# Road and Utility Investigation Plan (B22)

**Developed in Support of Construction Activities for**
**Area B: Parcel B22, Phase 1**

## Tradepoint Atlantic
## Sparrows Point, Maryland

Prepared for:
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Revision 1
November 29, 2016

ARM Project 160236M

Respectfully Submitted,

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## FIGURES

# 1.0 INTRODUCTION

## 1.1. INTRODUCTION

ARM Group Inc. (ARM), on behalf of EnviroAnalytics Group (EAG), has prepared the following Road and Utility Investigation Plan to support the approval of infrastructure construction activities on the Tradepoint Atlantic property related to the Development of Parcel B22, Phase 1. The Phase 1 Development Area consists of approximately 71.6 acres in the southern portion of Parcel B22, but some minor roadway and utility construction is proposed outside of the main development area beyond the parcel boundary.

Tradepoint Atlantic is proposing to construct an access road and three primary utility lines (two water lines and a BGE gas line) to the south of Parcel B22, outside of the areas which have previously been investigated by Phase II Investigations. An environmental investigation and risk assessment will be conducted for the installation of the proposed road/utilities. This Road and Utility Investigation Plan presents the environmental investigation plan for the areas where utility trenching and roadway installation will be completed, and also describes the risk assessment procedure. The results of the environmental investigation will be provided to the agencies in a Supplemental Report prior to the installation of the road/utilities identified in this plan. The Supplemental Report will describe any response measures or special health and safety considerations which are warranted based on the results of the risk assessment.

Site characterization of the proposed areas will be performed in compliance with requirements pursuant to the following:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (effective September 12, 2014); and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (effective November 25, 2014).

## 1.2. ENVIRONMENTAL INVESTIGATION

The purpose of this investigation is to identify any existing hazardous conditions in the vicinity of the proposed road/utility which may impact future construction workers. Across the whole Tradepoint Atlantic property, several buildings and facilities may have been historical sources of environmental contamination.

Ten (10) soil borings are proposed along the alignment of the proposed roadway and utilities. The locations of the samples were selected to provide coverage in the vicinity of each primary

utility and along the centerline of the proposed roadway. Locations were adjusted based on a review of available historical steel plant records and drawings to provide coverage of any features which could potentially have resulted in a past release to the environment. The first document to be reviewed was the Recognized Environmental Condition (REC) Location Map provided in the Phase I Environmental Site Assessment (ESA) prepared by Weaver Boos Consultants dated 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. No RECs were identified in the vicinity of the proposed road/utilities. Following the review of the REC Location Map, four (4) sets of historical site drawings were reviewed to identify additional potential sampling targets. These site drawings included the 5000 Set (Plant Arrangement), the 5100 Set (Plant Index), the 5500 Set (Plant Sewer Lines), and a set of drawings indicating coke oven gas distribution drip leg locations. Sampling target locations would be identified if the historical site drawings depicted industrial activities or a specific feature at a location that may have been a source of environmental contamination.

The locations of the proposed utilities and roadway alignment are provided on **Figure 1**, along with the locations of the proposed borings and corresponding identification numbers. This figure shows the proposed development plan (Overall Final Grading Plan) for the area toward the south end of Parcel B22. **Figure 2** shows the 5000 Set of historical steel plant drawings, indicating the substation which is present along the proposed alignment of the BGE gas line and access roadway. One boring was placed directly adjacent to the substation in order to investigate any potential impacts related to this feature (past releases to the environment). The remaining borings provide general coverage along the alignment of the roadway and utility corridors. **Figure 3** shows the proposed borings on an aerial image to indicate locations of borings with regard to physical landmarks.

This Road and Utility Investigation Plan presents the methods and protocols to be used to complete the proposed investigation activities. These methods and procedures follow the MDE-VCP and EPA guidelines. Information regarding the project organization, field activities and sampling methods, sampling equipment, sample handling and management procedures, the laboratory analytical methods and selected laboratory, quality control and quality assurance procedures, and investigation-derived waste (IDW) management methods are described in detail in the QAPP that has been developed to support the investigation and remediation of the Tradepoint Atlantic Site (Quality Assurance Project Plan, ARM Group Inc., April 5, 2016).

All site characterization activities will be conducted in accordance with a site-specific Health and Safety Plan (HASP), which was provided as Appendix B of the approved Area B: Parcel B22 Phase II Investigation Work Plan dated June 2, 2016.

