RESPONSE ACTION PLAN

5601 EASTERN AVENUE

Baltimore City, Maryland

April 18, 2016

Submitted to:

United States Environmental Protection Agency, Region 3
1650 Arch Street – 3WC23
Philadelphia, Pennsylvania 19103

Attn: Mr. Luis Pizarro

Maryland Department of the Environment, Voluntary Cleanup Program
1800 Washington Boulevard
Baltimore, Maryland 21230

Attn: Ms. Barbara Brown

Prepared for:

TRP-MCB 5601 Eastern LLC
2701 North Charles Street, Suite 404
Baltimore, Maryland 21218

Attn: Mr. David Frederick

Prepared by:

GEO-TECHNOLOGY ASSOCIATES, INC.
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GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing GBA Member Firm

April 18, 2016

TRP-MCB 5601 Eastern LLC
2701 North Charles Street, Suite 404
Baltimore, Maryland 21218

Attn: Mr. David Frederick

Re: Response Action Plan
5601 Eastern Avenue
Baltimore City, Maryland

Dear Mr. Frederick:

In accordance with our agreement, dated June 16, 2015, Geo-Technology Associates, Inc. (GTA) has prepared this Response Action Plan (RAP) for 5601 Eastern Avenue ("subject property"), south of Eastern Avenue and east of South Umbra Street, in the eastern portion of City of Baltimore, Maryland. This RAP has been prepared to address soil, soil vapor, groundwater contamination detected during prior evaluations in conjunction with site development. It is GTA's understanding that the subject property is planned to be developed with multi-story apartment buildings with retail at the street level, a hotel, parking garages, a single-story anchor retail tenant, and several other single-story retail buildings.

An application for the subject property's acceptance into the Maryland Department of the Environment (MDE) Voluntary Cleanup Program (VCP) was received by the MDE on September 29, 2014. The subject property was accepted into the VCP by the MDE on August 12, 2015.

We appreciate the opportunity to be of assistance on this project. Should you have any questions regarding this information, or should you require additional information, please do not hesitate to contact our office at (410) 792-9446.

Sincerely,
GEO-TECHNOLOGY ASSOCIATES, INC.

Kevin P. Plocek
Senior Environmental Scientist

for
Paul H. Hayden, P.G., L.R.S.
Vice President

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KPP/PHH/SJS/RPM
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cc: Mr. Luis Pizarro / United States Environmental Protection Agency, Region 3
Ms. Barbara Brown / Maryland Department of the Environment, Voluntary Cleanup Program

EXECUTIVE SUMMARY

Geo-Technology Associates, Inc. (GTA) has prepared this Response Action Plan (RAP) for 5601 Eastern Avenue (the "subject property"), as described herein. This *Executive Summary* is limited in scope and detail and is presented for the convenience of the reader. Please refer to the written report for details concerning the environmental condition of the subject property, as well as the scope and limitations of this RAP. Do not rely on this *Executive Summary* for any purpose except that for which it was prepared. Rely only on the full report for information about the findings, recommendations, and other concerns.

The subject property consists of approximately 19.97 acres of land located south of Eastern Avenue and east of South Umbra Street, in the eastern portion of the City of Baltimore, Maryland. The subject property contains 13 buildings and several support structures. These structures include several vacant industrial buildings, a vacant laboratory building, and a vacant warehouse. The remaining portions of the subject property contain asphalt parking lots, an inactive industrial landfill (herein identified as "Crystal Hill"), and grassed areas. Historically, the Porcelain Enamel Manufacturing Corporation (PEMCO) facility began operation in the early 20th Century, prior to which the subject property was vacant land. The facility produced specialty glass (frit), ceramic, enamels, and inorganic pigments until operations ceased in September 2007, and the plant was decommissioned in December 2007.

An application for acceptance into the Maryland Department of the Environment's (MDE) Voluntary Cleanup Program (VCP) was received by the MDE on September 29, 2014. The TRP-MCB 5601 Eastern LLC (Applicant) received an "Inculpable Person" status, and the subject property was accepted into the VCP by the MDE on August 12, 2015.

An on-site wastewater treatment plant operated at the subject property until 2002. This plant was located on the eastern portion of the subject property and treated facility discharge prior to disposal to a settling pond located adjacently southeast of the subject property until the early 1960s. In the mid-1960s the property containing the settling pond was sold to the Exxon Company for use as part of a large tank farm, and the discharge was routed to local stormwater systems. The treatment plant operated under a National Pollutant Discharge Elimination System discharge permit until 2002. After 2002, the facility discharge was routed through the treatment plant's settling basin and then to the municipal sanitary sewer system.

In addition to regulated materials used in the manufacturing and maintenance processes, the facility historically generated waste in the form of off-specification product, recovered dust, and material settled from process discharge water and surface runoff. Until approximately 1979, off-specification product, smelter refractories, packaging materials, and general facility trash was placed in the approximately six-acre Crystal Hill on the southern and western portions of the subject property.

Several assessments of Crystal Hill have been performed, and these evaluations concluded that while the landfill cover needs some maintenance, there is little or no migration of waste material from Crystal Hill under current conditions. In 2013, the United States Environmental Protection Agency (USEPA) indicated that the "Migration of Contaminated Groundwater Under Control" has been verified.

Two propane above-ground storage tanks (ASTs), two oxygen ASTs, and one "oil-containing" AST were historically present on the subject property. These ASTs are not currently present on the subject property, and GTA has not observed obvious indications of leaks or spills in the former locations of the ASTs.

The subject property has also historically contained nine underground storage tanks (USTs), which ranged in capacity from 500 gallons to 12,000 gallons and were primarily used to store diesel fuel, #2 fuel oil, and gasoline. MDE documentation indicating three 12,000-gallon #2 fuel oil USTs and two 500-gallon diesel USTs were abandoned-in-place on the central portion of the subject property; however, no closure documentation was available for these USTs since the abandonments pre-dated MDE UST regulations. In addition, one 650-gallon UST that reportedly stored oil containing polychlorinated biphenyls (PCBs) was also reportedly abandoned-in-place on the northern portion of the subject property. Prior evaluations identify this UST adjacently west or south of a former control building; however, the exact location of the UST is currently unknown. A 500-gallon gasoline and 1,000-gallon #2 fuel oil UST were removed from the central portion of the subject property; however, MDE closure documentation was only available for one of these two removed USTs. A third #2 fuel oil UST was also reportedly removed from the northern portion of the subject property; however, information regarding this UST removal is not available.

Under PEMCO ownership, PEMCO participated in the USEPA's Facility Lead Program (FLP) to assess environmental conditions on the subject property. PEMCO initiated its participation in the FLP with submission of a Site Characterization Work Plan in December 2006, which was approved by the USEPA in January 2007. A VCP application was submitted to the MDE in February 2007 by another Applicant, a Site Characterization and Risk Assessment Report was finalized in May 2013, and a RAP was submitted to the MDE VCP in September 2013. The site characterization activities and RAP were based on a proposed commercial use, and the RAP and Applicant have since been withdrawn from the VCP.

With regard to the current VCP application by TRP-MCB 5601 Eastern LLC, the USEPA and the MDE VCP requested that supplemental site characterization be performed at the subject property prior to acceptance into the VCP. Proposed supplemental site characterization activities included soil, groundwater, soil vapor, and methane sampling and field screening. Soil sampling identified elevated concentrations of metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) that primarily consisted of polycyclic aromatic hydrocarbons (PAHs), primarily in the vicinity of Crystal Hill and south of the manufacturing complex. Groundwater sampling identified elevated concentrations of VOCs, SVOCs, and metals, with the highest concentrations in the area of Crystal Hill, particularly near the central portion. Methane was detected in the central portion of Crystal Hill as high as 61.7% by volume.

At the time of the supplemental site characterization activities, GTA personnel attempted to install 11 sub-slab and five subsurface soil vapor probes at the subject property. At the sub-slab soil vapor probe locations, a perched water layer was encountered immediately below the concrete building slabs. Additional wet soils were also encountered at the subsurface soil vapor probe locations. GTA revisited these locations on several occasions, and the perched water or wet soil conditions did not improve with the passage of time. Soils were wet enough to cause concern with

the effectiveness of soil vapor sampling, and this additional soil vapor sampling is proposed as part of this RAP.

This RAP has been prepared to establish a proposed remedy for impacted soil, soil vapor, and groundwater contamination within the site boundary in conjunction with the planned site development. The proposed remedy for soil and soil vapor includes removing USTs and potentially petroleum-impacted soil, the installation of vapor barriers and sub-slab vapor mitigation systems, construction observation for correct RAP implementation, and using appropriate construction observation and health and safety measures during the planned construction, capping to prevent direct contact exposure, and notification to MDE prior to future excavation activities. The proposed remedy for groundwater includes the proper abandonment of groundwater monitoring wells, construction observation for correct RAP implementation, using appropriate construction observation and health and safety measures during the planned construction, and a deed notice to restrict groundwater use at the subject property. Groundwater monitoring wells will not be abandoned until approval has been granted by the MDE and USEPA. The RAP has been prepared for MDE and USEPA submittal so that a Certificate of Completion (COC) may be obtained following the proposed RAP implementation.

Prior to and after the demolition of the existing on-site buildings, the following additional site evaluations will be performed and the results will be provided to the MDE VCP and the USEPA:

- Geophysical evaluation and soil and groundwater sampling in the vicinity of the reported 650-gallon UST that stored oil containing PCBs;
- Additional soil sampling in areas where elevated lead and cadmium concentrations were previously identified;
- Additional evaluation of an area where elevated VOCs were previously identified; and
- Soil vapor sampling.

Work Plans will be provided to the MDE VCP and the USEPA prior to the commencement of each of the evaluations, and the results of the evaluations will be provided to the MDE VCP and the USEPA. Dependent on these results; source reduction, source removal, or active remedial measures may be necessary to achieve remedial goals. If additional remedial measures are needed, they will be addressed in a RAP Addendum.

Development of the subject property is planned to be performed in phases. As such, TRP-MCB 5601 Eastern LLC will likely request a COC for individual lots, groups of lots, and/or specific subdivided parcels as development activities are completed. TRP-MCB 5601 Eastern LLC understands that in order for a COC to be issued for individual lots, groups of lots, and/or specific subdivided parcels; additional VCP applications must be submitted and accepted for participation for each individual lot, groups of lots, and/or specific subdivided parcels. This RAP has been prepared to establish a proposed remedy in conjunction with the planned site development.

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5601 EASTERN AVENUE
BALTIMORE, MARYLAND
APRIL 18, 2016

1.0 INTRODUCTION

1.1 Overview and Purpose

Geo-Technology Associates, Inc. (GTA) has prepared this Response Action Plan (RAP) for 5601 Eastern Avenue (the "subject property"), which is located south of Eastern Avenue and east of South Umbra Street, in the eastern portion of the City of Baltimore, Maryland. During previous environmental evaluations, impacted soil, soil vapor, and groundwater were identified above the applicable Maryland Department of the Environment (MDE) and/or United States Environmental Protection Agency (USEPA) criteria.

