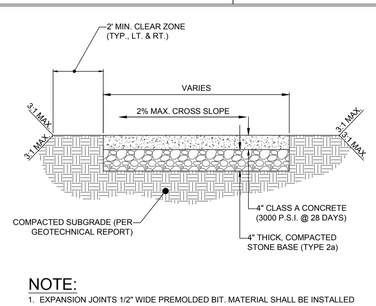
COLLECTOR CURB & GUTTER

NOTES:

1. CONCRETE FOR CURBING SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. @ 28 DAYS.
2. CONSTRUCTION STAKING FOR CURB INSTALLATION SHALL BE REFERENCED (CUT OR FILL) TO THE TOP OF CURB.
3. AT CONTRACTOR'S OPTION, THE GUTTER THICKNESS MAY BE INCREASED AT THE EDGE OF PAVEMENT TO MAKE BOTTOM OF GUTTER CONTIGUOUS WITH BOTTOM OF ASPHALT PAVEMENT.
4. CONTRACTION JOINTS SHALL BE PLACED @ 10'-0" O.C. TOOLED 1/4" (±1/16") WIDE, 1" DEEP. EXPANSION JOINTS SHALL BE PLACED @ 40'-0" INTERVALS, MAXIMUM, AND ALL P.C.'S.
5. GUTTER PAN SLOPE TO BE ADJUSTED WITHIN ACCESSIBLE PARKING SPACES TO MATCH SLOPE BETWEEN SPOT ELEVATIONS.

CONCRETE CURB & GUTTER DETAIL

NOT TO SCALE

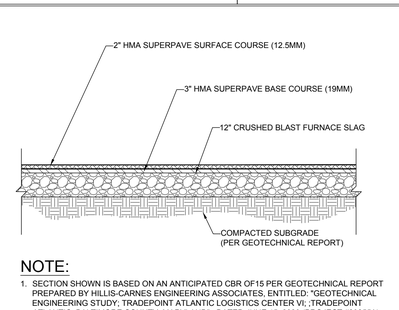


NOTE:

1. EXPANSION JOINTS 1/2" WIDE PREMOLDED BIT. MATERIAL SHALL BE INSTALLED AT 30' INTERVALS, CRACK CONTROL JOINTS TO BE SPACED AT INTERVALS EQUAL TO SIDEWALK WIDTH.

CONCRETE SIDEWALK DETAIL

NOT TO SCALE



NOTE:

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HEAVY DUTY ASPHALT PAVEMENT SECTION

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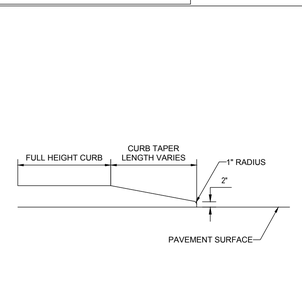


CURB TAPER DETAIL

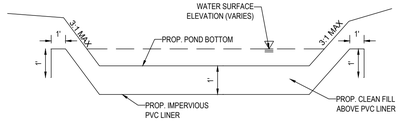
NOT TO SCALE

SEEDING SPECIFICATIONS

1. PRIOR TO SEEDING, AREA IS TO BE TOPSOILED, FINE GRADED, AND RAKED OF ALL DEBRIS LARGER THAN 2" DIAMETER.
2. PRIOR TO SEEDING , CONSULT MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.
3. SEEDING RATES:

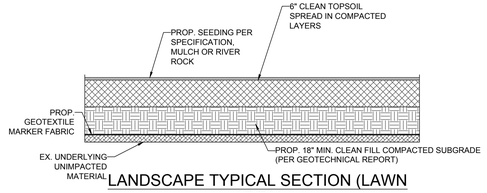
PERENNIAL RYEGRASS	½ LB/1,000 S.F.
KENTUCKY BLUEGRASS	1 LB/1,000 S.F.
RED FESCUE	1 ½ LBS/1,000 S.F.
SPREADING FESCUE	1 ½ LBS/1,000 S.F.
FERTILIZER (20:10:10)	14 LBS/1,000 S.F.
MULCH	90 LBS/1,000 S.F.

4. GERMINATION RATES WILL VARY AS TO TIME OF YEAR FOR SOWING. CONTRACTOR TO IRRIGATE SEEDED AREA UNTIL AN ACCEPTABLE STAND OF COVER IS ESTABLISHED BY OWNER.



STORMWATER MANAGEMENT WET POND - TYPICAL SECTION

NOT TO SCALE



LANDSCAPE TYPICAL SECTION (LAWN AREA)

NOT TO SCALE

ELEVATIONS BASED ON NAVD 88, COORDINATES AND MERIDIAN ARE BASED ON THE MARYLAND COORDINATE SYSTEM (MCS) PER MONUMENTS BCO #1433 AND GIS 2

TRACKING # DRC-2019-00154; DRC# 111919B; DIST 15C7

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CAD I.D.:	MD1922491-SSP-0

PROJECT:

NELSON BOX

FOR

TRADEPOINT ATLANTIC

MDE ENVIRONMENTAL PLANS

2100 SPARROWS POINT BOULEVARD
BALTIMORE, MD 21219
TM 111, GRID 14 PARCEL 318
ELECTION DISTRICT 15
COUNCILMANIC DISTRICT 7
BALTIMORE COUNTY

BOHLER

901 DULANEY VALLEY ROAD, SUITE 801
TOWSON, MARYLAND 21204
Phone: (410) 821-7900
Fax: (410) 821-7987
MD@BohlerEng.com

M.J. GESELL

PROFESSIONAL ENGINEER
MARYLAND LICENSE No. 44097
PROFESSIONAL CERTIFICATION
I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO.: 44097, EXPIRATION DATE: 6/9/21

SHEET TITLE:

SECTIONS AND DETAILS

SHEET NUMBER:

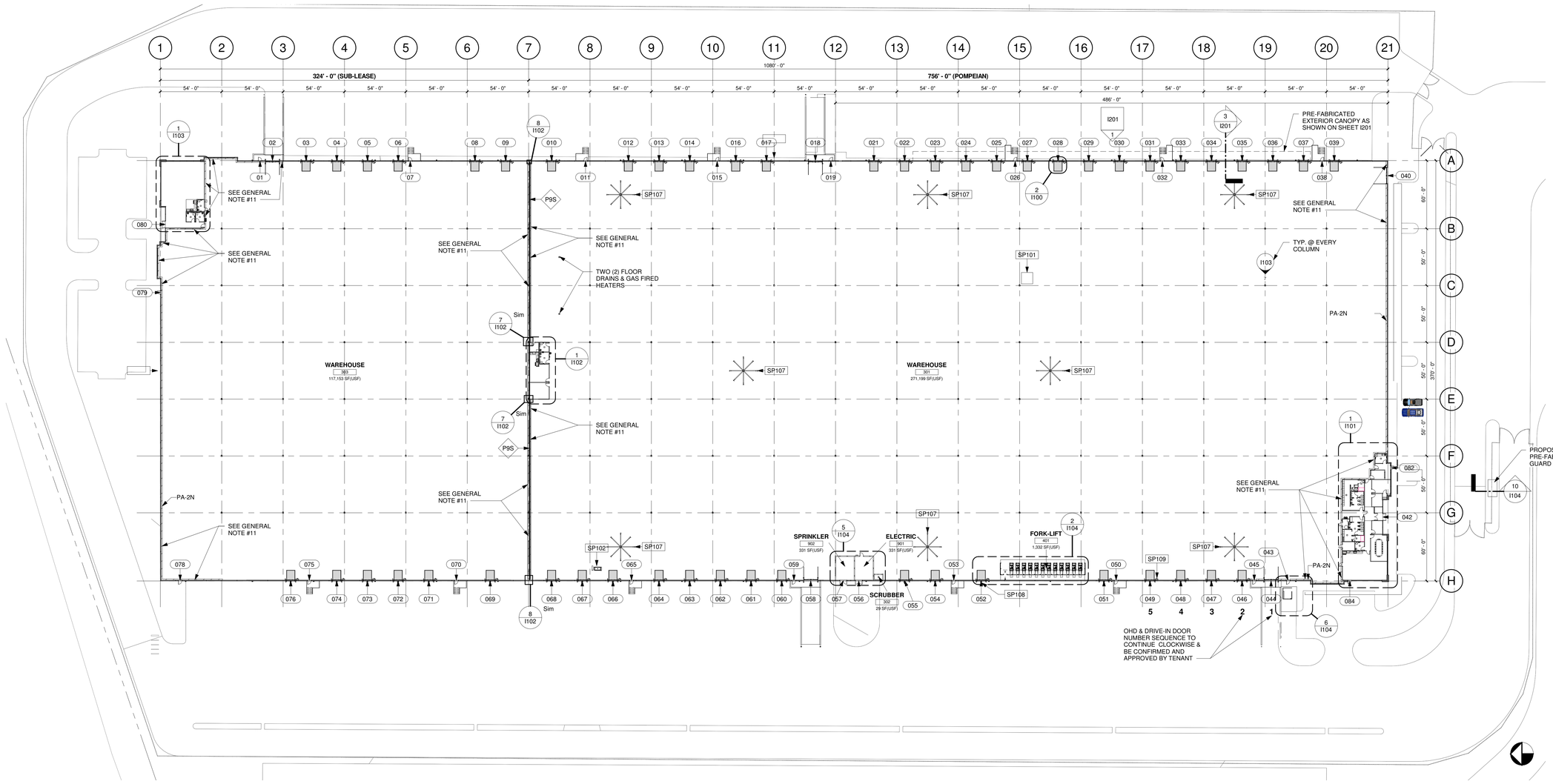
4

ORG. DATE - 10/14/20

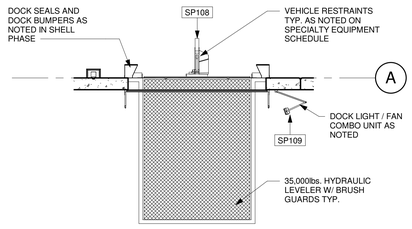
Dec 03, 2020
H:\19\MD1922491\DRAWINGS\PLAN SETS\MDE ENVIRONMENTAL PLAN\MD1922491 SSP-0----\LAYOUT 5 - SECTIONS AND DETAILS

GENERAL NOTES:

1. LIGHTING TO BE 2X4 LED LIGHTS TO ACHIEVE 25 FOOT CANDLES W/ OCCUPANCY SENSORS.
2. CAMBRIDGE HEATING UNITS TO MAINTAIN 55 DEGRESS.
3. PROVIDE EIGHT (8) HVLS FANS.
4. ALL COLUMNS TO BE PAINTED "SAFETY YELLOW" TO 10'-0" A.F.F.
5. ALL DRIVE-IN DOORS TO BE POWERED (5 TOTAL) & MANUAL OVERHEAD DOORS W/ DOCK LIGHTS/FAN COMBO, DOCK SEALS, AND TRAILER RESTRAINTS. ALL OHD'S TO BE NUMBERED INSIDE AND OUT.
6. PAINT INTERIOR OF CONCRETE PANEL WALLS TO 12'-0" A.F.F.
7. PROVIDE 12" WIDE PAINTED RODENT STRIP AS NOTED.
8. PROVIDE 6" IMP DEMISING WALL.
9. ALL LEVELERS TO BE 35,000LBS HYDRAULIC W/ BRUSHES.
10. PROVIDE EXTERIOR LIGHTING UNDER CANOPY ON EAST EXTERIOR WALL (AS SHOWN). LIGHTS TO BE MTD. BETWEEN TRAILERS AS REQ'D. UNDER CANOPY OR WALL MTD. TBD.
11. TENANT'S LICENSED PEST CONTROL OPERATOR TO HAVE FINAL DECISION ON RODENT STRIP EXTENT. SEE PLAN FOR DESIGN INTENT.



1 TENANT PLAN - OVERALL
1" = 40'-0"



2 TYP. @ OHD
1/4" = 1'-0"

Specialty Equipment Schedule

Type Mark	Count	Description	Type Comments
SP101	1	Commercial wrapping equipment	Specifications and requirements provided by tenant
SP102	1	Vertical High Density Recycling Baler	Specifications and requirements provided by tenant
SP103	3	Refrigerator appliance provided by tenant	Specifications and requirements provided by tenant
SP104	11	Dyson Airblade 9kJ HEPA-filtered hand dryer	Specifications and requirements provided by tenant
SP105	1	A.D.A. compliant dishwasher. Appliance provided by tenant	Specifications and requirements provided by tenant
SP106	6	Microwave appliance provided by tenant. Provide dedicated outlet for each microwave	Specifications and requirements provided by tenant
SP107	8	HVLS Fans	Specifications and requirements provided by tenant
SP108	50	McGuire Automatic Vehicle Restraint - TPR as Specified	Specifications and requirements provided by tenant
SP109	50	LED dock lights 220 VAC w/ Fan, as approved and specified by tenant requirements	The Loading Systems LED dock light is used to illuminate the full length of truck trailers.
SP110	12	Fork-lift chargers mounted above floor in each location. All chargers provided by tenant	Specifications and requirements provided by tenant

HOFMANN ARCHITECTS
HOFMANN ASSOCIATES, INC.
606 Baltimore Ave. Suite 102
Towson, Maryland 21204
410-828-9090
fax 410-828-4433

Seal

PROFESSIONAL CERTIFICATION:
I CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NUMBER: 16781
EXPIRATION DATE: 12/19/2021

No.	Date	Description
	12/2/2020	DESIGN DEVELOPMENT
	12/22/2020	PERMIT SET

TRADEPOINT ATLANTIC

1600 SPARROWS POINT BLVD.
BALTIMORE, MARYLAND 21219
BALTIMORE COUNTY

JLR DESIGN CONSULTANTS
1901 N. FOUNTAIN GREEN ROAD
BELAIR, MARYLAND 21015
contact: Jerry Rutkowski (Mech/Plumb.)
contact: Tom Fitch (Elec.)
email:jerryr@jrdesign.net
email:tomf@jrdesign.net
phone: 410-893-2822

PERMIT SET

TENANT PHASE

POMPEIAN, INC.

2100 SPARROWS POINT BOULEVARD
BALTIMORE, MARYLAND 21219
BALTIMORE COUNTY

TENANT PLAN - OVERALL

Project Number	20-198
Date	DECEMBER 22, 2020
Drawn By	MCP
Checked By	RDH

I100

Scale As indicated

12/22/2020 11:53:16 AM
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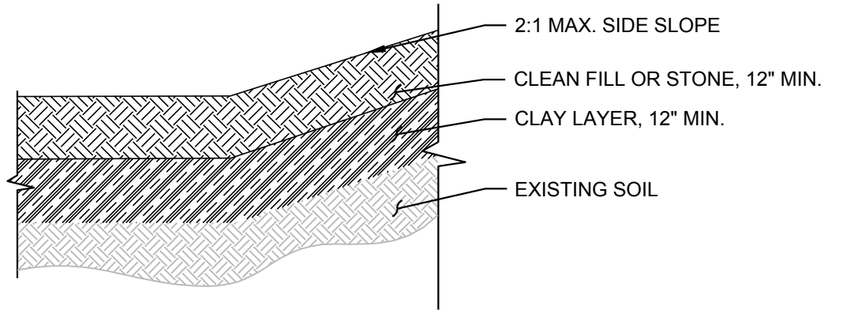
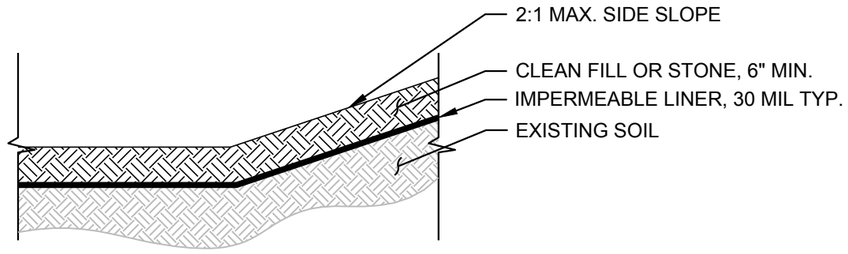
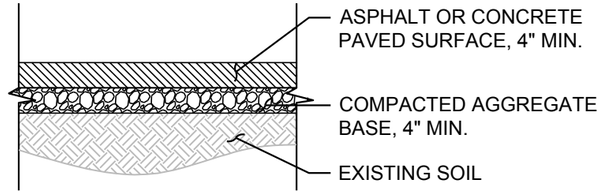
APPENDIX E





TYPICAL POND SECTIONS
NOT TO SCALE

TYPICAL LANDSCAPE SECTION
NOT TO SCALE



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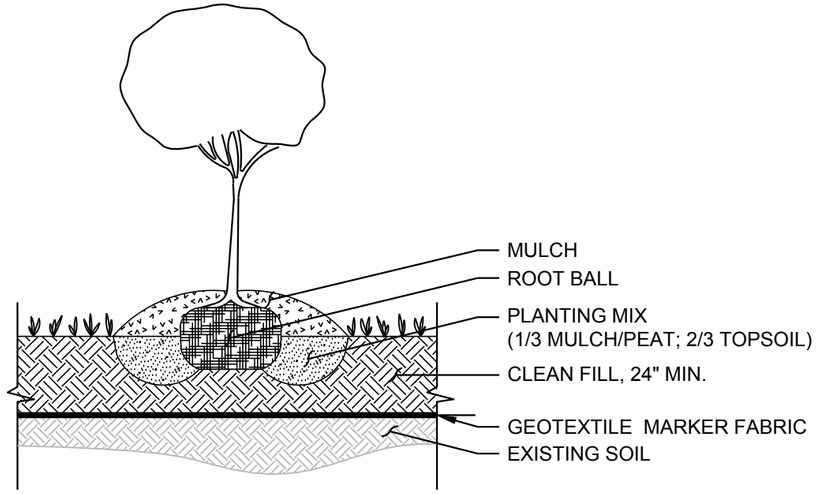
NOT TO SCALE