# 2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

## 2.1. PROJECT PERSONNEL

Site investigation of the road/utility installation areas will be conducted by ARM under a contract with EAG. ARM will provide project planning, field sampling and reporting support. The required drilling, Geoprobe® and laboratory services will be contracted directly by EAG. The management, field, and laboratory responsibilities of key project personnel are defined in this section.

The ARM Project Manager, Mr. Eric Magdar is responsible for ensuring that all activities are conducted in accordance with this Investigation Plan and the contract requirements. Mr. Magdar will provide technical coordination with the MDE, EPA and EAG. The ARM Project Manager is responsible for managing all operations conducted for this project including:

- Ensure all personnel assigned to this project review the technical project plans before initiation of all tasks associated with the project.
- Review of project plans in a timely manner.
- Ensure proper methods and procedures are implemented to collect representative samples.
- Monitor the project budget and schedule and ensure the availability of necessary personnel, equipment, subcontractors, and other necessary services.

The lead ARM Project Scientist, Mr. Nicholas Kurtz, will be responsible for coordinating field activities including the collection, preservation, documentation and shipment of samples. Mr. Kurtz will directly communicate with the ARM Project Manager and Laboratory Project Manager on issues pertaining to sample shipments, schedules, container requirements, and other necessary issues. Mr. Kurtz is also responsible for ensuring the accuracy of sample documentation including the completion of the chain-of-custody (CoC) forms.

PACE of Greensburg, Pennsylvania will provide the analytical services for this project. The address for the laboratory is as follows:

Pace Analytical
1638 Roseytown Road
Greensburg, PA 15601

During the field activities, the Laboratory Project Manager will coordinate directly with the ARM Project Manager on issues regarding sample shipments, schedules, container requirements, and other field-laboratory logistics. The Laboratory Project Manager will monitor the daily activities of the laboratory, coordinate all production activities, and ensure that work is being

conducted as specified in this document. Ms. Samantha Bayura will be the Laboratory Project Manager for PACE on this project.

### 2.2. HEALTH AND SAFETY ISSUES

Because of the potential presence of metals, petroleum hydrocarbons and chlorinated hydrocarbons in the soil and groundwater at the Site, the investigation will be conducted under a HASP to protect investigation workers from possible exposure to contaminated materials. The HASP to be used for this investigation was provided as Appendix B of the approved Area B: Parcel B22 Phase II Investigation Work Plan dated June 2, 2016.

Based on information provided to ARM regarding the Tradepoint Atlantic property, the planned site activities will be conducted under modified Level D personal protection. The requirements of the modified Level D protection will be defined in ARM's site specific Health and Safety Plan. All field personnel assigned for work at the Site have been trained in accordance with the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response standard (29 CFR 1910.120) and other applicable OSHA training standards. All field staff will be experienced in hazardous waste site work, use of personal protective equipment (PPE), and emergency response procedures.

### 2.3. UTILITY CLEARANCE

ARM will take appropriate precautions to avoid subsurface utilities and structures during the investigation. Prior to initiating any subsurface investigations, ARM will attempt to determine the location of utilities in the project area using the Miss Utility system. Additionally, any required state or local permits will be acquired prior to the commencement of site activities.

In addition to the Miss Utility system, EAG will clear each proposed boring with utility personnel currently working on the property. To facilitate this, ARM will locate with a GPS and mark all proposed boring locations in the field. ARM will coordinate the staking of borings in the field with Tradepoint Atlantic utility personnel to avoid conflicts. Historical utility drawings which may be relevant include the 5600 Set (Plant Water Lines) and 5800 Set (Plant Gas Lines).

# 3.0 FIELD ACTIVITIES AND PROCEDURES

## 3.1. SOIL INVESTIGATION

Soil samples will be collected from the locations identified in **Figure 1** through **Figure 3** of this Investigation Plan, and in accordance with procedures referenced in the QAPP Worksheet 21 – Field SOPs (Standard Operating Procedures), SOP No. 009 – Sub-Surface Soil Sampling. Regarding soil sampling depth, a shallow sample will be collected from the 0 to 1 foot depth interval, and a deeper sample will be collected from the 4 to 5 foot depth interval. Each boring will provide two analytical soil samples, yielding a total of 20 samples for this investigation. It should be noted that no soil samples will be collected from a depth that is below the water table. If asphalt and/or roadway sub-base occupies the 0 to 1 foot below ground surface (bgs) sample, the interval may be shifted to the depth of the first observed underlying soil interval. In the event of refusal prior to collecting the 5 foot sample (with a minimum of 3 independent attempts), the deeper sample will be collected from the lowest possible interval. Borings will be completed as close as possible to the proposed locations, and the MDE will be notified if any field shifts of greater than 50 feet are required due to shallow refusal.