TRP-MCB 5601 Eastern LLC, applied to the MDE Voluntary Cleanup Program (VCP) as an "Inculpable Person" for the subject property. The subject property was accepted into the VCP by the MDE on August 12, 2015. TRP-MCB 5601 Eastern LLC is herein identified as the "Participant." A copy of the MDE acceptance letter is included in *Appendix A*. The proposed future land use is restricted residential (Tier 1B).

This RAP has been prepared to establish a proposed remedy for impacted soil, soil vapor, and groundwater contamination within the site boundary in conjunction with the planned site development. The proposed remedy for soil and soil vapor includes removing underground storage tanks (USTs) and potentially petroleum-impacted soil, the installation of vapor barriers and sub-slab vapor mitigation systems, construction observation for correct RAP implementation, and using appropriate construction observation and health and safety measures during the planned construction, capping to prevent direct contact exposure, and notification to MDE prior to future excavation activities. The proposed remedy for groundwater includes the proper abandonment of groundwater monitoring wells, construction observation for correct RAP implementation, using appropriate construction observation and health and safety measures during the planned construction, and a deed notice to restrict groundwater use at the subject property. Groundwater

monitoring wells will not be abandoned until approval has been granted by the MDE and USEPA. The RAP has been prepared for MDE and USEPA submittal so that a Certificate of Completion (COC) may be obtained following the proposed RAP implementation.

Prior to and after the demolition of the existing on-site buildings, the following additional site evaluations will be performed and the results will be provided to the MDE VCP and USEPA:

- Geophysical evaluation and soil and groundwater sampling in the vicinity of the reported 650-gallon UST that stored oil containing PCBs;
- Additional soil sampling in areas where elevated lead and cadmium concentrations were previously identified;
- Additional evaluation of an area where elevated VOCs were previously identified; and
- Soil vapor sampling.

Work Plans will be provided to the MDE VCP and the USEPA prior to the commencement of each of the evaluations, and the results of the evaluations will be provided to the MDE VCP and the USEPA. Dependent on these results; source reduction, source removal, or active remedial measures may be necessary to achieve remedial goals. If additional remedial measures are needed, they will be addressed in a RAP Addendum.

Development of the subject property is planned to be performed in phases. As such, TRP-MCB 5601 Eastern LLC will likely request a COC for individual lots, groups of lots, and/or specific subdivided parcels as development activities are completed. TRP-MCB 5601 Eastern LLC understands that in order for a COC to be issued for individual lots, groups of lots, and/or specific subdivided parcels; additional VCP applications must be submitted and accepted for participation for each individual lot, groups of lots, and/or specific subdivided parcels. This RAP has been prepared to establish a proposed remedy in conjunction with the planned site development.

1.2 Limitations

This RAP was prepared by GTA for the sole and exclusive use of TRP-MCB 5601 Eastern, LLC. GTA acknowledges that this document is being submitted to the MDE VCP and USEPA

and will be part of the public record, and that the MDE VCP and USEPA are expected to use this report as part of their review process. However, use of this report by any third party is at their sole risk. GTA is not responsible for any claims, damages, or liabilities associated with third-party use.

2.0 GENERAL PROPERTY INFORMATION

2.1 Site Description

The subject property comprises approximately 19.97 acres of land located south of Eastern Avenue and east of South Umbra Street, in the eastern portion of the City of Baltimore, Maryland. The subject property contains several vacant industrial buildings, a vacant laboratory building, a vacant warehouse, asphalt parking lots, an inactive industrial landfill (herein identified as "Crystal Hill"), and grassed areas. A *Site Location Map* for the subject property is presented as *Figure 1,* and a *2009 Aerial Photograph* is included as *Figure 2*.

According to the records of the Maryland Department of Assessments and Taxation (MDAT), the subject property encompasses approximately 19.97 acres of land, and is identified on the City of Baltimore Tax Map 26, in Block 6694, as Lot 28. The MDAT records indicate that the subject property was acquired by TRP-MCB 5601 Eastern, LLC from Pemco Holding Corporation in 2014. The MDAT records identify the subject property at the address 5601 Eastern Avenue, with a "storage warehouse" that was constructed in 1950 and encompasses approximately 178,188 square feet. The MDAT records indicate that the land use for Parcel 28 is "industrial."

2.2 Proposed Development Affected by the RAP

Based on a review of the available plans and additional information provided by the Participant, GTA understands that the existing structures will be razed and the subject property will be redeveloped with a mixed-use development. An *Existing Conditions Plan* is attached as *Figure 3*. GTA understands that the development plans are subject to change. However, for the purposes of this RAP, GTA has assumed that the development will consist of a "Minimum Density Plan," which includes multi-story apartment buildings with retail at the street level, a hotel, parking garages, a single-story anchor retail tenant, and several other single-story retail buildings. A *Proposed Development Plan*, which is based on the "Minimum Density Plan," is presented as *Figure 4*. Detailed structural information for the buildings was not available at the time the RAP

was prepared. However, based on our experience with similar structures, GTA has made the following assumptions about the proposed structures.

Anticipated Building Summary

Structure	Description	Construction Type	Location
Mixed-Use Building(s)	Ground Level Retail with 4 to 5 levels of Apartments Above	Ground Level Podium below Concrete Transfer Slab with Wood or Light-Gauge Steel Framed Apartments	Western Portion of Site (Portions in Crystal Hill)
Hotel	5 to 6 levels, Slab-On-Grade	Wood-Framed or Light-Gauge Steel	Southern Portion of the Site (In Crystal Hill)
Parking garage	3 to 4 levels, Slab-On-Grade	Cast-in-Place or Precast Concrete	Western portion of the Site (In Crystal Hill)
Anchor Retail	1 Level, Slab-On-Grade	Steel Framed or Light Gauge	Eastern portion of the Site (Outside of Crystal Hill)
Small Retail	1 Level, Slab-On-Grade	Steel Framed, Light Gauge, or Wood-Framed	Eastern portion of the Site (Outside of Crystal Hill)

Note
The anticipated building summary is based on the "Minimum Density Plan," and GTA's experience with similar structures. The "Maximum Density Plan" is similar but includes two mixed-use buildings with parking garages in lieu of anchor retail and parking lots. These assumptions should be considered preliminary and subject to verification by the structural engineer.

The *Proposed Development Plan* indicates that five roadways are planned throughout the subject property. Two main roadways (referenced as N/S Street and Center Drive) will extend through the subject property, and three additional roads (referenced as East, South, and West Drive) will extend along the perimeter of the development area. Access to the subject property will be provided from three entrances extending south into the site from Eastern Avenue. In addition to the roadways, paved parking lots are planned in the northeastern and southwestern portions of the subject property. Additional improvements include a retaining wall, utilities, and storm water management (SWM) devices. A retaining wall will be constructed in the vicinity of an existing slope on the northeastern portion of the subject property and will likely approach 20 to 30 feet in height to support a cut slope at the property line. GTA understands that the SWM devices

may consist of above-grade Environmental Site Design (ESD) facilities or underground sand filters, or a combination of both. Specific details regarding the ESD facilities were not available at the time this RAP was prepared.

Detailed grading plans were not available at the time of the preparation of this report. However, the available conceptual plans include conceptual grading schemes. Based on a review of these plans, cuts and fills predominantly on the order of two to five feet will be required to establish the mass grades. However, deeper excavations (11 to 19 feet) will be required on the existing slope in the eastern portion of the subject property.

Once final development plans, inclusive of grading and foundation plans, are available these documents will be submitted to the MDE VCP and appropriate RAP addendums will be prepared and submitted for approval.

2.3 Topography

The topographic information on the 7.5-minute USGS Topographic Quadrangle Map (Baltimore East, MD) for the site vicinity indicates that the ground surface elevations on the site range from approximately 120 feet above Mean Sea Level (MSL) on the northeastern portion of the subject property, to approximately 60 feet above MSL on the southernmost portion of the subject property. A topographic knoll is located on the northeastern portion of the subject property, and the subject property slopes downward to the southwest, toward southerly flowing Gorsuch Creek, which is located southwest of the subject property. Surficial drainage in the site vicinity is collected by Gorsuch Creek, and is directed toward the south and southwest. A *Topographic Map* for the site and vicinity, based on the USGS Map, is included as *Figure 5*.

2.4 Soils

According to the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service Web Soil Survey (reviewed on March 31, 2014), the site is underlain by the Sunnyside-Urban land complex (36UB), Udorthents loam (3UB), and the Urban land-Beltsville-Keyport complex (3UB).

Geotechnical explorations performed on the subject property encountered a subsurface profile that generally consisted of existing fills underlain by native silts/clays with interbedded layers of sand, transitioning to more granular and non-plastic soils. As anticipated, the existing fills were significantly greater in the vicinity of Crystal Hill. The approximate extents of Crystal Hill, based on prior explorations, are depicted on *Figures 6* through *8*. Descriptions of the subsurface conditions encountered within the vicinity of Crystal Hill and on the remainder of the subject property during prior geotechnical evaluations are presented below.

Crystal Hill

The explorations performed in Crystal Hill encountered variable fills underlain by native Coastal Plains Soils. Explorations performed by others at the subject property indicated that a clay cap is present in the landfill area. However, soils encountered near the existing ground surface in GTA's recent explorations consisted of a variable mixture of sand, clay, and silt with varying amounts of debris. A distinctive clay cap was not evident in a number of the explorations. Where encountered, the fine-grained clayey soils were 2 to 6 feet thick.

The existing fills encountered below ground surface (bgs) consisted of a heterogeneous mixture of sand, silt, and clay with varying amounts of gravel, concrete and brick fragments, wood pieces, and industrial processed solid waste material (e.g. frit, frit waste, ceramics, etc.). Significant amounts of rubble and debris, as indicated by hard drilling, and a lack of auger cuttings, were encountered in several of the explorations performed within Crystal Hill. The observed fills extend to depths of 12 to 37 feet bgs.

Areas Outside of Crystal Hill

The explorations performed in the remaining areas of the site encountered a limited thickness of existing fills at the ground surface, underlain by silts and clays transitioning to clean granular soils. The existing fills consisted of silty and clayey sands with varying amounts of gravel, clay, and foreign debris (frit waste, concrete and brick fragments, etc.). Where encountered, the existing fills were typically 2 to 5 feet thick.

2.5 Geology and Hydrology

According to the *Geologic Map of Maryland* (1968) and the *Geologic Map of the Baltimore East Quadrangle* (1979), published by the Maryland Geologic Survey, the site is within the Coastal Plain Physiographic Province of the Lower Cretaceous Age. The Coastal Plain is characterized by undifferentiated and interlayered sedimentary deposits derived from eroded and transported rock formations to the north and west. Coastal Plain sediments were deposited in a marine and alluvial environment during periods of fluctuating sea levels. More specifically, the site is shown to be underlain by the Patapsco Formation and Artificial Fills. These formations are described in further detail below.