TYPICAL PLANTING SECTION
NOT TO SCALE

GEOTEXTILE MARKER FABRIC SPECIFICATIONS

THE GEOTEXTILE MARKER FABRIC SHALL BE A NONWOVEN PERVIOUS SHEET OF POLYPROPYLENE MATERIAL. ADD STABILIZERS AND/OR INHIBITORS TO THE BASE MATERIAL, AS NEEDED, TO MAKE THE FILAMENTS RESISTANT TO DETERIORATION BY ULTRAVIOLET LIGHT, OXIDATION AND HEAT EXPOSURE. REGRIND MATERIAL, WHICH CONSISTS OF EDGE TRIMMINGS AND OTHER SCRAPS THAT HAVE NEVER REACHED THE CONSUMER, MAY BE USED TO PRODUCE THE GEOTEXTILE. POST-CONSUMER RECYCLED MATERIAL MAY BE USED. GEOTEXTILE SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING THE EDGES. GEOTEXTILES SHALL MEET THE REQUIREMENTS SPECIFIED IN TABLE 1. WHERE APPLICABLE, TABLE 1 PROPERTY VALUES REPRESENT THE MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPAL DIRECTION. VALUES FOR APPARENT OPENING SIZE (AOS) REPRESENT MAXIMUM AVERAGE ROLL VALUES

TABLE 1

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec^{-1}	1.7	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	135 (5500)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

ARM Group LLC
Engineers and Scientists

designed RJC
checked TNP
drawn RJC
scale N/A
date 9/8/2020
project no. 160443M

drawing title: MINIMUM CAPPING SECTION DETAILS

project title: SPARROWS POINT TRADEPOINT ATLANTIC

SPARROWS POINT
BALT. COUNTY, MARYLAND

Sheet 1

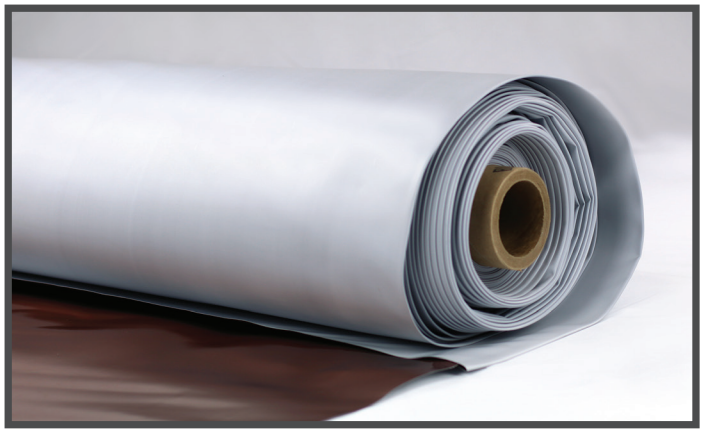
APPENDIX F

DRAGO® WRAP
VAPOR INTRUSION BARRIER

A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

1. PRODUCT NAME

DRAGO WRAP VAPOR INTRUSION BARRIER



2. MANUFACTURER

c/o Stego® Industries, LLC*
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672
Sales, Technical Assistance
Ph: (877) 464-7834
Fx: (949) 257-4113
www.stegoindustries.com

3. PRODUCT DESCRIPTION

USES: Drago Wrap is specifically engineered to attenuate volatile organic compounds (VOCs) and serve as a below-slab moisture vapor barrier.

COMPOSITION: Drago Wrap is a multi-layered plastic extrusion that combines uniquely designed materials with only high grade, prime, virgin resins.

ENVIRONMENTAL FACTORS: Drago Wrap can be used in systems for the control of various VOCs including hydrocarbons, chlorinated solvents, radon, methane, soil poisons, and sulfates.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF DRAGO WRAP VAPOR INTRUSION BARRIER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E1745 – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	ASTM E1745 Compliant
Water Vapor Permeance	ASTM F1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0069 perms
Push-Through Puncture	ASTM D4833 – Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products	183.9 Newtons
Tensile Strength	ASTM D882 – Test Method for Tensile Properties of Thin Plastic Sheeting	53.5 lbf/in
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F1249 – Permeance after wetting, drying, and soaking ASTM E154 Section 11, F1249 – Permeance after heat conditioning ASTM E154 Section 12, F1249 – Permeance after low temperature conditioning ASTM E154 Section 13, F1249 – Permeance after soil organism exposure	0.0073 perms 0.0070 perms 0.0062 perms 0.0081 perms
Hydrocarbon Attenuation Factors	Contact Stego Industries' Technical Department	
Chlorinated Solvent Attenuation Factors	Contact Stego Industries' Technical Department	
Methane Transmission Rate	ASTM D1434 – Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting	7.0 GTR** (mL(STP)/m^2*day)
Radon Diffusion Coefficient	K124/02/95	9.8 x 10^{-14} m^2/second
Thickness		20 mil
Roll Dimensions		14' x 105' or 1,470 ft^2
Roll Weight		150 lb

Note: perm unit = grains/(ft^2*hr*in-Hg) ** GTR = Gas Transmission Rate

Continued...
Note – legal notice on page 2.

DRAGO® WRAP
VAPOR INTRUSION BARRIER

A STEGO TECHNOLOGY, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: 2/22/2019

5. INSTALLATION

UNDER SLAB: Unroll Drago Wrap over a tamped aggregate, sand, or earth base. Overlap all seams a minimum of 12 inches and tape using Drago® Tape. All penetrations must be sealed using a combination of Drago Wrap and Drago Accessories.

Review Drago Wrap's complete installation instructions prior to installation.

6. AVAILABILITY & COST

Drago Wrap is available nationally through our network of building supply distributors. For current cost information, contact your local Drago distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. Stego Technology, LLC does offer a limited warranty on Drago Wrap. Please see www.stegoindustries.com/legal.

8. MAINTENANCE

Store Drago Wrap in a dry and temperate area.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Contact Number: (877) 464-7834
Website: www.stegoindustries.com

10. FILING SYSTEMS

- www.stegoindustries.com

DRAGO® WRAP
VAPOR INTRUSION BARRIER

INSTALLATION INSTRUCTIONS

Engineered protection to create a ***healthy*** built environment.

DRAGO® WRAP VAPOR INTRUSION BARRIER
INSTALLATION INSTRUCTIONS

IMPORTANT: Please read these installation instructions completely, prior to beginning any Drago Wrap installation. The following installation instructions are generally based on ASTM E1643 – *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs*. There are specific instructions in this document that go beyond what is stated in ASTM E1643 to take into account vapor intrusion mitigation. If project specifications call for compliance with ASTM E1643, then be sure to review the specific installation sections outlined in the standard along with the techniques referenced in these instructions.

UNDER-SLAB INSTRUCTIONS:

1. Drago Wrap has been engineered to be installed over a tamped aggregate, sand, or earth base. It is not typically necessary to have a cushion layer or sand base, as Drago Wrap is tough enough to withstand rugged construction environments.

NOTE: Drago Wrap must be installed with the gray facing the subgrade.

Fig.1: UNDER-SLAB INSTALLATION

2. Unroll Drago Wrap over the area where the slab is to be placed. Drago Wrap should completely cover the concrete placement area. All joints/seams should be overlapped a minimum of 12 inches and taped using Drago® Tape. (Fig. 1). If additional protection is needed, install DragoTack™ Tape in between the overlapped seam in combination with Drago Tape on top of the seam.

NOTE: The area of adhesion should be free from dust, dirt, moisture, and frost to allow maximum adhesion of the pressure-sensitive tape. Ensure that all seams are taped with applied pressure to allow for maximum and continuous adhesion of the pressure-sensitive Drago Tape. Adhesives should be installed above 40°F. In temperatures below 40°F, take extra care to remove moisture/frost from the area of adhesion.

3. ASTM E1643 requires sealing the perimeter of the slab. Extend vapor retarder over footings and seal to foundation wall or grade beam at an elevation consistent with the top of the slab or terminate at impediments such as waterstops or dowels. Consult the structural and environmental engineer of record before proceeding.