After soil sampling has been concluded at a location, down-hole soil sampling equipment will be decontaminated according to procedures referenced in the QAPP Worksheet 21 – Field SOPs, SOP No. 016 Equipment Decontamination. The decontamination procedures that will be used during the course of this investigation include Decontamination Area (Section 3.1 of the SOP), Decontamination of Sampling Equipment (Section 3.5), Decontamination of Measurement Devices & Monitoring Equipment (Section 3.7), Decontamination of Subsurface Drilling Equipment (Section 3.8), and Document and Record Keeping (Section 5).

All soil samples will be analyzed for TCL-SVOCs, TAL-Metals, Oil & Grease, TPH-DRO, TPH-GRO, hexavalent chromium, and cyanide. During field screening of the soil cores, any sample interval which exceeds a PID reading of 10 ppm will also be analyzed for TCL-VOCs. Additionally, the shallow soil samples from the 0-1 foot bgs interval will also be analyzed for PCBs. In the event that a shallow sample is shifted below the 0-1 foot interval, the new interval will still be collected as a surface soil sample and analyzed for PCBs. Analytical methods, sample containers, preservatives, and holding times for the sample analyses are listed in the QAPP Worksheet 19 & 30 – Sample Containers, Preservation, and Holding Times.

## 3.2. SAMPLE DOCUMENTATION

Samples will be documented using a project specific identification code for the proposed roadway and utility construction (in this case the format R1-XXX-SB will be used). Data from this investigation may also be incorporated into the Phase II Investigation Report for additional parcels in which fieldwork has not yet been completed (currently Parcel B2 and Parcel B3).

#### 3.2.1. Sample Numbering

Samples will be numbered in accordance with the QAPP Appendix C—Data Management Plan.

#### 3.2.2. Sample Labels & Chain-of-Custody Forms

Samples will be labeled and recorded on the Chain-of-Custody form in accordance with methods referenced in the QAPP Worksheet 26 & 27—Sample Handling, Custody and Disposal.

### 3.3. LABORATORY ANALYSIS

EAG has contracted Pace Analytical Services, Inc. (PACE) of Greensburg, Pennsylvania to perform the laboratory analysis for this project. All sample analyses to be performed are listed in Section 3.1, above. The samples will be submitted for analysis with a standard turnaround time (approximately 5 work days). The specific list of compounds and analytes that the soil samples will be analyzed for, as well as the quantitation limits and project action limits, is provided in QAPP Worksheet 15 – Project Action Limits and Laboratory-Specific Detection/Quantitation Limits.

# 4.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

All soil samples will be collected using dedicated equipment including new soil core liners and sampling kits. Each cooler temperature will be measured and documented by the laboratory upon receipt.

Quality control (QC) samples are collected during field studies for various purposes, among which are to isolate site effects (control samples), to define background conditions (background sample), and to evaluate field/laboratory variability (spikes and blanks, trip blanks, duplicates, etc.).

The following QC samples will be submitted for analysis to support the data validation:

- Trip Blank – at a rate of one per cooler with VOC samples
  - Soil – VOCs only
- Blind Field Duplicate – one for each set of 20 samples
  - Soil – VOCs, SVOCs, Metals, Oil & Grease, TPH-DRO, TPH-GRO, PCBs, Hexavalent Chromium, and Cyanide
- Matrix Spike/Matrix Spike Duplicate – one for each set of 20 samples
  - Soil – VOCs, SVOCs, Metals, Oil & Grease, TPH-DRO, TPH-GRO, PCBs, and Hexavalent Chromium
- Field Blank and Equipment Blank – one for each set of 20 samples
  - Soil – VOC, SVOC, Metals, Oil & Grease, TPH-DRO, TPH-GRO, Hexavalent Chromium, and Cyanide

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

# 5.0 MANAGEMENT OF INVESTIGATION DERIVED WASTE

All investigation derived waste (IDW) procedures will be carried out in accordance with methods referenced in the QAPP Worksheet 21 – Field SOPs, SOP No. 005 – Investigation-Derived Wastes Management.