The southwestern portion of the site is mapped within Artificial Fills. These materials are described as a heterogeneous mixture of materials such as rock, unconsolidated sediment, slag, refuse, and dredge spoil. The central and northern portions of the site are mapped within the clay facies of the Patapsco Formation. The clay facies consist of "buff, red-yellow, and brown mottled kaolinitic clays with variable amounts of quartz sand and silt, present as pods and interbeds throughout the clay." The northeastern portion of the site is underlain by the sand facies of the Patapsco Formation. These soils consist of "well-sorted medium to fine grained quartz sand with locally abundant quartz gravel and clay clasts." Iron-cementing is common in this formation typically at the sand-clay boundaries.

Hydrologically, the Coastal Plain is underlain by both unconfined and confined aquifers of unconsolidated sediments, which overlie consolidated bedrock and dip toward the southeast. Groundwater storage and movement are functions of the primary porosity of the sediments. Larger storage is provided by gravel and sand, with little to no storage provided by clay. Near-surface, unconfined aquifers typically consist of sediments of higher permeability and are recharged locally, primarily through precipitation that permeates through the unsaturated zone into the aquifer. The water table in unconfined aquifers is therefore highly variable, fluctuating with the seasons and with rates of precipitation. Variations in the groundwater surface and flow generally reflect the topography and relative locations of surface water features. Intermittent confining layers can locally alter the water table conditions. The deeper, confined aquifers are bound by

confining layers above and below, creating an artesian system. Confined aquifers are recharged in areas where the formation crops out, generally in more remote areas to the west.

The groundwater flow direction in the site vicinity is assumed to mirror surficial topography. Accordingly, the groundwater flow direction is assumed to be generally toward the southwest in the immediate site vicinity. However, prior evaluations indicated the shallow water table occurs more than 30 feet below ground surface, and groundwater flow direction was toward the south.

2.6 Background

The subject property has been the subject of substantial prior investigation. Documentation provided to or prepared by GTA includes a Site Characterization and Risk Assessment report, a VCP Application, draft RAP, Resource Conservation and Recovery Act (RCRA) Site Inspection reports, a USEPA Facility Lead Agreement (FLA), Phase I Environmental Site Assessments (ESAs), Site Characterization Reports, and various correspondence including letters and emails. Documents typically pertained to either the general site assessment or a closed landfill, but some overlap of documents occurred. These documents have been provided to the Participant, the MDE VCP, and the USEPA under separate cover. Please refer to these documents for details not summarized below.

2.6.1 General

Historically, the Porcelain Enamel Manufacturing Corporation (PEMCO) facility began operation in the early 20th Century, prior to which the subject property was vacant land. The facility produced specialty glass (frit), ceramic, enamels, and inorganic pigments until operations ceased in September 2007, and the plant was decommissioned in December 2007. Thirteen buildings and several support structures are present on the subject property. One structure is located on the northeastern portion of the subject property, and the remaining structures are clustered on the northern and central portion of the site, in a manufacturing complex. The main manufacturing building housed smelting furnaces, where raw materials were heated until molten and then cooled and broken into small pieces (the frit). Weighing and mixing of raw materials occurred in a color and

mixing building, and raw materials were received at the facility via truck and rail car. Finished product was stored in an on-site warehouse building or at an off-site, leased, warehouse prior to shipment. A control laboratory monitored production quality, and a separate research laboratory provided technical assistance. Two railroad spurs historically served the facility, but have since been removed. An *Existing Conditions Plan* is attached as *Figure 3*.

2.6.2 Environmental

Waste Management

An on-site wastewater treatment plant operated at the subject property until 2002. This facility, located southeast of the Color and Mixing building, treated facility discharge prior to disposal to a settling pond located adjacently southeast of the subject property until the early 1960s. In the mid-1960s, the property containing the settling pond was sold to the Exxon Company for use as part of a large tank farm, and the discharge was routed to local stormwater systems. The treatment plant operated under National Pollutant Discharge Elimination System discharge permit 97-DP-0317 until April 1, 2002. After that date, the facility discharge was routed through the treatment plant's settling basin and then to the municipal sanitary sewer system.

In addition to regulated materials used in the manufacturing and maintenance processes, the facility historically generated waste in the form of off-specification product, recovered dust, and material settled from process discharge water and surface runoff. Until approximately 1979, off-specification product, smelter refractories, packaging materials, and general facility trash was placed in an approximately six-acre industrial landfill (known as Crystal Hill) on the southern and western portions of the subject property.

Several assessments of Crystal Hill have been performed, and these evaluations concluded that while the landfill cover needs some maintenance, there is little or no migration of waste material from Crystal Hill under current conditions. In a letter dated January 5, 2005, the MDE stated that "the Department believes the landfill is secure at this time and, with the completion of the proposed corrective actions, should not adversely

impact human health or the environment." In addition, a *RCRA Corrective Action Indicator Determination*, dated April 18, 2013, and prepared by USEPA, indicated that the "Migration of Contaminated Groundwater Under Control" has been verified.

ASTs and USTs

Two propane above-ground storage tanks (ASTs), two oxygen ASTs, and one "oil-containing" AST were historically present on the subject property. These ASTs are not currently present on the subject property, and GTA has not observed obvious indications of leaks or spills in the former locations of the ASTs.

The subject property has also historically contained nine USTs, which ranged in capacity from 500 gallons to 12,000 gallons and were primarily used to store diesel fuel, #2 fuel oil, and gasoline. MDE documentation indicate three 12,000-gallon #2 fuel oil USTs and two 500-gallon diesel USTs were abandoned-in-place; however, no closure documentation was available for these USTs since the abandonment dates preceded MDE UST regulations. In addition, one 650-gallon UST that reportedly stored oil containing polychlorinated biphenyls (PCBs) was also reportedly abandoned-in-place on the northern portion of the subject property. Prior evaluations identify this UST adjacently west or south of a former control building; however, the exact location of the UST is currently unknown. According to a prior report, the MDE stated that this UST was not regulated. The approximate locations of the abandoned USTs are presented on *Figure 3*. A 500-gallon gasoline and 1,000-gallon #2 fuel oil UST were removed from the central portion of the subject property; however, MDE closure documentation was only available for one of the two removed USTs. A third #2 fuel oil UST was also reportedly removed from the northern portion of the subject property; however, information regarding this UST removal is not available.

MDE and USEPA Involvement

Under PEMCO ownership, PEMCO participated in the USEPA's Facility Lead Program (FLP) to assess environmental conditions on the subject property. PEMCO initiated its participation in the FLP with submission of a Site Characterization Work Plan

in December 2006, which was approved by the USEPA in January 2007. A VCP application was submitted to the MDE in February 2007 by a different Applicant, a Site Characterization and Risk Assessment Report was finalized in May 2013, and a RAP was submitted to the MDE VCP in September 2013. The site characterization activities and RAP were based on a proposed commercial use, and the RAP and VCP application has since been withdrawn.

Prior to purchase of the property, TRP-MCB 5601 Eastern Avenue LLC was granted Inculpable Person status by the MDE VCP on April 2, 2014. TRP-MCB 5601 Eastern Avenue LLC purchased the property on April 14, 2014, and submitted an application for enrollment into the VCP on September 29, 2014.

Supplemental Site Characterization

The USEPA and the MDE VCP requested that supplemental site characterization be performed at the subject property prior to acceptance into the VCP. GTA submitted a *Work Plan*, dated August 8, 2014, revised October 10, 2014, to the USEPA and the MDE VCP, and the *Work Plan* was approved on October 14, 2014. The *Work Plan* included a *Quality Assurance Project Plan* (*QAPP*), dated August 8, 2014.

Proposed supplemental site characterization activities included soil, groundwater, soil vapor, and methane sampling and field screening. Soil sampling identified elevated concentrations of metals, volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) that primarily consisted of polycyclic aromatic hydrocarbons (PAHs). Elevated VOCs in particular were identified primarily in the vicinity of Crystal Hill and south of the manufacturing complex (herein identified as the VOC-impacted area). Groundwater sampling identified elevated concentrations of VOCs, SVOCs, and metals, with the highest concentrations in the area of Crystal Hill, particularly near the central portion. Methane was detected in the central portion of Crystal Hill as high as 61.7% by volume.

At the time of the supplemental site characterization activities, GTA personnel attempted to install 11 sub-slab and five subsurface soil vapor probes at the subject property. At the sub-slab soil vapor probe locations, a perched water layer was encountered immediately below the concrete slabs. Additional wet soils were also encountered at the subsurface soil vapor probe locations. GTA revisited these locations on several occasions, and the perched water or wet soil conditions did not improve with the passage of time. Soils were wet enough to cause concern with the effectiveness of soil vapor sampling, and this additional soil vapor sampling was proposed as part of this RAP (see *Section 5.1.5*).

The 2013 Site Characterization and Risk Assessment and 2014 Supplemental Site Characterization soil, groundwater, soil vapor, and methane sampling locations are referenced on the following Figures:

- Soil Sample Location Plan *(Figures 6A* and *6B);*
- Groundwater Sample Location Plan *(Figures 7A* and *7B);*
- Soil Vapor Sample Location Plan *(Figures 8A* and *8B); and*
- Methane Sample Location Plan *(Figure 9).*

The approximate extents of the VOC-impacted area and methane detections are indicated on the above referenced Figures.

The soil, groundwater, soil vapor, and methane sampling data collected during the 2013 Site Characterization and Risk Assessment and 2014 Supplemental Site Characterization are summarized on the following Tables:

- Characterization Sampling Key *(Table 1);*
- VOC Soil Characterization Summary *(Table 2);*
- SVOC and PCB Soil Characterization Summary *(Table 3);*
- Metals Soil Characterization Summary *(Table 4);*
- VOC and SVOC Groundwater Characterization Summary *(Table 5);*
- Metals Groundwater Characterization Summary *(Table 6);*
- Soil Vapor Characterization Summary *(Table 7); and*
- Methane Field Screening Summary *(Table 8);*

It should be noted that additional sampling data reported in the historical reports was reviewed for the subject property. However, the above referenced Figures and Tables only summarize the sampling data from approximately the last ten years. Please refer to

the previously submitted documents for sampling locations and data not summarized in the above referenced Figures and Tables.

3.0 ADDITIONAL SITE EVALUATION

A summary of proposed additional site evaluations is presented in *Sections 3.1* through *3.4* below. Prior to performing these evaluations, GTA will submit formalized Work Plans for the MDE VCP and the USEPA for comment and approval. Documentation of these evaluations will be submitted to MDE VCP and the USEPA within separate reports for each evaluation, monthly RAP Implementation Progress Reports, and RAP Completion Reports.

3.1 PCB UST Evaluation

A prior environmental evaluation indicated that "A 650-gallon UST containing oil with 75 parts per million (ppm) of PCBs was abandoned in place in 1998. This tank was located near the locked transformer substation located adjacent to the control lab." Based on GTA's reviews of historical documentation, transformers were previously located west and south of the control laboratory. Therefore, the most likely location for this former UST would have been either west or south of the control laboratory.