Fig.2a: SEAL TO PERIMETER WALL

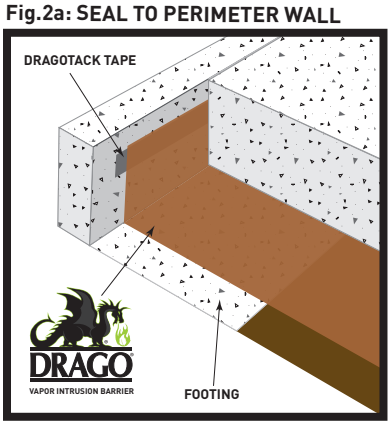
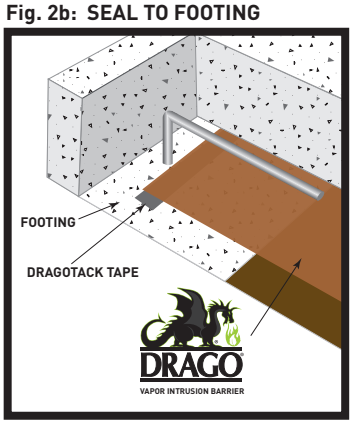


Fig. 2b: SEAL TO FOOTING



SEAL TO PERIMETER WALL OR FOOTING WITH DRAGOTACK TAPE: (Fig. 2a and 2b)

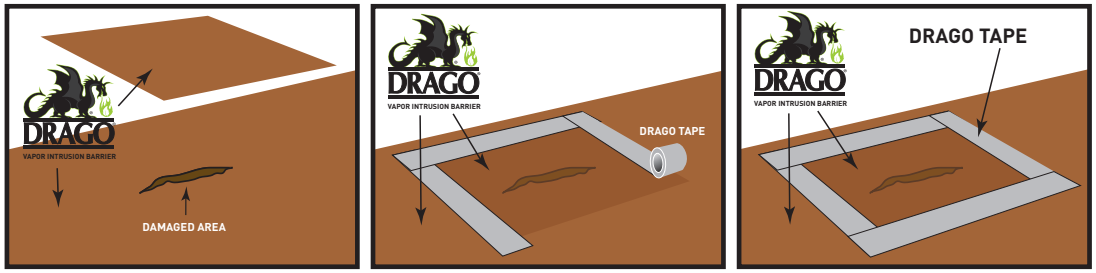
- **a.** Make sure area of adhesion is free of dust, dirt, debris, moisture, and frost to allow maximum adhesion.
- **b.** Remove release liner on one side and stick to desired surface.
- **c.** When ready to apply Drago Wrap, remove the exposed release liner and press firmly against DragoTack Tape to secure.
- **d.** If a mechanical seal is needed, fasten a termination bar over the top of the Drago Wrap inline with the DragoTack Tape.

NOTE: If sealing to the footing, the footing should receive a hand float finish to allow for maximum adhesion.

Continued ...

4. In the event that Drago Wrap is damaged during or after installation, repairs must be made. Cut a piece of Drago Wrap to a size and shape that covers any damage by a minimum of 6 inches in all directions. Clean all adhesion areas of dust, dirt, moisture, and frost. Tape down all edges using Drago Tape. (Fig. 3)

Fig. 3: SEALING DAMAGED AREAS



5. **IMPORTANT: ALL PENETRATIONS MUST BE SEALED.** All pipe, ducting, rebar, and block outs should be sealed using Drago Wrap, Drago Tape, and/or Drago® Sealant and Drago® Sealant Form. (Fig. 4a). Drago accessories should be sealed directly to the penetrations.

Fig. 4a: PIPE PENETRATION SEALING

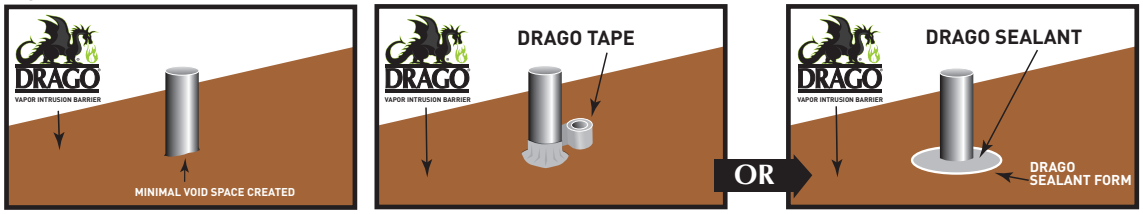
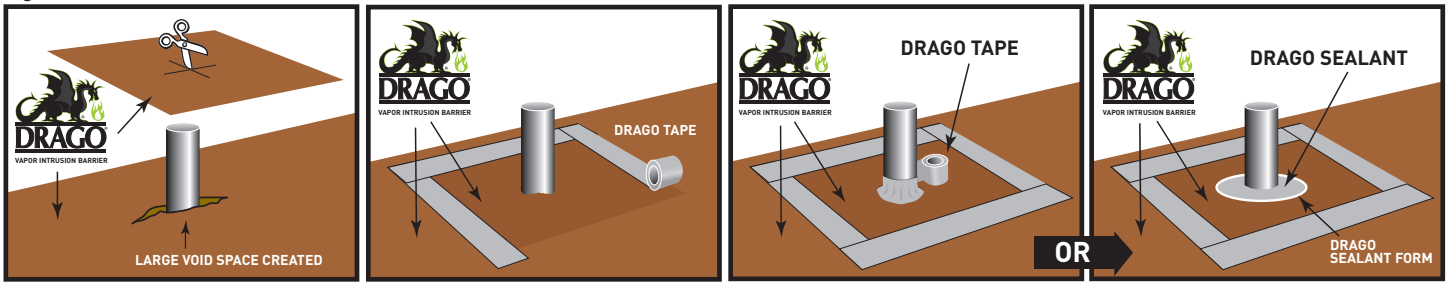


Fig. 4b: DETAIL PATCH FOR PIPE PENETRATION SEALING



DETAIL PATCH FOR PIPE PENETRATION SEALING: (Fig. 4b)

a. Install Drago Wrap around pipe penetrations by slitting/cutting material as needed. Try to minimize void space created.

b. If Drago Wrap is close to pipe and void space is minimized, proceed to step d.

c. If void space exists, then
   i. Cut a detail patch to a size and shape that creates a 6-inch overlap on all edges around the void space at the base of the pipe.
   ii. Cut an "X" slightly smaller than the size of the pipe diameter in the center of the detail patch and slide tightly over pipe.
   iii. Tape the edges of the detail patch using Drago Tape.

d. Seal around the base of the pipe using Drago Tape and/or Drago Sealant and Drago Sealant Form.
   i. If Drago Sealant is used to seal around pipe, make sure Drago Wrap is flush with the base of the penetration prior to pouring Drago Sealant.

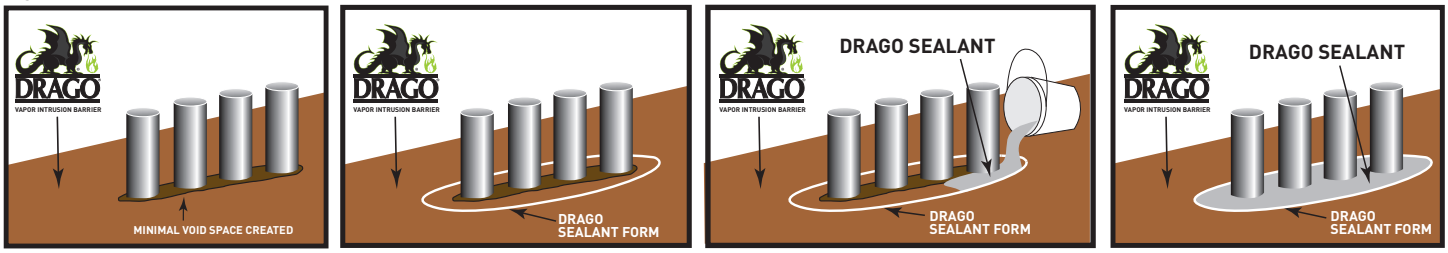
Continued ...

MULTIPLE PIPE PENETRATION SEALING: (Fig. 5)

NOTE: Multiple pipe penetrations in close proximity may be most efficiently sealed using Drago Wrap, Drago Sealant, and Drago Sealant Form for ease of installation.

a. Cut a hole in Drago Wrap such that the membrane fits over and around the base of the pipes as closely as possible, ensuring that it is flush with the base of the penetrations.
b. Install Drago Sealant Form continuously around the entire perimeter of the group of penetrations and at least 1 inch beyond the terminating edge of Drago Wrap.
c. Pour Drago Sealant inside of Drago Sealant Form to create a seal around the penetrations.
d. If the void space between Drago Wrap and the penetrations is not minimized and/or the base course allows for too much drainage of sealant, a second coat of Drago Sealant may need to be poured after the first application has cured.

Fig. 5: MULTIPLE PIPE PENETRATION SEALING

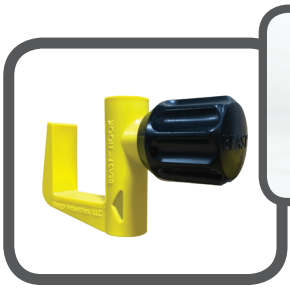


BEAST® CONCRETE ACCESSORIES - VAPOR BARRIER SAFE

Stego Industries* recommends the use of BEAST vapor barrier-safe concrete accessories, to help eliminate the use of non-permanent penetrations in Drago Wrap installations.