# 6.0 DATA VALIDATION

For the road/utility investigation, a representative 50% of the complete analytical dataset will undergo data validation. Samples will be selected in groups according to the PACE project number assigned to each set of samples (if more than one project number is needed). Each PACE project number will be assigned a sequential number (from 1, 2, 3 … n) in the order received by the lab until all sample groups for the parcel have been received by the lab. The random number function will be used to randomly order the project numbers and project numbers will be selected from top to bottom until 50% or more of the total number of samples in the investigation have been identified for validation.

All data validation procedures will be carried out in accordance with the QAPP Worksheet 34 – Data Verification and Validation Inputs, QAPP Worksheet 35 – Data Verification Procedures, and QAPP Worksheet 36 – Data Validation Procedures.

# 7.0 REPORTING

The results of the environmental investigation will be presented to the agencies in a Supplemental Report prior to the installation of the road/utility. This Supplemental Report will include an evaluation of any necessary health and safety protocols or response measures which are warranted based on the completed risk assessment.

## 7.1. ANALYSIS PROCESS

A human health Screening Level Risk Analysis (SLRA) will be completed for soils to further evaluate the Site conditions in support of the design of necessary response measures or site-specific health and safety protocols. Ten (10) soil borings are proposed along the alignment of the proposed roadway and utilities, providing 20 samples to be included in the risk assessment. Since the utilities and road are being investigated to support temporary construction activities, the data will be evaluated to determine risk for the Construction Worker scenario. The Composite Worker scenario is not relevant for surface soils in this case. The SLRA included the following evaluation process:

**Identification of Constituents of Potential Concern (COPCs):** Compounds that are present at concentrations at or above the EPA Regional Screening Levels (RSLs) set at a target cancer risk of 1E-6 or target non-cancer Hazard Quotient (HQ) of 0.1 will be identified as COPCs to be included in the SLRA.

**Identification of Exposure Units (EUs):** The development area for the proposed utilities/roads will be analyzed as a single exposure unit.

**Exposure Point Concentrations (EPCs):** Since the exposure being assessed is for construction workers grading and/or trenching within the identified roadway and utility corridors, the COPC soil data for surface (0-1 ft) and subsurface (>1 ft) depths will be pooled to create a more robust single dataset. This dataset will be used for estimation of potential exposure point concentrations to soil within the exposure unit during construction activities. A statistical analysis will be performed for each COPC data set 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 the pooled dataset will be calculated for comparison to the Adult Lead Model-based values. If applicable, all PCB results equaling or exceeding 50 mg/kg would be delineated for excavation and removal, and all remaining PCBs would be included in the EPC and risk ratio calculations.

**Risk Ratios:** The soil EPCs will be compared to the calculator-based RSLs for Construction Worker, Soil – Other Construction Activities to develop risk ratios for each COPC. The risk ratios will be calculated with a cancer risk of 1E-6 and a non-cancer HQ of 1. The risk ratios for the carcinogens will be summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens will be segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer hazard.

**Assessment of Lead:** For lead, the arithmetic mean concentrations for surface soil and subsurface soils for the site-wide EU will be compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU are below the applicable RSL, the EU will be identified as requiring no further action for lead. If a mean concentration exceeds the RSL, the mean values will be compared to calculated Adult Lead Model (ALM Version date 8/2/2016) values with inputs of 1.7 for the geometric standard deviation and a blood baseline lead level of 0.7 ug/dL. The ALM calculation generates a soil lead concentration of 2,737 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 are below 2,737 mg/kg, the EU will be identified as requiring no further action for lead. For lead, all results equaling or exceeding 10,000 mg/kg will be be delineated for possible excavation and removal (if applicable).

**Assessment of TPH-DRO/GRO and Oil & Grease:** EPCs will not be calculated for TPH-DRO/GRO or Oil & Grease. Instead, the individual results will be compared to the PAL set to a HQ of 1 (6,200 mg/kg). Any TPH/Oil & Grease PAL exceedances or non-aqueous phase liquid (NAPL) observations near the proposed subsurface utilities will be fully delineated. If TPH/Oil & Grease PAL exceedances or free phase NAPL are identified near a proposed subsurface utility, the final Response and Development Work Plan will include a plan to prevent mobilization of the petroleum and/or Oil & Grease to these features, which may include removal, stabilization, sealing of utilities, etc.