GTA proposes to use geophysical methods to survey the areas south and west of the control laboratory for the suspect UST. The area of the proposed geophysical survey is depicted on the attached *Existing Conditions Plan* (*Figure 3*). GTA proposes to perform the following:

- Mobilize geophysics personnel and equipment to the subject property.
- Perform an electromagnetic survey utilizing a Geonics EM-31 (EM-31) and a magnetic survey using a GSM-19G magnetometer (MAG) to perform a survey of the accessible areas south and west of the control laboratory. The survey will consist of traverses across these locations to identify significant or large magnetic anomalies indicative of potential UST in the opinion of the on-site geophysicist. Areas of significant cultural interference will not be surveyed. The anomalies will be marked by paint.
- Perform a ground penetrating radar (GPR) survey of locations with identified significant magnetic anomalies indicative of a potential UST. If possible, the approximate size and orientation of suspected UST will be marked and approximately located on a site map.

The results of this survey will be used to identify target areas for additional evaluation. If an anomaly is identified during the geophysical evaluation that is indicative of a suspect UST, a soil and groundwater evaluation will be performed around the suspected UST location and an exploratory test pit will be performed at the time of the proposed UST removals (see *Section 6.2.2*). In the event that a UST is identified, the tank will be removed in accordance to the parameters identified in *Section 6.2.2*. The soil and groundwater evaluation will be performed in advance of the UST removal. In the event that an anomalous area is not identified that is indicative of a UST, a soil and groundwater evaluation will be performed on the western and southern sides of the control laboratory.

3.2 Lead and Cadmium Evaluation

Recent surface and subsurface soil sampling and analysis identified elevated concentrations of lead and cadmium on portions of the subject property. Elevated lead concentrations ranged from 470 to 22,000 mg/kg, while elevated cadmium concentrations ranged from 150 to 2,300 mg/kg. These elevated lead and cadmium concentrations were generally identified in Crystal Hill and east of the building that previously contained the Color Mixing Department.

GTA proposes to further evaluate three locations where the highest lead and cadmium concentrations were identified, GTA-SB-11, GTA-SB-26, and GTA-SB-41 (GTA-SB-DUP 4). These sampling locations are identified on the *Soil Sample Location Plan* (*Figures 6A* and *6B*). GTA will collect discrete surface and subsurface soil samples (0-2 feet, 4-5 feet, and 8-9 feet) immediately adjacent to the prior GTA-SB-11, GTA-SB-26, and GTA-SB-41 sampling locations. GTA will then offset five feet in each cardinal direction from GTA-SB-11, GTA-SB-26, and GTA-SB-41 to collect discrete surface and subsurface soil samples (0-2 feet, 4-5 feet, and 8-9 feet). A total of 45 samples will be collected for analysis of lead (GTA-SB-11 and offsets) or lead and cadmium (GTA-SB-26, GTA-SB-41, and offsets).

Upon receipt of the sample analytical results, the samples containing the three highest cadmium and/or lead concentrations from each sample location/offset groupings will be submitted for Toxic Characteristic Leaching Procedure (TCLP) cadmium and/or lead analysis.

3.3 VOC-Impacted Area Evaluation

GTA proposes to evaluate the VOC-impacted area for source area remediation. The evaluation will consist of soil and soil vapor sample collection and analysis, and soil vapor extraction pilot tests. Soil and soil vapor samples will be collected at various locations and, depending upon observations made in the field, at various depths in the VOC impacted area. The soil and soil vapor samples will be analyzed for VOCs.

Based on the results of the soil and soil vapor sample analyses, GTA will place one or more soil vapor extraction points in the VOC-impacted area. In addition, a series of soil vapor monitoring points will also be installed in the area. A vacuum extraction system, generally consisting of a regenerative blower, moisture trap, particulate filter, dilution valve, and muffler system, will be connected to the soil vapor extraction point. During system operation, VOC concentrations in the extracted soil vapor will be monitored via field screening and through laboratory testing. Vacuum pressures in the soil vapor monitoring points will be monitored to evaluate the system radius of influence.

Data collected during the pilot test will be used to evaluate system performance, select an appropriately sized vacuum extraction system, evaluate the need for an air discharge permit, and estimate source area removal timeframes and overall mass reduction. Active groundwater monitoring wells will also be sampled prior to and after the pilot test.

3.4 Soil Vapor Evaluation

Upon completion of building demolition and rough grading, GTA will use a Direct-Push Technology (DPT) rig (e.g. Geoprobe) to install 16 soil vapor probes (GTA-SV1 through GTA-SV16) on the subject property. The approximate locations of these soil vapor probes (SVPs) are depicted on the attached *Figures 8A* and *8B*. Planned exploration locations will be selected and field located by GTA personnel using a handheld global positioning system (GPS) unit.

The soil vapor probes will then be installed using the following methodology.

- Use a DPT rig to advance a soil boring (depth will be determined upon completion of building demolition and rough grading);

- Place approximately six inches of clean, coarse sand (No. 2 or similar) in the bottom of the borehole;
- Insert an implant on laboratory cleaned, ¼-inch outer diameter low-density Nylaflow tubing, to allow the passage of air but exclude soil and sand particles;
- Lower a length of tubing equipped with the implant into the borehole;
- Backfill the annular space around the implant with clean, coarse sand (No. 2 or similar) to four feet bgs;
- Place 1 foot of granular sodium bentonite (Enviroplug No. 16 or similar) atop the sand;
- Place 3 feet of granular sodium bentonite (⅜-inch Enviroplug medium or similar) that is hydrated with clean, potable water to grade; and
- Allow the soil vapor probes to equilibrate for at least 24 hours.

Soil will be screened with a PID during the borings of the soil vapor points. If elevated PID readings are observed in the borings, a soil sample will be collected for VOC analysis. Prior to sampling the SVPs, GTA will purge each SVP of at least three air volumes, using a peristaltic pump or portable photoionization detector. Each SVP will then be connected to a laboratory certified clean 6 liter Summa canister equipped with a 24-hour regulator, and the Summa canisters will be activated for a 24-hour period. Immediately following the connection of the Summa canister to the SVP, each sampling location will be leak tested. Shortly before the completion of the 24-hour sampling period, the canisters will be sealed and submitted for laboratory analysis of VOCs.

4.0 EXPOSURE ASSESSMENT

4.1 Contaminants of Potential Concern

VOCs, SVOCs (primarily PAHs), and metals have been detected in on-site soils above the USEPA Region 3 Residential Soil Regional Screening Levels (RSLs) and the MDE's Residential Cleanup Standard (RCS). In addition, several USTs have been abandoned-in-place and the potential for TPH DRO- and TPH GRO-impacted soil above the MDE's RCS exists. VOCs, SVOCs, and metals have been detected in groundwater beneath the subject property above the USEPA Region 3 Tapwater RSLs. Soil vapor sampling has identified VOCs above the MDE's Tier 1 Residential Soil Vapor Screening Values. These non-carcinogenic and carcinogenic contaminants are herein collectively identified as contaminants of potential concern (COPC), and are summarized in more detail below. As discussed in *Section 3.0*, additional environmental evaluations of the subject property are proposed. In the event that the additional evaluations

identify additional COPCs, a RAP Addendum will be submitted to MDE VCP for review and approval with the additional COPCs.

4.1.1 Surface Soil

SVOCs (specifically benzo(a)pyrene, benzo(a)antharacene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and hexachloroethane) and metals (antimony, arsenic, cobalt, iron, lead, and sodium) and are the COPCs that have been detected in on-site surface soils (0-2 feet bgs) above their USEPA RSLs or the MDE's RCS. In addition, Total Petroleum Hydrocarbon (TPH) Diesel Range Organics (DRO) and TPH Gasoline Range Organics (GRO) may be COPCs present in the on-site surface soils.

4.1.2 Subsurface Soil

VOCs (specifically tetrachloroethene [PCE], trichloroethene [TCE] , vinyl chloride, cis-1,2-dichloroethene, 1,1,2,2-tetrachloroethane,); SVOCs (specifically benzo(a)antharacene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and hexachloroethane), and metals (antimony, arsenic, cadmium, cobalt, iron, lead, and sodium) are the COPCs that have been detected in on-site subsurface soils (greater than 2 feet bgs) above their USEPA RSLs and the MDE's RCS. In addition, TPH DRO and TPH GRO may be COPCs in the subsurface soils.

4.1.3 Groundwater

VOCs (specifically benzene, bromodichloromethane, carbon tetrachloride, chloroform, cis-1,2-dichloroethene, PCE, TCE, vinyl chloride, cis-1,2-dichloroethene, 1,2-dichloroethane, naphthalene, and 1,1,2,2-tetrachloroethane); SVOCs (specifically bis(2-Ethylhexyl)phthalate, and hexachloroethane), and metals (cobalt, lead, and manganese) are the COPCs that have been detected in groundwater beneath the subject property above their USEPA Tapwater RSLs. In addition, TPH DRO and TPH GRO may be COPCs in the groundwater.

4.1.4 Soil Vapor

VOCs (specifically acrolein, benzene, carbon disulfide, chloroform, 1,2-dibromoethane, methylene chloride, 1,1,2,2-tetrachloroethane, PCE, 1,1,2-trichloroethane, TCE, and vinyl chloride) are the COPCs that have been detected in soil vapor beneath the subject property above their MDE Tier 1 Values. Methane has also been detected in the subsurface matrix beneath the subject property and is a COPC.

4.2 Potential Exposure Populations and Pathways

The subject property contains several vacant industrial buildings, a vacant laboratory building, a vacant warehouse, asphalt parking lots, Crystal Hill, and grassed and wooded areas. Proposed redevelopment plans include the construction of a mixed-use development. The planned use of the subject property includes "Tier 1B (Restricted Residential)" as defined by the *MDE Voluntary Cleanup Program Guidance Document*.

A site-specific Human Health Risk Assessment for future occupants has not been prepared for this site because the proposed site development activities will eliminate the identified exposure pathways. Potential risks to construction workers may exist through direct contact/ingestion of impacted soil and through inhalation of dust, VOCs, and methane. The following exposure pathways have been identified and the summarized remedies are proposed.

Potential Exposed Populations

Media	Exposure Pathway	Potentially Exposed Population	Contaminants
Surface Soil	Dermal Exposure	Adult, Youth, Children, Construction Worker	SVOCs, metals, and possibly TPH DRO and GRO
	Ingestion	Adult, Youth, Children, Construction Worker	
	Inhalation of Volatiles and Fugitive Dust	Adult, Youth, Children, Construction Worker	
Subsurface Soil	Dermal Exposure	Adult, Youth, Children, Construction Worker	VOCs, SVOCs, metals, and possibly TPH DRO and GRO
	Ingestion	Adult, Youth, Children, Construction Worker	
	Inhalation of Volatiles and Fugitive Dust	Adult, Youth, Children, Construction Worker	
Groundwater	Dermal Exposure	Construction Worker	VOCs, SVOCs, metals, and possibly TPH DRO and GRO
	Incidental Ingestion	None	
	Inhalation	None	

Media	Exposure Pathway	Potentially Exposed Population	Contaminants
Soil Vapor	Dermal Exposure	None	VOCs, methane
	Incidental Ingestion	None	
	Inhalation	Adult, Youth, Children, Construction Worker	

4.2.1 Direct Contact from Soil Contamination

Soil has been impacted by COPCs above their USEPA RSLs at the subject property. These COPCs have been detected at depths ranging from the ground surface to approximately 37 feet bgs.