BEAST® SCREED

Improve efficiency and maintain concrete floor levelness with the BEAST SCREED SYSTEM!



BEAST® HOOK

Locate it and lock it down!

BEAST® FORM STAKE

The Stego barrier-safe forming system that prevents punctures in the vapor barrier.

IMPORTANT: AN INSTALLATION COMPLETED PER THESE INSTRUCTIONS SHOULD CREATE A MONOLITHIC MEMBRANE BETWEEN ALL INTERIOR INTRUSION PATHWAYS AND VAPOR SOURCES BELOW THE SLAB AS WELL AS AT THE SLAB PERIMETER. THE UNDERLYING SUBBASE SHOULD NOT BE VISIBLE IN ANY AREA WHERE CONCRETE WILL BE PLACED. IF REQUIRED BY THE DESIGN ENGINEER, ADDITIONAL INSTALLATION VALIDATION CAN BE DONE THROUGH SMOKE TESTING.

NOTE: While Drago Wrap installation instructions are based on ASTM E1643 - *Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs,* these instructions are meant to be used as a guide, and do not take into account specific job site situations. Consult local building codes and regulations along with the building owner or owner's representative before proceeding. If you have any questions regarding the above-mentioned installation instructions or products, please call us at 877-464-7834 for technical assistance. While Stego Industries' employees and representatives may provide technical assistance regarding the utility of a specific installation practice or Stego product, they are not authorized to make final design decisions.

SUB-SLAB VAPOR BARRIER INSTALLATION SPECIFICATIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Products supplied under this section:
   1. Vapor barrier and installation accessories for installation under concrete slabs.

B. Related sections (to be developed by the general contractor within the Construction Drawings):
   1. Cast-in-Place Concrete

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM E1745-17 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
   2. ASTM E1643-11 Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

B. Technical Reference - American Concrete Institute (ACI):
   1. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
   2. ACI 302.1R-15 Guide to Concrete Floor and Slab Construction.

1.3 SUBMITTALS

A. Quality control/assurance:
   1. Summary of test results per paragraph 9.3 of ASTM E1745.
   2. Manufacturer's samples and literature.
   3. Manufacturer's installation instructions for placement, seaming, penetration prevention and repair, and perimeter seal per ASTM E1643.
   4. Manufacturer of textured tape must supply testing summary to verify the product demonstrates adhesion to both the manufacturer's vapor retarder/barrier and to freshly-placed concrete.
   5. All mandatory ASTM E1745 testing must be performed on a single production roll per ASTM E1745 Section 8.1.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Vapor barrier shall have all of the following qualities:
   1. Maintain permeance of less than 0.01 Perms [grains/(ft^2 · hr · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
   2. Other performance criteria:
      a. Strength: ASTM E1745 Class A.
      b. Thickness: 15 mils minimum
   3. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1.

2.2 ACCESSORIES

A. All accessories must be from the same manufacturer of the vapor barrier material used, or must be approved by the vapor barrier manufacturer.

   1. Seams
      a. Approved seam tape.

   2. Sealing permanent penetrations of vapor barrier
      a. Approved vaporproofing mastic.
      b. Approved tape.

3. Perimeter edge/seal
   a. Approved tape with a textured surface that creates a mechanical seal to freshly-placed concrete.
   b. Approved termination bar.
   c. Approved double-sided sealant tape.

4. Penetration prevention forming system (if required)
   a. Approved peel-and-stick base/foot and blunt-end stake.

5. Vapor Barrier-Safe Screed System (if used)
   a. Approved vapor barrier-safe, fixed elevation, point-to-point guide screed system.

PART 3 – EXECUTION

3.1 PREPARATION

A. Ensure that subsoil is approved by Engineer.
   1. Level and compact base material.

3.2 INSTALLATION

A. Install vapor barrier in accordance ASTM E1643.
   1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
   2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.
      a. Seal vapor barrier to the entire slab perimeter using textured tape, per manufacturer's instructions.
         OR
      b. Seal vapor barrier to the entire perimeter wall or footing/grade beam with double-sided tape, or both termination bar and double-sided tape, per manufacturer's instructions. Ensure the concrete is clean and dry prior to adhering tape.
   3. Overlap joints 6 inches and seal with manufacturer's seam tape.
   4. Apply seam tape/textured tape/double-sided tape to a clean and dry vapor barrier.
   5. Seal all penetrations (including pipes, footings, columns, utilities) per manufacturer's instructions.
   6. Avoid the use of stakes driven through vapor barrier by utilizing vapor barrier-safe, peel-and-stick screed and forming penetration prevention systems. Ensure peel-and-stick adhesive base is fully adhered to the vapor barrier.
   7. If non-permanent stakes must be driven through vapor barrier, repair as recommended by vapor barrier manufacturer.
   8. Use reinforcing bar supports with base sections that eliminate or minimize the potential for puncture of the vapor barrier.
   9. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile.
   10. For vapor barrier-safe concrete screeding applications (if used), install vapor barrier-safe, fixed elevation, point-to-point guide screed system prior to placing concrete.

END OF SECTION

APPENDIX G

GENERAL NOTES:

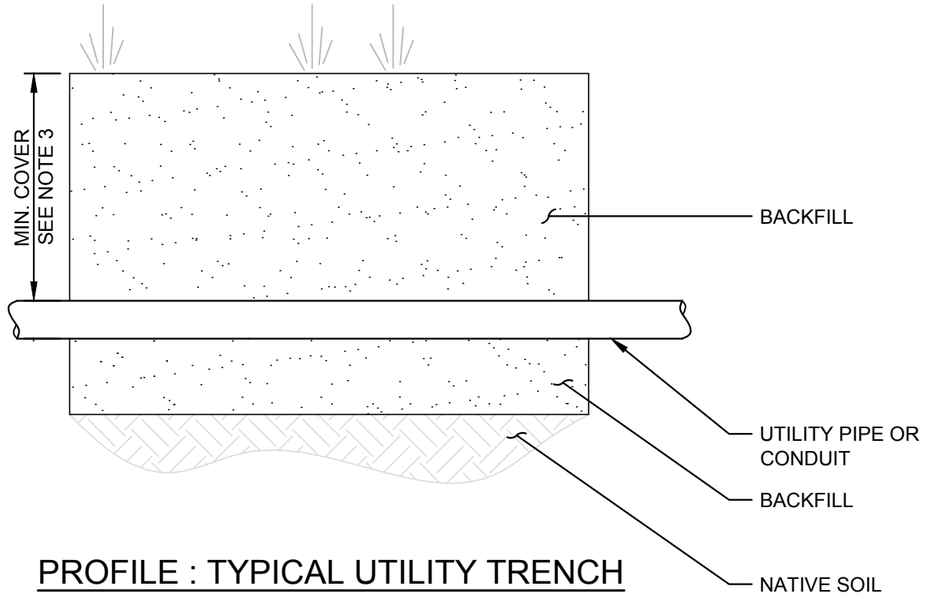
1. ALL PIPES OR CONDUIT SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.

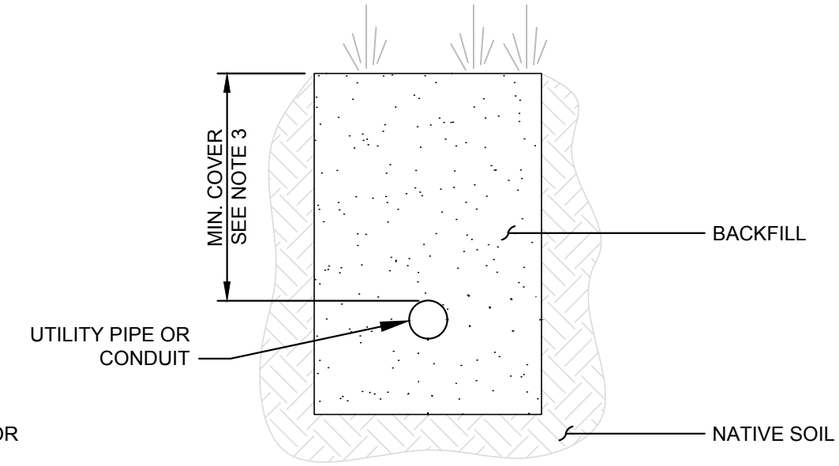
3. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

4. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

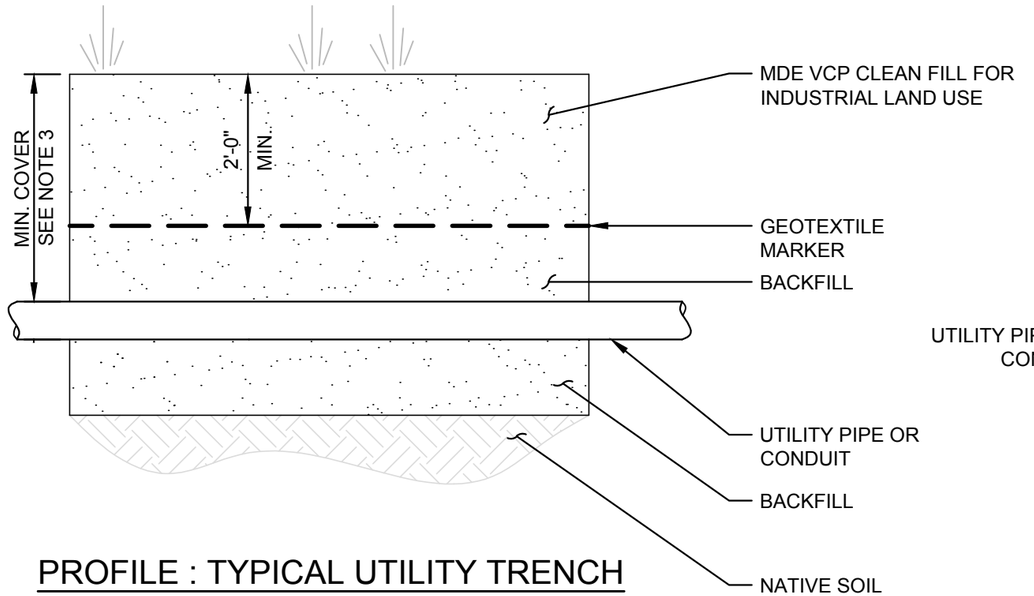
5. FOR ANY UTILITY SEGMENT WHICH GOES THROUGH AN AREA WHICH IS DESIGNATED TO RECEIVE A LANDSCAPED CAP, THE UPPER 2 FEET OF BACKFILL MUST MEET THE REQUIREMENTS OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE. IN THIS CASE THE MDE VCP CLEAN FILL WILL BE UNDERLAIN BY A GEOTEXTILE MARKER FABRIC. UTILITY SEGMENTS WHICH GO THROUGH AREAS WHICH DO NOT REQUIRE CAPPING OR ARE DESIGNATED TO RECEIVED A PAVED CAP WILL BE BACKFILLED WITH MATERIALS APPROVED BY MDE FOR THIS USE.



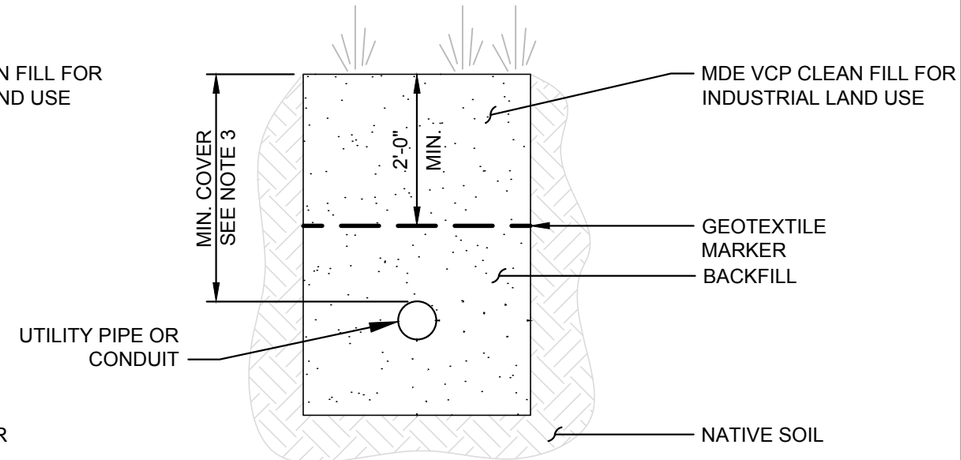
PROFILE : TYPICAL UTILITY TRENCH



SECTION : TYPICAL UTILITY



PROFILE : TYPICAL UTILITY TRENCH
(SEE NOTE 5)



SECTION : TYPICAL UTILITY
(SEE NOTE 5)

ARM Group LLC
Engineers and Scientists

TYPICAL UTILITY
CROSS SECTIONS
Sparrows Point Site
Tradepoint Atlantic

September 2020
1/2" = 1'-0"
160443M

Figure
1

APPENDIX H

Utility Excavation NAPL Contingency Plan

Revision 4 – June 19, 2017

Introduction:

Proposed underground utilities and excavations necessary for the redevelopment of the Tradepoint Atlantic property may encounter areas of petroleum and/or Oil & Grease contamination in soil. The assessment of total petroleum hydrocarbons (TPH) diesel range organics (DRO), gasoline range organics (GRO), Oil & Grease, and/or non-aqueous phase liquid (NAPL) completed as part of each Phase II Investigation includes the following:

- Each soil boring with evidence of NAPL (i.e., containing a sheen or free oil in the soil core), whether located near utilities or not, is investigated via the installation of a piezometer to assess mobility to groundwater. If measureable NAPL is present in the initial piezometer, additional soil borings and shallow temporary piezometers are installed surrounding the initial detection to delineate the impacts. Each piezometer installed to delineate the presence or absence of NAPL is checked with an oil-water interface probe immediately after installation, 48 hours after installation, and at least 30 days after installation.
- TPH-DRO/GRO and Oil & Grease data, once received, are assessed in their magnitude and location respective to subsurface utilities, stormwater conveyances, and surface waters.
- Locations that exhibit elevated detections of TPH/Oil & Grease or evidence of NAPL, that are within reasonable proximity (i.e. 25 feet) to subsurface utilities or stormwater conveyances and/or within reasonable proximity (i.e. 100 feet) to surface waters, are identified for further delineation and selective removal (if warranted).

Any NAPL identified in soil borings or piezometers during the Phase II Investigation would be noted on relevant logs and identified in Response and Development Work Plans for construction planning purposes. Despite these planning efforts, unidentified pockets of contamination (including NAPL) may still be encountered during construction. This contingency plan provides the procedures to be utilized during construction work to properly address response and construction techniques if any materials impacted with NAPL are encountered.

Objectives:

The purpose of this plan is to describe procedures to be followed in the event that NAPL is encountered in utility trenches or other excavations during development of the Tradepoint Atlantic property. The specific objectives of this plan and the procedures outlined herein are:

1. To ensure identification and proper management of Oil & Grease and petroleum-contaminated soils.
2. To ensure proper worker protection for working in areas of Oil & Grease and petroleum contamination.
3. To ensure that the installation of new utilities does not create new preferential flow paths for the migration of free-phase hydrocarbons (Oil & Grease, TPH-DRO/GRO, etc.) or soil vapors.

Identification of Oil & Grease and Petroleum Contaminated Soil:

An Environmental Professional (EP) will be on-site to determine if soils show evidence of the presence of Oil & Grease or TPH present as NAPL during installation of utility trenches or other excavation activities completed during development. Oil & Grease or petroleum-contaminated soils can be identified by the presence of free oil, oil staining, a petroleum odor, or any combination of these conditions. Free oil (NAPL) is liquid oil which could potentially be drained or otherwise extracted from the soil, and is the focus of this contingency plan, although severe staining accompanied by odors should be addressed via the same contingency measures provided herein (based on the judgement of the EP). The appearance of oil staining is not always consistent, but varies depending on the nature of the oil, the soil type, and the age of the release. Staining associated with old petroleum contamination often has a greenish hue, but may also be brown or black. The olfactory sense is the most sensitive instrument for identifying petroleum contamination in the field. Therefore, a petroleum odor may be noted although there is no visible sign of oil or staining. In some instances, decaying organic matter can produce an odor similar to petroleum, but this is rare.

If NAPL is encountered during construction, the extent of impacts shall be delineated by excavating trenches or installing four soil borings (two in each direction) perpendicular to the utility alignment or excavation to examine the soil for physical evidence of NAPL. Perpendicular transects will be investigated every 50 feet along the section of the utility trench or excavation where there is physical evidence of NAPL. Each transect will extend to a distance of 10 feet from the edge of the utility trench or excavation. This represents the maximum distance which would require mandatory excavation to mitigate potential migration risks (see below).