**Risk Characterization Approach:** For the road/utility EU, 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 1E-4, then site-specific health and safety requirements will be considered to be an acceptable risk mitigation measure for the construction worker. The efficacy of health and safety measures for elevated non-cancer hazard will be evaluated in terms of the magnitude of

the exceedance and other factors such as bioavailability of the COPC. Similarly, for lead, if the results of the ALM indicate that the mean concentrations would present a 5% to 10% probability of a blood concentration of 10 ug/dL for the EU, then health and safety requirements would be an acceptable risk mitigation measure. The mean soil lead concentrations corresponding to ALM probabilities of 5% and 10% are 2,737 mg/kg, and 3,417 mg/kg, respectively.

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 construction worker risk mitigation. The magnitude of non-carcinogen hazard exceedances and bioavailability of the COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for construction worker risk mitigation. In addition, 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 evaluated such that the probability would be reduced to less than 10% for the construction worker after toxicity reduction.

### 7.2. MANAGEMENT OF PCB-CONTAMINATED MEDIA

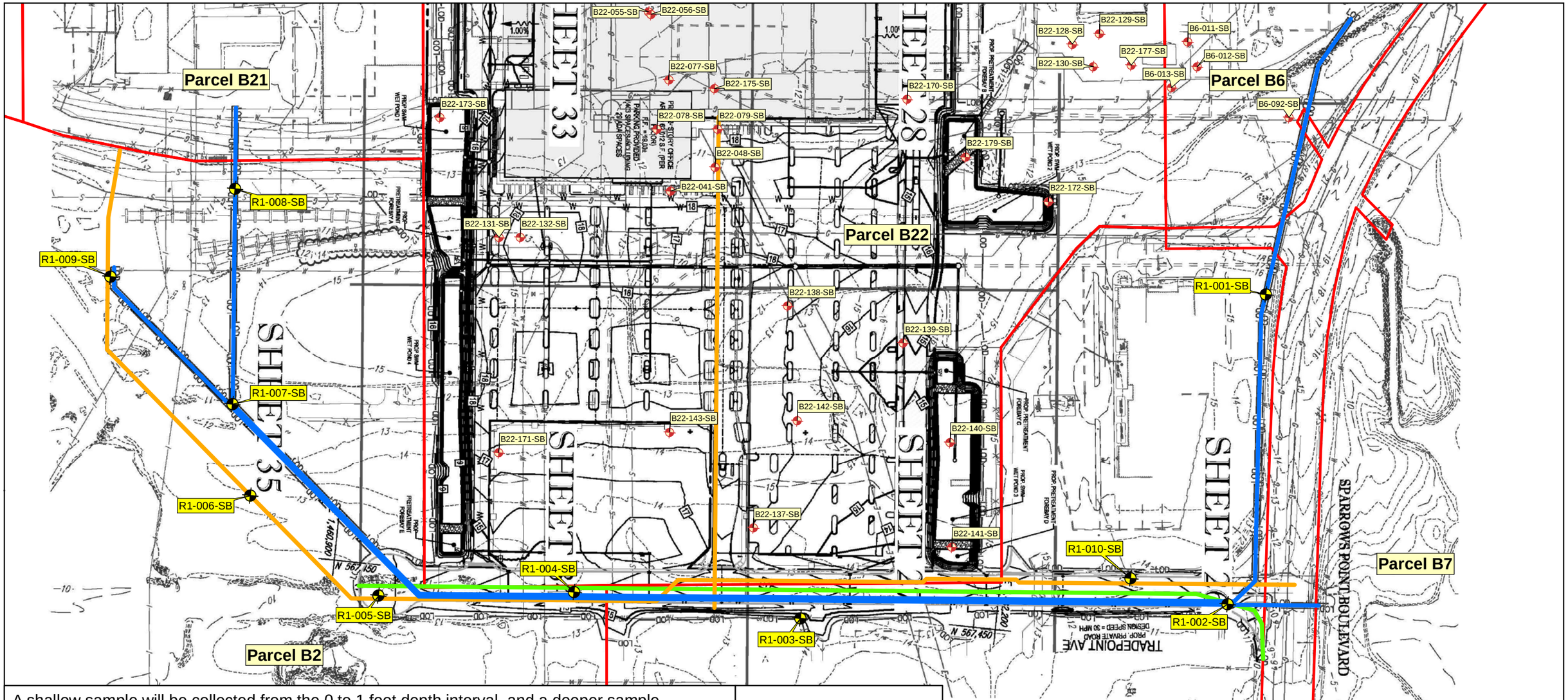
Soils or contaminated media within the proposed road/utility development area containing total PCB concentrations less than 50 mg/kg may be left in place if paved or otherwise capped. The Toxic Substances Control Act (TSCA) low and high occupancy standards will not apply to structures serving as engineered barriers. All soil exceeding 50 mg/kg of total PCBs would be excavated and transported to a permitted off-site commercial landfill approved to accept TSCA-regulated remediation waste. Soils or contaminated media containing total PCB concentrations less than the PALs specified in the QAPP may be left in place without additional assessment.