A potential exists for site construction workers to come into contact with the COPCs. This contact can be appropriately managed through implementation of a site-specific Health and Safety Plan (HASP).

Based on current development plans, soil will be removed to enable capping (e.g., clean fill, asphalt, or concrete, etc.) across the subject property. This will act as a limiting alternative, which will eliminate the direct contact exposure risk to construction workers and future adult, youth, and child populations. In addition, MDE-certified clean fill material is expected to be imported to the site to adjust grade or for capping prior to final construction. Excavation for installation of subsurface utilities and foundation systems may encounter impacted soil, which will be re-used on site beneath the cap or disposed off-site. These limitations will be recorded as a deed restriction in the land records for the subject property. The proposed remedies for the soil contamination (HASP, capping, soil removal, institutional, and engineering controls) are protective of human health because they are designed to prevent exposure to contamination. Under the current conditions, construction worker and future adult, youth, and child populations at the subject property could be exposed to the COPCs; however, once this RAP is complete and the HASP is followed, the above-referenced populations will be protected. These proposed remedial strategies are further outlined in *Sections 6.1* and *6.2* of this RAP.

4.2.2 Inhalation of Fugitive Dust, VOC Vapors, and Methane

During future construction activities, it is possible for soil impacted by COPCs to become airborne. There is a potential for site construction workers to breathe this fugitive dust. The inhalation of fugitive dust will be limited by implementing a site-specific HASP and construction practices that prevent dust generation (e.g., implementation of dust control methodologies). In addition, there is a potential for site construction workers to encounter VOC vapors and methane during on-site intrusive activities. The inhalation/collection of VOC vapors and methane will be limited by implementing a site-specific HASP and field screening utilizing appropriate field instrumentation to monitor VOC vapors and methane (e.g. PID and LEL meters).

Capping (e.g., soil, asphalt, or concrete) across the subject property will act as a limiting alternative, which will eliminate future exposure to inhalation of fugitive dust, VOC vapors, and methane to future adult, youth, and child populations. The proposed remedy for inhalation of fugitive dust, VOC vapors, and methane (HASP, dust control methodologies, field screening) is protective of human health since exposure to contamination above regulatory limits will be prevented. Specific details associated with the air monitoring requirements and dust control during construction is further described in *Section 10.3* of this RAP.

4.2.3 Exposure to Groundwater Contamination

Groundwater has been impacted by COPCs above their USEPA Tapwater RSLs at the subject property. Groundwater at the subject property and the surrounding area is not currently used. Groundwater monitoring wells are located on the subject property and are proposed to be abandoned as part of this RAP. There is a potential for site construction workers to come into contact with the groundwater during well abandonment or during construction activities. This contact will be limited by implementing a site-specific HASP. Abandonment of the groundwater monitoring wells will eliminate the direct contact exposure risk to potentially exposed populations. However, groundwater monitoring wells will not be abandoned until approval has been granted by the MDE and USEPA.

Because identified groundwater depths ranged from approximately 16 to 40 feet bgs, it is not likely that site development activities will encounter groundwater. However, as discussed below perched water conditions have been identified on portions of the subject property. Proposed buildings will be connected to and utilize municipal water and sewer services. GTA proposes the proper abandonment of the existing groundwater monitoring wells and a deed restriction prohibiting the use of groundwater at the site. Based on the implementation of the proposed remedy, a direct contact exposure pathway will not exist between the potentially exposed populations and potential groundwater contamination. The proposed remedy for the impacted groundwater is protective of human health, because contact with groundwater will be restricted. These proposed remedial strategies are further outlined in *Section 6.1.4* of this RAP.

As discussed in *Section 2.6.2*, a perched water layer was recently encountered immediately below the concrete slabs of the existing on-site structures. Many of these structures are currently in a state of disrepair, and the perched water layer is likely associated with rain water, leaking water pipes, and intrusion water beneath the building slabs. The existence of a perched water layer will be re-evaluated once building demolition activities are complete. If a perched water layer remains, a RAP Addendum that addresses the perched water condition will be submitted to MDE VCP and USEPA for review and approval.

4.2.4 Vapor Intrusion to Indoor Air

Based on development plans available at the time this RAP was prepared, cuts and fills will be required to establish the mass grades on the subject property. The majority of the excavated materials from areas of cuts will be utilized on portions of the subject property requiring fill. In addition, MDE-certified clean fill soil (see *Section 6.1.3*) is expected to be required for site grading. The proposed buildings on the subject property will be constructed with a minimum 4-inch thick concrete floor slab. This construction is considered part of the capping remedy that is proposed for the subject property.

It is possible for VOC-impacted soil to theoretically off-gas beneath the proposed building, creating vapors that can migrate upward through the soil, and methane may migrate through the subsurface soils to areas beneath buildings, potentially entering into the buildings in sufficient concentrations to create a human health risk and/or a physical hazard (rapid combustion). Therefore, vapor mitigation systems are proposed to minimize the infiltration of VOCs and methane into the buildings.

A vapor mitigation system will be installed beneath the concrete foundations of the proposed on-site buildings. The proposed remedy for indoor air exposure (a vapor mitigation system) is protective of human health, because exposure to contamination above regulatory limits and/or accumulation of potentially combustible concentrations of methane will be prevented. Specific details associated with the system are further described in *Section 6.1.5* of this RAP.

4.2.5 Migration of Contamination to Ecological Receptors

Typical ecological receptors to contamination include wetlands and surface water bodies. Aside from a small intermittent stream that daylights from a stormdrain and enters another stormdrain off-site, the site does not contain surface water bodies. This stream is located in a forested buffer area that is not currently proposed to be disturbed during development activities. Proposed sampling of the forested buffer area is presented in *Section 6.2.4*. In addition, silt fencing will be placed north of the forested buffer area to prevent surface run-off from construction related activities. Therefore, the primary migration route of on-site contaminants to ecological receptors is through wind-borne dust and surface water runoff. Dust will be controlled during site development using standard construction practices and will be monitored as discussed in *Section 10.3*. A forested buffer area, which is not currently proposed for development, separates the stream and proposed development areas. Sediment erosion controls will be installed downgradient of the proposed redial areas to reduce potential for on-site contamination to migrate off-site. Once the RAP has been implemented, the migration pathway for contaminants will no longer exist. Based on this information, there does not appear to be a significant risk of migration of contamination to ecological receptors.

5.0 CLEANUP CRITERIA

Presented below are the soil, groundwater, and soil vapor cleanup criteria selected for the subject property, and are based upon current regulatory requirements that will guide these proposed remedial activities. The USEPA Region 3 Residential Soil and Tapwater RSLs for VOCs, SVOCs, and metals are referenced in the USEPA Region 3 *Regional Screening Level Summary Table (TR=10^{-6}, HQ=1)*; June 2015. The MDE RCS and GCS concentrations for TPH DRO and TPH GRO are referenced in the *MDE Cleanup Standards for Soil and Groundwater: Interim Final Guidance (Update No. 2.1);* June 2008. Per MDE guidance, the MDE Tier 1 soil vapor concentrations were calculated by the RSL for Residential Air referenced in the USEPA Region 3 *Regional Screening Level Summary Table*, adjusting from TR = 10^{-6} to TR = 10^{-5}, and multiplying by 20 to account for the attenuation from soil vapor to indoor air. The applicable cleanup criteria and known maximum detected concentrations for COPCs at the subject property are summarized below.

Applicable Cleanup Criteria

Analyte	Known Maximum Concentration In On-Site Soils	Cleanup Criteria
SVOCs		
Benzo(a)anthracene	**5.8 mg/kg**	0.16 mg/kg (USEPA RSL)
Benzo(a)pyrene	**5 mg/kg**	0.016 mg/kg (USEPA RSL)
Benzo(b)fluoranthene	**4.4 mg/kg**	1.6 mg/kg (USEPA RSL)
Benzo(k)fluoranthene	**4.6 mg/kg**	1.6 mg/kg (USEPA RSL)
Dibenz(a,h)anthracene	**1.1 mg/kg**	0.016 mg/kg (USEPA RSL)
Indeno(1,2,3-cd)pyrene	**2.6 mg/kg**	0.16 mg/kg (USEPA RSL)
Hexachloroethane	**2.6 mg/kg**	1.8 mg/kg (USEPA RSL)
VOCs		
cis-1,2-Dichloroethene	**330 mg/kg**	160 mg/kg (USEPA RSL)
Tetrachloroethane, 1,1,2,2-	**5,200 mg/kg**	0.6 mg/kg (USEPA RSL)
Tetrachloroethene	**6,300 mg/kg**	24 mg/kg (USEPA RSL)
Trichloroethene	**280 mg/kg**	0.94 mg/kg (USEPA RSL)
Vinyl Chloride	**7.2 mg/kg**	0.059 mg/kg (USEPA RSL)
Total Petroleum Hydrocarbons		
TPH-GRO	**--**	230 mg/kg (MDE RCS)
TPH-DRO	**--**	230 mg/kg (MDE RCS)
Total Metals		
Antimony	**387 mg/kg**	31 mg/kg (USEPA RSL)
Arsenic	**74 mg/kg**	6 mg/kg (*)
Cadmium	**2,300 mg/kg**	71 mg/kg (USEPA RSL)
Cobalt	**6,200 mg/kg**	23 mg/kg (USEPA RSL)
Lead	**22,000 mg/kg**	400 mg/kg (MDE RCS)
Iron	**110,000 mg/kg**	55,000 mg/kg (USEPA RSL)