NAPL delineation will be guided primarily by screening observations from the perpendicular borings or trenches, and samples will be collected to test for extractable Oil & Grease or petroleum-contaminated soil using the Oil Sticks™ test kit. This test kit provides a determination of whether hydrocarbons are present in soil and extractable (i.e. could mobilize as a NAPL). Oil Sticks™ change from a pale blue to a deep blue color when they come in contact with free product. This instantaneous change in color occurs even when miniscule amounts of product come in contact with the strip. The sensitivity of Oil Sticks™ to determine the presence/absence of oil is reported by the manufacturer to be about 1,000 to 2,000 mg/kg. The

field test is performed by placing approximately 3 tablespoons of soil in a clean sample cup and adding enough water to cover the sample. After stirring the sample and waiting ~1 minute, the Oil Sticks™ test strip should be swished through the water, making sure to touch the strip to the sides of the cup where product may collect at the interface (meniscus) between the cup, water, and air. If the strip turns deep blue, or deep blue spots appear, oil or hydrocarbon is present. However, the MDE has observed that the Oil Sticks™ method may produce inconsistent results. Therefore, documentation of all screening methods is necessary during boring/trenching work. This documentation shall include an accurate record of visual and olfactory screening, along with a narrative with photographs. Field screening will be aided by photoionization detector (PID) results, and Oil Sticks™ samples should be biased to target elevated PID readings, if any. The agencies have requested that all soil samples prepared for the Oil Sticks™ field test be photographed for evidence of sheen/residue on the cup sides. Detailed records are required to be submitted with the project-specific Completion Report.

If petroleum or Oil & Grease impacts are identified in Site soils based on use of the Oil Sticks™ test kit or other field screening methods, disposal requirements will be determined using the quantitative PetroFLAG™ hydrocarbon analysis system or fixed laboratory analysis (see following section). The PetroFLAG™ hydrocarbon analysis system is a broad spectrum field test kit suitable for TPH contamination regardless of the source or state of degradation (Dexsil Corporation). PetroFLAG™ field test kits do not distinguish between aromatic and aliphatic hydrocarbons, but quantify all fuels, oils, and greases as TPH. Dilutions can be used to determine concentrations of TPH/Oil & Grease above the normal calibration range. Dexsil notes that positive results for TPH may occur if naturally occurring waxes and oils, such as vegetable oils, are present in the sample. Additional detail regarding the procedure for the PetroFLAG™ kit is given in **Attachment 1**.

Soil Excavation, Staging, Sampling and Disposal:

The EP will monitor all utility trenching and excavation activities for signs of potential contamination. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of NAPL contamination that may be different than what was already characterized. Excavated material that is visibly stained or that exhibits a sustained PID reading of greater than 10 ppm will be segregated and containerized or placed in a stockpile on polyethylene or impervious surface until the material can be analyzed using the PetroFLAG™ test kit to characterize the material for appropriate disposal. If a PetroFLAG™ test kit is not available to the contractor, or if the contractor prefers to use fixed laboratory analysis, samples may be characterized via submittal to a laboratory for TPH/Oil & Grease analysis. However, any excavated material containing NAPL (i.e., containing free oil) cannot be characterized for waste disposal using the PetroFLAG™ test kit and must instead be characterized via fixed laboratory analysis, as described in the final paragraph of this section. In addition, any hydrocarbon contaminated soil discovered during construction activities that was not previously

characterized must also be analyzed for PCBs prior to removal and transport to an appropriate disposal facility. If excavated and stockpiled, such materials will be covered with a plastic tarp so that the entire stockpile is encapsulated, and anchored to prevent the elements from affecting the integrity of the containment. The MDE will be notified if such materials are encountered during utility work.

Soil exhibiting physical evidence of NAPL contamination or elevated TPH/Oil & Grease with detections in the low percentage range, which is located within 10 feet of a proposed new utility or subsurface structure (i.e., foundation, sump, electrical vault, underground tank, etc.), will be excavated and segregated for disposal at the on-site nonhazardous landfill (Greys Landfill) or an off-site facility pending the completion of any required PCB analytical testing. Impacted soil which is located greater than 10 feet away from the proposed utility or subsurface structure may be left in place and undisturbed. The extent of the excavation will be determined in the field following visual/olfactory screening supplemented by the PID and Oil Sticks™ test kit, but soil disposal requirements will be determined with the PetroFLAG™ test kit (since the Oil Sticks™ method is not quantitative) or via fixed laboratory analysis for TPH/Oil & Grease (if preferred by the contractor or if the PetroFLAG™ test kit is unavailable to the contractor).

Any recovered NAPL will be collected for off-site disposal. As required by the appropriate and MDE approved facility, samples impacted by NAPL (i.e., containing free oil) will be collected for profiling/waste characterization and submitted to a fixed laboratory, as mentioned above, for the following analyses: metals, VOCs, TPH-DRO/GRO, and/or additional analysis required by the selected disposal facility. Upon receipt of any additional characterization analytical results, the MDE will be notified of the proposed disposal facility. Non-impacted material with no evidence of NAPL (i.e. soils that may contain measureable concentrations of TPH/Oil & Grease but below percentage levels) may be placed on the Site in areas to be paved or capped as long as all other requirements specified in the Response and Development Work Plan (or similar governing document) are met.

Initial Reporting:

If evidence of NAPL in soil or groundwater is encountered during excavation, it will be reported to the MDE within two hours. Information regarding the location and characteristics of any NAPL contaminated soil will be documented as follows:

- Location (exact stationing);
- Extent of contamination (horizontally and vertically – prepare a sketch including dimensions);
- Relative degree of contamination (i.e. free oil with strong odor vs. staining); and
- Visual documentation (take photographs and complete a photograph log)

Utility Installations in Impacted Areas:

Underground piping or conduits installed through areas of Oil & Grease or petroleum contamination shall be leak proof and water tight. All joints will be adequately sealed or gasketed, and pipes or conduits will be properly bedded and placed to prevent leakage. All trench backfill will meet the MDE definition of clean fill, or otherwise be approved by the MDE. Pipe bedding will be installed to minimize the potential for accumulation of water and concentrated infiltration. This can be achieved by using a relatively small amount of low-permeability pipe bedding; open-graded stone will be avoided or only used in thicknesses of 6 inches or less. Bedding must be properly placed and compacted below the haunches of the pipe. Clay, flowable fill, or concrete plugs will be placed every 100 feet across any permeable bedding to minimize the preferential flow and concentration of water along the bedding of such utilities.

If required, each trench plug will be constructed with a 2-foot-thick clay plug or 1-foot-thick flowable fill or concrete plug, perpendicular to the pipe, which extends at least 1 foot in all directions beyond the permeable pipe bedding. The plug acts as an anti-seep collar, and will extend above the top of the pipe. Installation of each trench plug will follow the completion of the trench excavation, installation of granular pipe bedding (because dense-graded aggregate or soil or other pipe bedding is difficult to properly compact below the haunches of the pipe), and seating of the pipe. The trench plug will then be installed by digging out a 1-foot trench below and around the pipe corridor, and placing clay, flowable fill, or concrete to construct the plug. A specification drawing for installation of the trench plug has been provided as **Figure 1**.

Attachment 1 - PetroFLAG™ Procedure

PetroFLAG™ field test kits use a proprietary turbidimetric reaction to determine the TPH concentration of solvent extracted samples (USEPA). Calibration standards provided with the unit are used to perform a two-point calibration for the PetroFLAG™. A blank and a 1,000 ppm standard are run by the analyzer unit to create an internal calibration curve.

Analysis of a soil sample is performed using three simple steps: extraction, filtration, and analysis. The PetroFLAG™ analysis is performed as follows:

- Place a 10 gram soil sample in a test tube.
- Add extraction solvent to the tube.
- Shake the tube intermittently for four minutes.
- Filter the extract into a vial that contains development solution
- Allow the solution to react for 10 minutes.

The filtration step is important because the PetroFLAG™ analyzer measures the turbidity or "optical density" of the final solution. Approximately 25 samples can be analyzed per hour. The vial of developed solution is placed in the meter, and the instrument produces a quantitative reading that reveals the concentration of hydrocarbons in the soil sample. The PetroFLAG™ method quantifies all fuels, oils, and greases as TPH between 15 and 2000 ppm (Dexsil Corporation). A 10x dilution of the filtered extraction solvent will be completed to allow for quantification of soil concentrations in excess of 10,000 ppm. The specially designed PetroFLAG™ analyzer allows the user to select, in the field, the response factor that is appropriate for the suspected contaminant at each site. Vegetable-based oils have been shown to exhibit a response factor of 18% (EPA Method 9074). Using the selected response factor, the analyzer compensates for the relative response of each analyte and displays the correct concentration in parts per million (ppm).

References:

U.S. Environmental Protection Agency (EPA). Contaminated Site Clean-up Information (Clu-IN): Test Kits. Office of Superfund Remediation and Technology Innovation. http://www.clu-in.net/characterization/technologies/color.cfm

Dexsil Corporation. 2016. PetroFLAG Analyzer System (PF-MTR-01). http://www.dexsil.com/products/detail.php?product_id=23

EPA SW-846 Method Number 9074 - Turbidimetric Screening Procedure for Total Recoverable Hydrocarbons in Soil

GENERAL NOTES:

1. ALL PIPES OR CONDUIT PASSING THROUGH AREAS OF PETROLEUM CONTAMINATION SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.