# 8.0 SCHEDULE

The field and reporting activities below (including sample analysis and validation) are planned so that they may be completed within these approximate timeframes:

- the sample collection activities will take approximately one (1) week to complete (including mobilization activities) once approval of the work plan is received;
- the sample analysis, data validation (≥50%) and review is expected to require an additional two (2) weeks to complete; and
- the preparation of the Supplemental Report, including an internal Quality Assurance Review cycle, will require one (1) week.

# FIGURES




A shallow sample will be collected from the 0 to 1 foot depth interval, and a deeper sample will be collected from the 4 to 5 foot depth interval. It should be noted that no soil samples will be collected from a depth that is below the water table. If asphalt and/or roadway sub-base occupies the 0 to 1 foot bgs sample, the interval may be shifted to the depth of the first observed underlying soil interval. In the event of refusal prior to collecting the 5 foot sample (with a minimum of 3 independent attempts), the deeper sample will be collected from the lowest possible interval. Borings will be completed as close as possible to the proposed locations, and the MDE will be notified if any field shifts of greater than 50 feet are required due to shallow refusal.

All soil samples will be analyzed for TCL-SVOCs, TAL-Metals, Oil & Grease, TPH-DRO, TPH-GRO, hexavalent chromium, and cyanide. During field screening of the soil cores, any sample interval which exceeds a PID reading of 10 ppm will also be analyzed for TCL-VOCs. Additionally, the shallow soil samples from the 0 to 1 foot bgs interval will be analyzed for PCBs. In the event that a shallow sample is shifted below the 0 to 1 foot interval, the new interval will still be collected as a surface soil sample and analyzed for PCBs.

- Proposed Roadway Borings
- Completed Phase II Borings
- Proposed Water Lines
- Proposed BGE Gas Line
- Approximate Centerline of New Road Construction
- Parcel Boundary