Sodium	**4,600 mg/kg**	2,300 mg/kg (USEPA RSL)
Analyte	**Known Maximum Concentration In On-Site Groundwater**	**Cleanup Criteria**
SVOCs		
Bis(2-Ethylhexyl)phthalate	**9.5 ug/L**	5.6 ug/L(USEPA RSL)
Hexachloroethane	**670 ug/L**	0.33 ug/L(USEPA RSL)
VOCs		
Benzene	**4.0 ug/L**	0.45 ug/L (USEPA RSL)
Bromodichloromethane	**3.0 ug/L**	0.13 ug/L (USEPA RSL)
Carbon tetrachloride	**290 ug/L**	0.45 ug/L (USEPA RSL)
Chloroform	**190 ug/L**	0.22 ug/L (USEPA RSL)
cis-1,2-Dichloroethene	**12,000 ug/L**	36 ug/L (USEPA RSL)
Dichloroethane, 1,2-	**2.6 ug/L**	0.17 ug/L (USEPA RSL)
Naphthalene	**29 ug/L**	0.17 ug/L (USEPA RSL)
Tetrachloroethane, 1,1,2,2-	**1.5 ug/L**	0.076 ug/L (USEPA RSL)
Tetrachloroethene	**28,000 ug/L**	11 ug/L (USEPA RSL)
Trichloroethene	**3,400 ug/L**	0.49 ug/L (USEPA RSL)
Vinyl chloride	**38 ug/L**	0.019 ug/L (USEPA RSL)
Total Petroleum Hydrocarbons		
TPH-GRO	**--**	47 ug/L (MDE GCS)
TPH-DRO	**--**	47 ug/L (MDE GCS)
Total Metals		
Cobalt	**91 ug/L**	6 ug/L (USEPA RSL)
Lead	**60 ug/L**	15 ug/L (USEPA RSL)
Manganese	**1,400 ug/L**	430 ug/L (USEPA RSL)
Analyte	**Known Maximum Concentration In On-Site Soil Vapor**	**Cleanup Criteria****
Acrolein	**5.3 µg/m3**	0.42 µg/m3 (MDE Tier 1)
Benzene	**696 µg/m3**	72 µg/m3 (MDE Tier 1)
Carbon disulfide	**18,000 µg/m3**	14,600 µg/m3 (MDE Tier 1)
Chloroform	**160,000 µg/m3**	24 µg/m3 (MDE Tier 1)
Dibromoethane, 1,2-	**28 µg/m3**	0.94 µg/m3 (MDE Tier 1)
Methylene chloride	**17,000 µg/m3**	12,600 µg/m3 (MDE Tier 1)
Tetrachloroethane, 1,1,2,2-	**32 µg/m3**	10 µg/m3 (MDE Tier 1)
Tetrachloroethene	**7,500,000 µg/m3**	840 µg/m3 (MDE Tier 1)
Trichloroethane, 1,1,2-	**39 µg/m3**	4 µg/m3 (MDE Tier 1)
Trichloroethene	**1,200,000 µg/m3**	42 µg/m3 (MDE Tier 1)
Vinyl chloride	**47,000 µg/m3**	34 µg/m3 (MDE Tier 1)

Soil concentrations expressed in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm).
Groundwater concentrations expressed in micrograms per liter (ug/L), equivalent to parts per billion (ppb).
Soil Vapor concentrations are expressed in micrograms per cubic meter ($\mu g/m^3$).
* Cleanup standard for arsenic is above USEPA RSL and is being proposed to the MDE VCP for an approval.
** Although the cleanup criteria for on-site soil vapor is presented in the table above, the soil vapor pathway will be under institutional control as detailed in subsequent sections of the RAP. Vapor barriers and sub-slab vapor mitigation systems will be installed in the proposed buildings, and indoor air will be tested and the results provided to the MDE VCP and USEPA for review prior to occupancy.
Bold = Exceeds cleanup criteria.

6.0 SELECTED TECHNOLOGIES AND INSTITUTIONAL CONTROLS

Potential exposure pathways have been identified between the contaminated soil, soil vapor, groundwater, and construction worker and future adult, youth, and child populations. These exposure pathways will be eliminated through the preparation of a HASP; the installation of a vapor barrier and sub-slab vapor mitigation system in proposed buildings; construction observation for correct RAP implementation using appropriate health and safety measures during the planned construction; well abandonment; excavation and off-site disposal of impacted materials encountered during development activities; site-wide capping; and engineering and institutional controls (e.g. deed restrictions on use of groundwater and notifications prior to excavation). The engineering and institutional controls are summarized below.

Engineering and Institutional Controls

ENGINEERING CONTROLS	INSTITUTIONAL CONTROLS
HASP preparation and implementation for construction workers.	Restricted residential land use requirement (per the VCP land use definition).
Permanent site capping requirements.	Groundwater use prohibition.
Soil excavation and off-site disposal.	One-Call system (Miss Utility) notification
Sub-slab vapor mitigation system and vapor barrier.	Inspection and maintenance requirement for site caps.
Pavement vapor vent units.	Soil excavation notification.
	MDE notification of transfer of property ownership.

Limiting alternatives to future potential exposure will be performed through placement of deed restrictions prohibiting the use of groundwater beneath the property and the restriction of soil excavation and cap maintenance. Additionally, future site improvements will be connected to municipal water and sewer services.

6.1 Site-Wide Corrective Actions

6.1.1 Protection of Site Workers

A HASP will be prepared and implemented to reduce direct contact exposure of construction workers to the COPCs during construction. Appropriate construction practices for dust control will be utilized to limit worker exposure to contaminants borne on dust and windblown particulates, and the dust will be monitored as discussed in *Section*

10.3. On-site construction monitoring will be provided during earthwork activities to ensure that the soil is handled properly and document on-site activities.

6.1.2 Impacted Soil Relocation and Removal

Excavated materials generated during general site grading and foundation and utility installation are anticipated to be utilized elsewhere on-site beneath a capped area or removed from the site for disposal. The COPCs consist of SVOCs, VOCs, metals, and petroleum. SVOC- and metals-impacted material is currently proposed to be placed below capped areas, while VOC- and petroleum-impacted materials encountered during construction activities may require off-site disposal. As discussed in *Section 3.2*, recent surface and subsurface soil sampling and analysis identified elevated concentrations of lead and cadmium on portions of the subject property. An additional evaluation of these areas is currently proposed. In the event that this evaluation identifies lead or cadmium concentrations that would be considered hazardous in a waste disposal scenario, an appropriate RAP addendum will be prepared and submitted for approval discussing the handling and removal of the soil.

It is likely that VOC- and petroleum-impacted materials will be encountered during re-development activities, primarily in the VOC-impacted area in proximity to the USTs that are proposed to be removed from the subject property. An evaluation of the excavated materials will be performed during construction activities, consisting of visual/olfactory observations and use of field screening equipment (e.g. PID). Petroleum-impacted soil is typically identified visually by dark gray or black staining in the soil, or olfactory by petroleum odors in the soil. VOC-impacted soil is typically identified by VOC odors in the soil.

Soil exhibiting evidence of contamination (elevated PID readings or visual/olfactory evidence of impact) will be staged in an established soil staging area that will be constructed in a predetermined area of the subject property. At a minimum, 10-mil plastic sheeting must available on-site in the event that contaminated materials are encountered that requires segregation. The 10-mil plastic sheeting will be placed at the

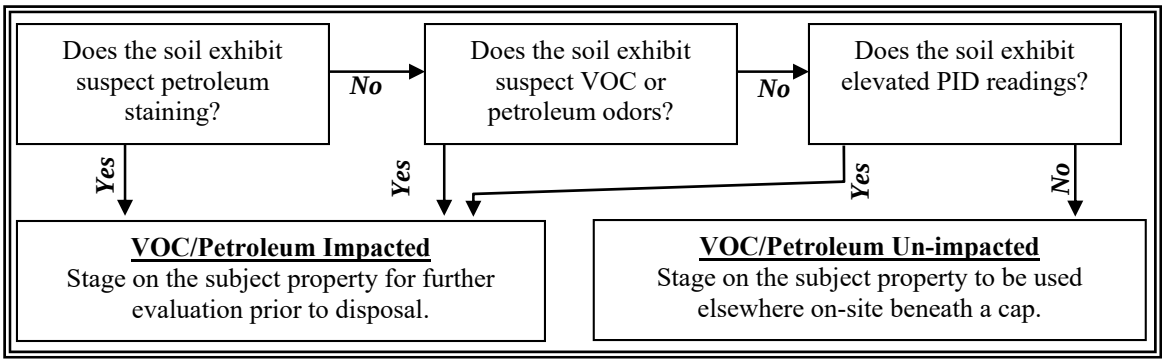
established soil staging area, and the contaminated soil will be placed on-top of the sheeting.

In addition to the established on-site erosion controls associated with the subject property's development, the soil staging areas will also have additional controls for erosion and prevention of cross contamination. The staging areas will be constructed using methods to limit migration of the contaminants and contain the water that separates from the soil or other materials. The staging areas will be constructed using a plastic 10-mil liner system with stone berms, or its equivalent. Depending on quantities and anticipated weather, the soil will be covered and secured with plastic while awaiting off-site disposal.

Once final development plans are available these documents will be submitted to the MDE VCP and a RAP addendum will be prepared and submitted for approval concerning staging of VOC- and petroleum-impacted soil.

In general, VOC- and petroleum-impacted soils encountered on the subject property will be relocated to a designated staging area on the subject property using the following flowchart:

SOIL SEGREGATION FLOWCHART



VOC/petroleum un-impacted soils will be utilized elsewhere on-site beneath a capped area or removed from the site for disposal. In the event that soil will need to be transported off-site, the likely off-site disposal facilities proposed for receiving contaminated soil are as follows:

Soil Safe, Inc. (Soil Safe) 16001 Mattawoman Drive Brandywine, Maryland 20613 (301) 782-3036 http://www.soilsafe.com Point of Contact: Amy Ralston	or	Clean Earth Inc. (Clean Earth) 6250 Dower House Road Upper Marlboro, Maryland 20772 (215) 734-1400 www.cleanearthinc.com Point of Contact: Paula Cross

Use of either facility as an off-site disposal facility is contingent on waste characterization soil sample results. If on-site soils are determined to be non-hazardous in a waste disposal scenario or have COPC concentrations below the levels in the facility's permit, the soil will be excavated, loaded, and transported to the selected licensed waste disposal facility. Additional/alternate disposal facilities may also be utilized. Information regarding these facilities will be provided to MDE prior to the transport of impacted soil off-site.

6.1.3 Imported Fill Material Sampling and Analysis

Imported fill will be needed to establish site grades or replace removed impacted soil. Such fill material will be sampled, with analytical results submitted for approval by MDE VCP, prior to being transported to the site. Work plans for sampling fill material source areas will be submitted to the VCP for review and approval prior to proposed soil sample collection and analysis. The MDE VCP review period for the work plans is generally one week, though it may be longer dependent on the MDE VCP work load. The work plan will include number and location of samples and sample analyses. No soil will be transported on-site for use as fill material without prior written approval by the VCP project manager and soil transported on-site for use as fill material will meet MDE RCS and/or cleanup criteria in *Section 5.0*. Documentation of the imported fill sampling activities will also be summarized within monthly RAP Implementation Progress Reports and the RAP Completion Report.

6.1.4 Groundwater Contamination

The subject property contains several groundwater monitoring wells. These wells will be properly abandoned by a State of Maryland-licensed driller in accordance with applicable state and local regulations.

The planned site development includes connection to a public water supply; therefore, groundwater use by future occupants will not occur. There is a potential for site construction workers to come into contact with the groundwater during well abandonment and construction activities. This contact will be limited by implementing a site-specific HASP. Otherwise, direct contact between the groundwater and construction workers and future occupants is not anticipated.

In addition, a perched water layer was recently encountered immediately below the concrete slabs of the existing on-site structures and is likely associated with rain water, leaking water pipes, and intrusion of water beneath the building slabs. The existence of a perched water layer will be re-evaluated once building demolition activities are complete. If a perched water layer remains, a RAP Addendum that addresses the perched water condition will be submitted to MDE VCP and USEPA for review and approval.

A groundwater use prohibition will be established for the site and recorded in the local land records. The proposed remedy for the groundwater contamination (groundwater use prohibition) is protective of human health, because contact with the potentially contaminated groundwater will be prevented.