2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.

3. ANTI-SEEP COLLARS FROM THE PIPE MANUFACTURER, THAT ARE PRODUCED SPECIFICALLY FOR THE PURPOSE OF PREVENTING SEEPAGE AROUND THE PIPE, ARE ACCEPTABLE IF INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND ONLY WITH PRIOR APPROVAL BY TPA.

4. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.

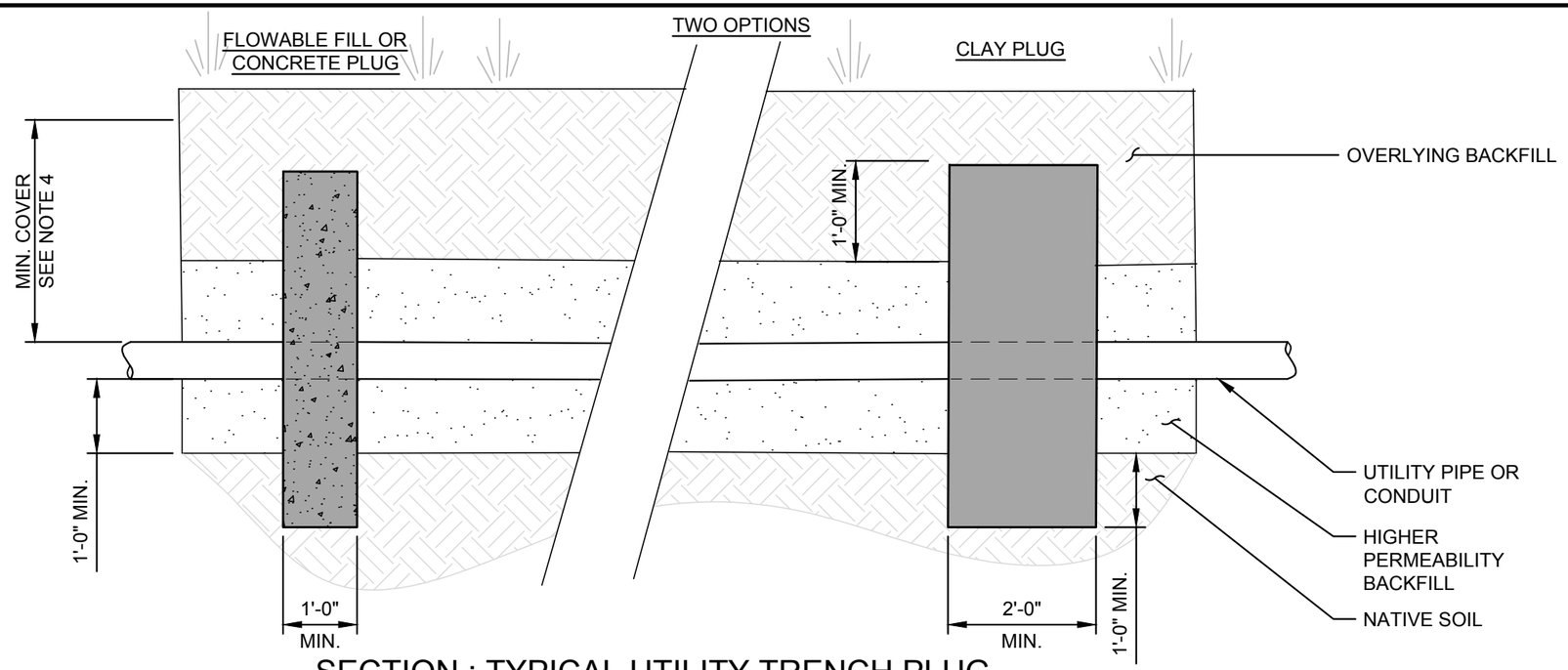
5. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.

6. FOR ADDITIONAL REQUIREMENTS, INCLUDING THE USE OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE AND INSTALLATION OF GEOTEXTILE MARKER FABRIC, REFER TO NOTE 5 ON THE TYPICAL UTILITY CROSS SECTIONS.

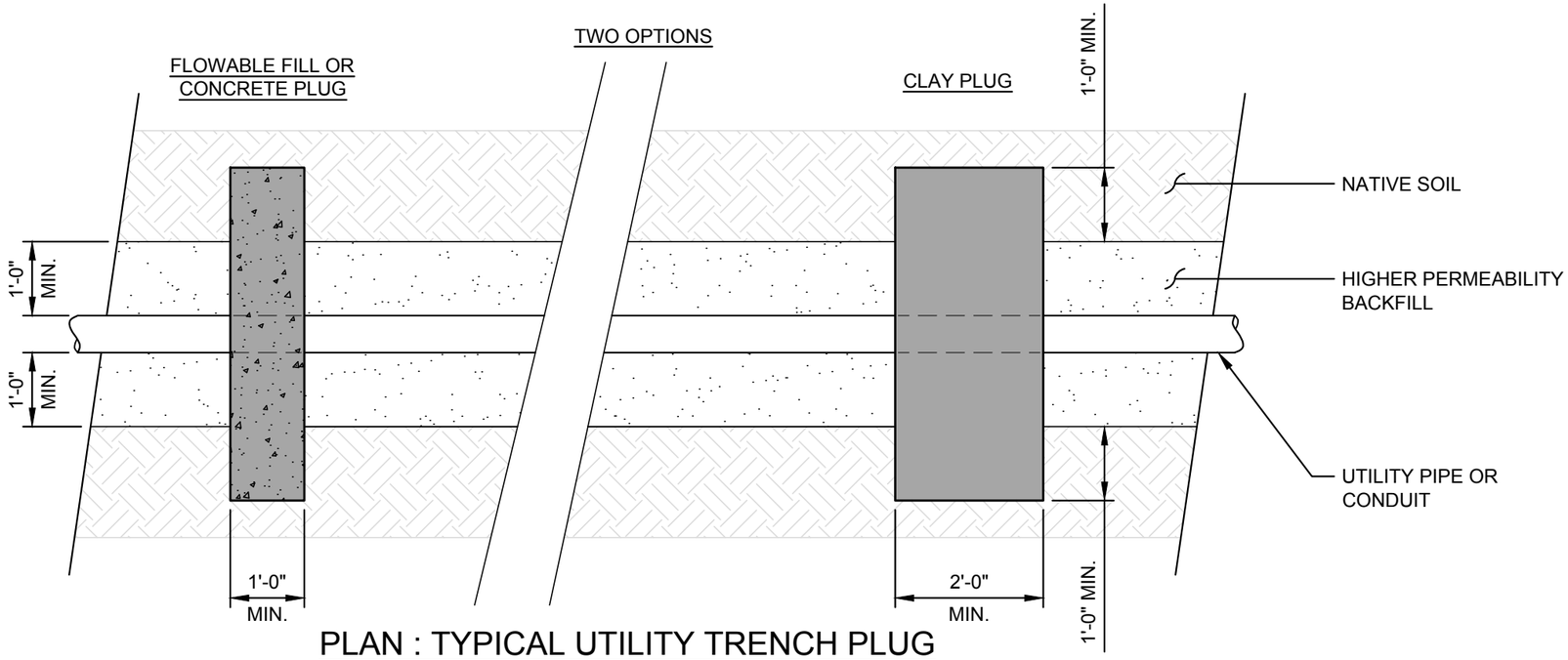
7. ALL UTILITIES INSTALLED THROUGH AREAS CONTAINING NAPL OR ELEVATED CHEMICAL IMPACTS WITH THE POTENTIAL TO TRANSMIT VAPORS ALONG PREFERENTIAL FLOW PATHWAYS SHALL BE EITHER 1) BACKFILLED WITH LOW PERMEABILITY BACKFILL MATERIAL (LESS THAN OR EQUAL TO THE PERMEABILITY OF THE EXISTING SUBGRADE), OR 2) INSTALLED WITH TRENCH PLUGS ALONG THE ALIGNMENT IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN AND THE FOLLOWING NOTES:

   A.) UTILITY TRENCH PLUGS SHALL BE INSTALLED AT 100-FOOT (MAX.) INTERVALS THROUGH ALL AREAS OF NAPL CONTAMINATION.

   B.) UTILITY TRENCH PLUGS SHALL EXTEND A MINIMUM OF 1-FOOT IN ALL DIRECTIONS BEYOND ANY HIGHER PERMEABILITY BACKFILL MATERIALS (I.E., MATERIALS EXCEEDING THE PERMEABILITY OF THE EXISTING SUBGRADE).



SECTION : TYPICAL UTILITY TRENCH PLUG



PLAN : TYPICAL UTILITY TRENCH PLUG

ARM Group LLC
Engineers and Scientists

UTILITY TRENCH PLUG
Sparrows Point Site
Tradepoint Atlantic

September 2020	Figure
Not to Scale	1
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