Road/Utility Exposure Unit
10 Borings Proposed

# Proposed Access Road and Utility Lines
# Overall Final Grading Plan
# Proposed Soil Sample Locations

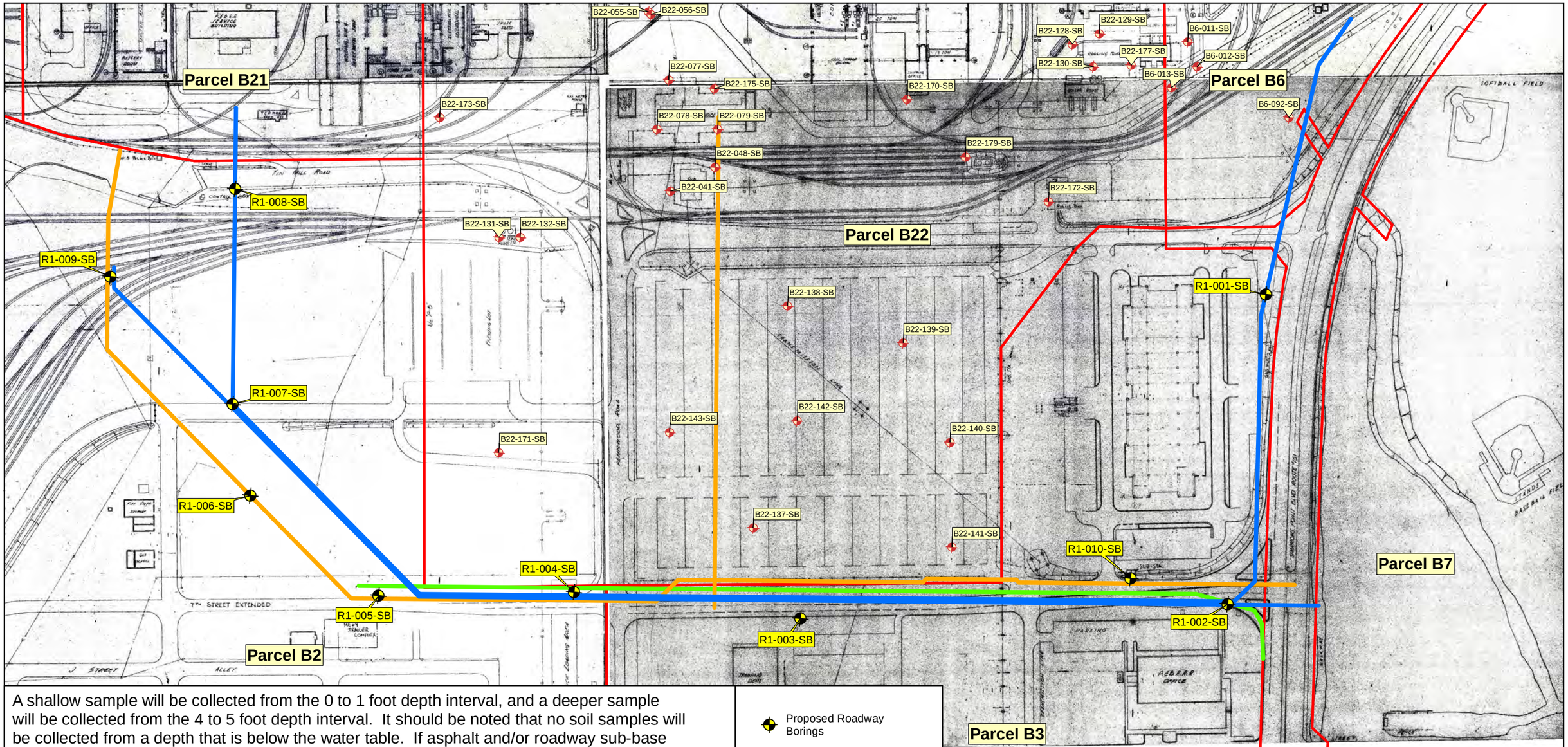
November 4, 2016

**Figure 1**

EnviroAnalytics Group
ARM Project 160236M
Baltimore County, MD
Tradepoint Atlantic

ARM Group Inc.
Earth Resource Engineers and Consultants

0 65 130 260 Feet




A shallow sample will be collected from the 0 to 1 foot depth interval, and a deeper sample will be collected from the 4 to 5 foot depth interval. It should be noted that no soil samples will be collected from a depth that is below the water table. If asphalt and/or roadway sub-base occupies the 0 to 1 foot bgs sample, the interval may be shifted to the depth of the first observed underlying soil interval. In the event of refusal prior to collecting the 5 foot sample (with a minimum of 3 independent attempts), the deeper sample will be collected from the lowest possible interval. Borings will be completed as close as possible to the proposed locations, and the MDE will be notified if any field shifts of greater than 50 feet are required due to shallow refusal.

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- Proposed Roadway Borings
- Completed Phase II Borings
- Proposed Water Lines
- Proposed BGE Gas Line
- Approximate Centerline of New Road Construction
- Parcel Boundary