6.1.5 Vapor Intrusion

The planned site development includes the construction of several slab-on-grade commercial, retail, and mixed-use buildings. A potential exposure pathway exists between elevated soil vapor concentrations and the future occupants of the planned buildings through vapor intrusion to indoor air.

During construction, a vapor mitigation system will be installed below the building slabs to mitigate indoor vapor accumulation for the buildings, thus eliminating the exposure pathway. Detailed drawings of the proposed buildings and their configuration were not available at the time of this RAP. Once such details are received the design, number, and spacing of the vapor vents, the design of the gravel sub-base, and the design of the sub-slab vapor mitigation system will be prepared and submitted to the MDE VCP for approval

in a RAP Addendum. Additional evaluation of the VOC-impacted area as detailed in *Section 3.3* of the RAP will also affect the proposed design of the vapor system. Active systems and source reduction may be necessary.

Based on the currently available information, the vapor mitigation systems will conceptually consist of a 20-mil (minimum) geomembrane or similar vapor barrier; a gas collection medium (e.g., lateral slotted/perforated PVC piping or proprietary geosynthetic vent product) in a gravel bed below the vapor barrier; and a vertical stack (3"-diameter PVC pipe), equipped with a sample port, extending above the building. Sealants will be used on building floor slab penetrations to prevent vapor intrusion. Vapor barrier seams will be taped, the vapor barrier will be sealed to the walls, and pipe or conduit penetrations will be sealed in accordance with the manufacturer's instructions. The vapor barrier will be smoke-tested, and any leaks will be repaired following the manufacturer's instructions. The concrete floor slab will then be poured on top of the vapor barrier. Vapors migrating through the subsurface soil beneath the building slabs will be blocked by the vapor barrier, transmitted through the preferential pathway created by the PVC piping or geosynthetic gas collection medium, and vented to the exterior through the vertical stack. Once detailed drawings of the proposed buildings and the results of the evaluation of the VOC-impacted area are available, GTA will provide a vapor mitigation system design for MDE VCP's review and approval in a RAP Addendum.

To address potential preferential vapor migration along utilities, utility trenches entering each building footprint will be sealed using a backfill material consisting of pelletized bentonite mixed with MDE-certified clean fill and hydrated after emplacement. Trench backfill seals will be placed beneath foundation entry points and extending outward from the foundation approximately 18 inches in each direction along the trench. *Designated Capping Areas* and *Capping Details* are included as *Figures 10* and *11*.

Confirmatory indoor air and soil vapor sampling will be collected after approval of the sampling method and analysis parameters, location, and appropriate comparison values are reviewed and approved in a RAP Addendum. This confirmatory indoor air and soil

vapor sampling will be conducted as each building is completed and the results reviewed by MDE prior to occupancy of the building. Confirmatory indoor air samples will initially be collected from the building envelope prior to installation of interior walls and fixtures to evaluate the efficiency of the vapor mitigation system and vapor barrier. In addition, a vapor sample will be collected from sample points installed in the vapor mitigation vent pipes to document vapor concentrations in the soil gas beneath the building foundation. A typical sample point is shown on *Figure 12 - Generic Vapor Venting Details*. Results from the vapor sampling event will be submitted to MDE VCP no more than 30 days following receipt of analytical results, or within 24 hours from receipt of data indicating an exceedance of indoor air quality criteria. The proposed remedy for indoor air (vapor mitigation system and a vapor barrier) is protective of human health, because it is designed to prevent exposure to contamination above regulatory levels.

Conceptually confirmatory indoor air and soil vapor samples will be analyzed for the full suite of VOCs plus naphthalene (SIM Methodology) and methane. The concentration of any individual contaminant of concern identified in the indoor air samples may not exceed a cancer risk of $1x10^{-5}$ or a hazard quotient of 1.0 in order for the cleanup criteria to be achieved. The sum of risk estimates for all contaminants of concern will not exceed a cancer risk of $1x10^{-5}$ or a hazard quotient of 1.0 in order for the cleanup criteria to be achieved. Any approved passive vapor mitigation system will be constructed in such a manner as to allow ready conversion to an active venting system, using an inline blower system or an MDE-approved alternative, if the MDE established criteria are not met.

6.1.6 Methane Mitigation

Methane gas was detected during previous vapor sampling at the subject property. As such, GTA proposes to address potential methane accumulation in the buildings through installation of the sub-slab vapor mitigation system and a vapor barrier described in *Section 6.1.5*. In addition to the vapor mitigation system details presented in *Section 6.1.5*, the final methane mitigation plan may also require methane detection and alarm devices in occupied structures and/or utility corridors. Once detailed drawings of the proposed

buildings are available, the design of the sub-slab vapor mitigation will be prepared and submitted to the MDE VCP for approval in a RAP Addendum.

Atmospheric pressure differentials and other factors such as soil permeability, moisture content, etc., may cause accumulation of methane beneath hardscaped paved areas, and will be addressed by installation of vapor vents located at several light locations, as described below. Vapor vent spacing will generally be based on the spacing of the area light locations, and the number and locations of the proposed hardscaped pavement vapor vents will be submitted to the MDE VCP for approval in a RAP Addendum.

Hardscaped pavement vapor vents will be constructed of 36 inches of gravel sub-base, installed in a 10-foot diameter area surrounding each light pole, with a 3-inch diameter PVC pipe penetrating the pavement and extending into the sub-base. A horizontal three-leg manifold of 3-inch diameter slotted PVC pipe will extend outward five feet from the light pole approximately three to six inches below the top of the sub-base, in a "T" configuration to increase the vented area. Each vertical vent pipe will be mounted to the light pole and will extend to a height of 8 feet above grade, above the breathing zone in the parking lots. The general construction details of the vapor vent are depicted on *Figure 12 - Generic Vapor Venting Details*. Please note that these plans are not for construction. A detailed design for the proposed development will be prepared once plans are available.

The confirmatory samples collected from the vapor mitigation system monitoring points as outlined in *Section 6.1.5* will also be analyzed for methane. As outlined in *Section 6.1.5*, the samples will be collected from each building as it is completed, and the results will be submitted to the MDE VCP prior to occupancy of the building. Analysis results will be submitted to the MDE VCP when available.

6.1.7 Institutional Controls

Institutional controls will be listed on the Certificate of Completion issued by the MDE VCP for the successful completion of RAP activities. These institutional controls will include the maintenance of the cap, soil excavation restrictions, restrictions on the use

of groundwater beneath the property, and other restrictions the MDE deems necessary based on implementation of the approved RAP. A restriction on maintenance and excavation through the cap will be recorded in the local land records. The future owners and occupants will act as an independent third party that will notify MDE of any request for excavation at the site.

The proposed remedies for the soil, soil vapor, and groundwater contamination are protective of human health because the remedies are designed to prevent exposure to contamination.

6.2 Corrective Actions for Specific Development Features

6.2.1 Reuse of Building Demolition Materials

GTA has prepared a Demolition Materials Management Plan (DMMP) for the reuse of "recycled materials," in conjunction with the redevelopment of the subject property. A copy of the DMMP is included in *Appendix C*. For the purpose of this RAP, "recycled materials" are defined as crushed concrete and masonry debris. The DMMP provides a justification for reuse of recycled material on the subject property; appropriate demolition observation and health and safety measures; descriptions of proposed building decommissioning, soft demolition, above-grade demolition, and below-grade demolition activities; and confirmatory sampling specifications and parameters.

6.2.2 Underground Storage Tank Removals

Five USTs that range in capacity from 500 to 12,000 gallons are currently abandoned-in-place on the subject property. A sixth UST is reportedly abandoned-in-place; however, the location of this UST is currently unknown. GTA's certified Maryland UST remover will oversee on-site activities involving the removal and closure of the USTs, in general accordance with Code of Maryland Annotated Regulations (COMAR) 26.10.06. These activities will involve the removal of the five known abandoned USTs. Dependent of the results of a UST evaluation detailed in *Section 3.1*, these activities may also involve the removal of a sixth UST.

Prior to the commencement of removal activities, GTA will notify the MDE VCP and Oil Control Program (OCP) of the UST removals. Written notification will be provided to MDE OCP, as well as a verbal request for waiver of the 30-day notification period.

GTA will removal soil cover from the USTs, and disconnect supply and return piping from the USTs (if present). GTA then will remove and dispose of residual petroleum product, pumpable sludge, and/or water present in the USTs using a vacuum truck. If necessary, the interior of the USTs will be pressure washed, and the liquids generated during the cleaning process will be removed via vacuum truck. Liquids removed from the USTs will be disposed of at an off-site disposal facility and will be documented by GTA.

Once empty, GTA will observe the excavation of soil from around the USTs to facilitate their removal from the tank pits. Excavated soil will be field screened for the presence of volatile petroleum constituents using a PID. If evidence of petroleum impact is observed in the soils, these soils will be disposed off-site at one of the disposal facilities identified in *Section 6.1.2*. Petroleum-impacted soil may be staged on plastic sheeting adjacent to the excavation pending future off-site disposal, or may be direct loaded for off-site disposal. GTA will document the disposal/recycling of the USTs, associated piping, and petroleum-impacted soil (if present) at an off-site disposal facility.

Once the USTs and/or petroleum-impacted soil are removed, GTA will procure soil samples from beneath the USTs or excavation area. The number of samples will be dependent on conditions identified at the time of the UST removals and will be determined by the MDE OCP and/or VCP. It is anticipated that the soil samples will be analyzed for TPH GRO and DRO, and VOCs with fuel oxygenates. Soil samples from the PCB Tank will also be analyzed for PCBs. Additional sample analysis may be requested by the MDE OCP and/or VCP at the time of the sampling.

Soil analysis results will be provided to the MDE OCP and VCP prior to backfill of an excavation. It is anticipated that fill materials from other portions of the subject property will be utilized to fill the excavations to the cap, after which MDE-certified clean fill materials will be utilized as fill. UST and petroleum-impacted soil removal activities will be documented in a UST Closure Report that will be provided to the MDE OCP and within monthly RAP Implementation Progress Reports and the RAP Completion Report.

6.2.3 Crystal Hill

The USEPA has defined locations such as Crystal Hill as "Waste-In-Place" locations, where waste was disposed to land when it was a legal and acceptable business practice, and operations ceased prior to the implementation of any regulatory requirements. These locations are not subject to current regulatory requirements, and are evaluated only when they are identified through other means. As previously discussed, proposed development activities will be conducted within and above Crystal Hill.

The USEPA recommends that "Waste-In-Place" locations be managed as "landfills" and that post closure requirements in C.F.R. Subpart G 265.110 be used as performance standards to satisfy corrective action obligations for "Waste-In-Place" locations. Crystal Hill must satisfy the following landfill Subpart G Section 265.111 (b) Closure Performance Standard:

> "Controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere, "

As discussed in *Section 2.6.2*, several assessments of Crystal Hill have been performed, and these evaluations concluded that while the landfill cover needs some maintenance, there is little or no migration of waste material from Crystal Hill under current conditions. Therefore, this RAP provides proposed remedies for the soil, soil vapor, and groundwater of Crystal Hill that are protective of human health since the remedies are designed to prevent exposure to contamination and prevent escape or

migration of contaminants within the landfill. The subject property is proposed to be redeveloped and capped with buildings and hardscaped and landscaped areas.