Road/Utility Exposure Unit
10 Borings Proposed

# Proposed Access Road and Utility Lines
# 5000 Historical Drawings Set
# Proposed Soil Sample Locations

November 4, 2016

**Figure 2**

EnviroAnalytics Group

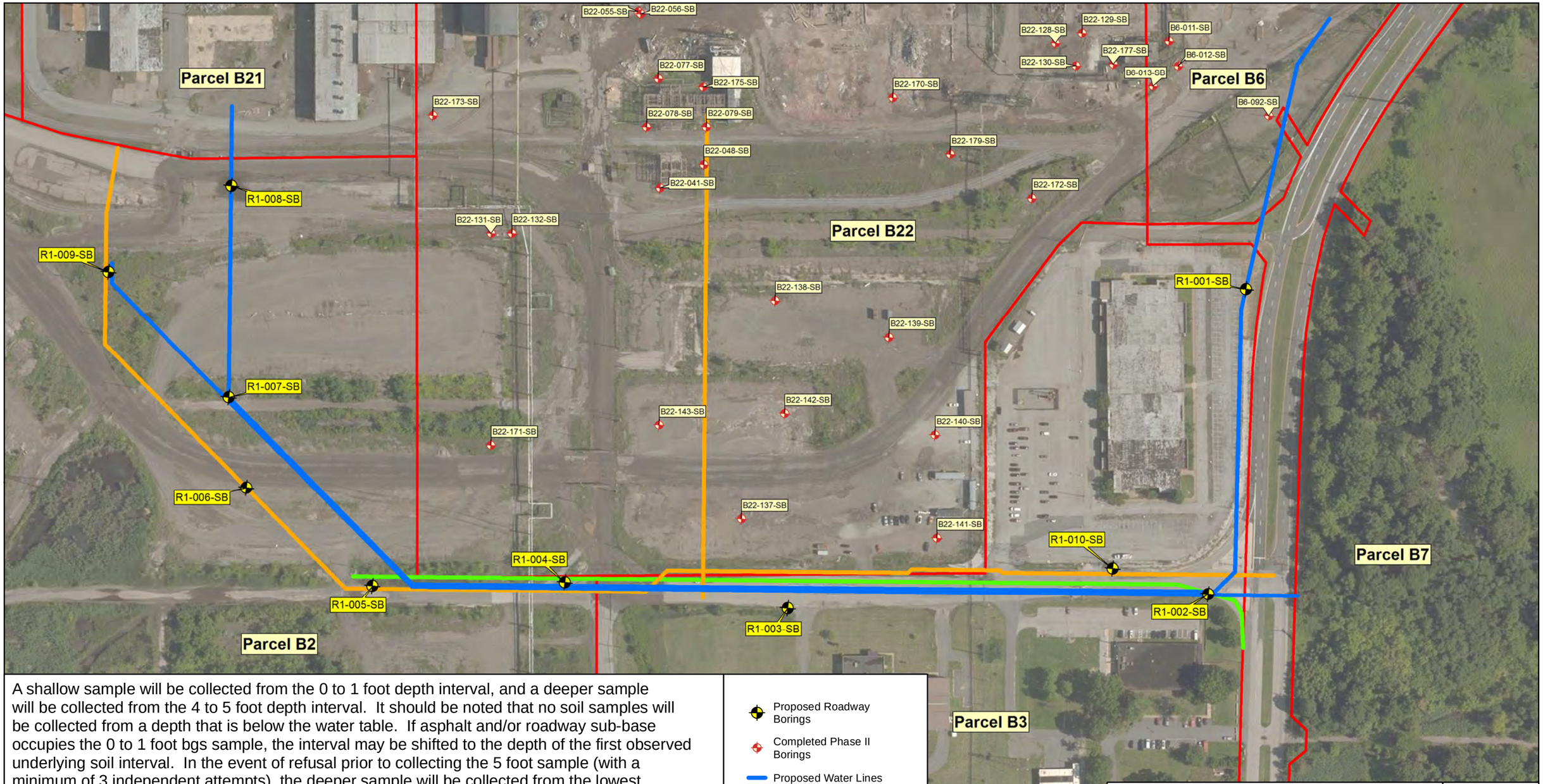
ARM Project 160236M

Baltimore County, MD

Tradepoint Atlantic

ARM Group Inc.
Earth Resource Engineers and Consultants

0 65 130 260 Feet

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- Proposed Roadway Borings
- Completed Phase II Borings
- Proposed Water Lines
- Proposed BGE Gas Line
- Approximate Centerline of New Road Construction
- Parcel Boundary

Road/Utility Exposure Unit
10 Borings Proposed

# Proposed Access Road and Utility Lines
## Aerial View
## Proposed Soil Sample Locations

November 4, 2016

**Figure 3**

EnviroAnalytics Group
ARM Project 160236M
Baltimore County, MD
Tradepoint Atlantic

ARM Group Inc.
Earth Resource Engineers and Consultants

0 65 130 260 Feet