A prior geotechnical evaluation indicated that the existing fill materials in Crystal Hill are not considered suitable for the support of the proposed buildings without improvements. Considering the thickness of the existing fills, and the assumed foundation loads, "intermediate" or "deep" foundation systems will likely be utilized for the support of the planned buildings in Crystal Hill.

Intermediate foundation systems consist of columnar soil reinforcements installed to improve the subgrade support. Such systems include non-displacement Aggregate Piers (APs), or Controlled Modulus Columns (CMCs). APs are an intermediate foundation system in which layers of aggregate are compacted in a drilled shaft. During the compaction process, the surrounding existing fills or loose soil zones are also improved. If APs are utilized for this project, they will be installed by a bottom-feed, displacement method as opposed to a drilling method, which would generate auger spoils. CMCs are a proprietary, design-build system by Menard, USA and consist of grouted columns installed using a displacement-type auger which displaces the soil laterally, and minimizes auger spoils. Pressure grouting is utilized to backfill the auger hole as the auger is retrieved.

Depending on the final foundation loads for the buildings, deep foundation systems may be required. If needed, these deep foundation systems will likely consist of Non-Displacement Auger Pressure Grouted piles.

It is anticipated that the non-displacement methods proposed for the intermediate and deep foundation systems will eliminate environmentally impacted spoils that would be generated by drilled piles. Once constructed, the buildings will be a portion of a cap over Crystal Hill and the remainder of the subject property.

Hardscaped and landscaped areas over Crystal Hill will be capped in general conformance with the methods specified in *Section 6.2.6*. However, the composition,

lateral extent, depth, and permeability of the capping material must be approved by the MDE VCP and the USEPA prior to installation.

6.2.4 Forested Buffer

A forested buffer area currently exists along the southwestern perimeter of the site, as depicted on the *Forested Buffer Sample Location Plan (Figure 12).* The current development plan does not include clearing or other disturbances in this area, which encompass over ¾ acres. As part of the response actions for the site, additional surface soil (zero to two feet bgs) and subsurface (four to six feet) characterization samples will be collected from the forest buffer area. In general, the forested buffer area will be divided into approximate 6,000-square foot sections, resulting in six characterization samples. The characterization samples will consist of 12-point composite soil samples that will be comprised of equal aliquots of all 12 discrete sample locations. The 12-point composite samples will be analyzed for SVOCs and Priority Pollutant Metals. In addition, three discrete surface and subsurface soil samples in each subdivided area will be collected for analysis of VOCs, TPH GRO, and TPH DRO. The sampling locations are depicted on *Figure 13*, and will result in a total of 36 samples. An equal portion of each sample collected for the 12-point composite will also be collected and submitted to a laboratory and placed on hold. Approximate sample collection points are depicted on the attached *Forested Buffer Sample Location Plan* (*Figure 13*).

Upon review of the analytical results, an area will be considered non-impacted if surface and subsurface SVOCs, metals, VOCs, and TPH GRO and TPH DRO concentrations are below their respective cleanup criteria. If one or more compounds are observed at a concentration exceeding the cleanup criteria, the 12 additional discrete soil samples collected during the surface and subsurface 12-point composite will be analyzed for the compound(s) of concern to verify the analytical results and evaluate the extent of impacts. This discrete soil sampling protocol will be determined on an area-specific basis and will be submitted to MDE VCP for review and approval prior to sample collection.

Upon receipt of verification sample analytical results, several options for addressing the forested buffer areas will be reviewed with TRP-MCB 5601 Eastern LLC and MDE VCP. These options may include soil excavation with confirmatory sample analysis, capping, or removal of the areas from the VCP and re-submission under an alternative use scenario, such as recreational use. A RAP Addendum will be submitted to MDE VCP for review and approval with additional details and procedures, determined on an area-specific basis, prior to initiating further remedial action in the forested buffer area.

Documentation of these activities will be submitted to MDE VCP within monthly RAP Implementation Progress Reports and RAP Completion Reports.

6.2.5 Proposed Buildings

The subject property is proposed to be developed with multi-story apartment buildings with retail at the street level, a hotel, parking garages, a single-story anchor retail tenant, and several other single-story retail buildings. Detailed structural information for the buildings was not available at the time the RAP was prepared. Once available these details will be provided to the MDE VCP in a RAP addendum. However, it is anticipated that these structures will have a slab-on-grade foundation with possible deeper foundation piers and supporting systems. These buildings will include a minimum 4-inch concrete slab and stone subbase that will act as a cap, which will eliminate the direct contact exposure risk to future construction workers and adult, youth, and child populations. Details regarding the proposed development for the subject property are presented as *Figure 4*.

6.2.6 Hardscaped and Landscaped Areas

Several roadways that will be retained by the current property owner will be constructed on the site as part of the overall site development. These include main thoroughfares, alleyways, and parking lots, as well as sidewalks. In addition, common areas to be constructed include landscaped areas, stormwater management facilities, and grassed areas. The remedy for these areas includes capping, which will eliminate the direct contact exposure risk to future adult, youth, and child populations. Details of the capping

are illustrated in *Figure 11 - Capping Details*. These capping details must be cross referenced with final construction drawings to ensure that they meet the engineering requirements for the required uses at the subject property. These plans are not for construction, and will be designed/incorporated into the detailed design of the proposed development by the design engineer. If capping changes are needed, such changes will be provided in a RAP Addendum that will be submitted to MDE VCP for review and approval.

The hardscaped areas are proposed to consist of six inches of granular sub-base and four inches of asphalt or concrete over in-situ material or MDE-certified clean fill. Landscaped areas will be capped with a minimum of two feet of MDE-certified clean fill, placed above a geo-textile fabric. The thickness of the cap will be increased as necessary to accommodate the planting of different species in order to ensure the minimum clean fill requirements and accommodate the plant's root ball. Based on preliminary grading estimates, the re-use of on-site materials is anticipated, with MDE-certified clean fill that meets residential soil standards used where necessary to reach final grade. A total of at least two feet of MDE certified clean fill material above a marker barrier will be placed in landscaped areas. A *Clean Fill Sampling Plan* will be submitted for MDE VCP approval, implemented, and the material accepted by MDE prior to the use of any off-site fill source on the property.

Both the hardscaped and landscaped capping will be underlain by a marker barrier. The marker barrier will not be placed beneath building foundations. The marker barrier will be placed between the impacted soil and MDE-certified clean fill. The marker barrier will consist of a geotextile fabric meeting the Maryland State Highway Administration specification 921.09; under Maryland application class SD Type I, woven, monofilament. Specifications for soil and asphalt marker fabric are presented, along with general details for the hardscaped and landscaped capping, on *Figure 11 – Capping Details*. The property owner is responsible for ensuring the proper implementation of all recorded deed restrictions and land use controls, and maintenance requirements for site caps to reduce the risk to public health and the environment.

It should be noted that utilities may be installed in these areas prior to capping. Excavated materials generated during utility installation that are not used as backfill will either be placed elsewhere onsite beneath a capped area or removed from the site for disposal. Specific details regarding soil disposal are presented in *Section 6.1.2*. Detailed utility drawings indicating the type of utility, depths, and bedding material will be submitted as a RAP Addendum. Documentation of these activities will be submitted to MDE VCP within monthly RAP Implementation Progress Reports and the RAP Completion Report.

7.0 EVALUATION CRITERIA FOR THE SELECTED TECHNOLOGIES

This RAP has been prepared to address potential exposure risks due to direct contact, ingestion, and/or inhalation for soil, soil vapor, and groundwater contamination at the subject property. The proposed remedy for soil and soil vapor includes UST and potentially petroleum-impacted soil removal, the installation of vapor barriers and sub-slab vapor mitigation systems, construction observation for correct RAP implementation, and using appropriate construction observation and health and safety measures during the planned construction, capping to prevent direct contact exposure, and notification to MDE prior to future excavation activities. The proposed remedy for groundwater includes the proper abandonment of existing groundwater monitoring wells, construction observation for correct RAP implementation, and using appropriate construction observation and health and safety measures during the planned construction, and a deed notice to restrict groundwater use at the subject property.

7.1 Certificate of Completion

The end point of the proposed remedial actions will be the completion of the planned site development (establishing the landscaped and hardscaped caps) and implementation of institutional and engineering controls pursuant to this RAP. These activities will be documented in a RAP Completion Report. Upon submitting this report, the Participant will request a COC.

It should be noted that development of the property will likely be performed in phases. The Participant may request a COC for individual lots, groups of lots, and/or specific subdivided parcels as development activities are completed. All individual lots or groups of lots will be legally

subdivided from the original 19.97-acre property prior to requesting issuance of the COC. In order for a COC to be issued for individual lots, groups of lots, and/or specific subdivided parcels, additional VCP applications must be submitted to the MDE VCP and accepted for participation for each individual lot, groups of lots, and/or specific subdivided parcels for which a COC is being requested. RAP activities for these individual lots, groups of lots, and/or specific subdivided parcels must be satisfactorily completed, and no additional RAP activities may occur on these lots once the COC has been issued. However, this RAP has been developed with this possibility in mind and shall apply to future subdivided properties or parcels to the extent that the development activity is consistent with the development activities contemplated herein.

7.2 Contingency Measures

The RAP will be implemented upon approval from the MDE. The Client and its contractors should comply with applicable local, State, and Federal regulations by obtaining necessary approvals and required permits during the RAP process.

In the event that the future soil and/or groundwater concentrations of COPC exceed their designated cleanup criteria and/or cannot be adequately controlled during the RAP implementation process or contamination and/or exposure risks/pathways not previously identified are identified, the following contingency measures will be taken:

- Notify MDE within 24 hours.
- Postpone implementation of the RAP.
- Evaluate new site conditions identified.
- Amend RAP to address new site conditions identified.

Notified departments will include:

MDE Voluntary Cleanup Program
Land Management Administration
1800 Washington Boulevard
Baltimore, Maryland 21230
(410) 537-3493

MDE Oil Control Program
Land Management Administration
1800 Washington Boulevard
Baltimore, Maryland 21230
(410) 537-3442

As discussed in *Section 6.1.4*, it is not anticipated that the installation of utilities and utility connections at the subject property will require dewatering. However, if groundwater is

encountered, the site may be required to obtain a NPDES Permit that will specify the discharge limits. This NPDES Permit will be obtained by GTA, in connection with the on-site construction activities, and will be utilized for dewatering activities on the site. If dewatering is necessary, GTA will submit an addendum to the RAP.

8.0 PROPOSED RESPONSE ACTIONS

The following table provides a summary of the technologies selected to address the contamination found on-site.

Remedial Response Actions

POTENTIAL EXPOSURE RISKS	PROPOSED RESPONSE ACTION
Dermal contact, ingestion, and inhalation of impacted soil by construction workers	Implementation of HASP; construction monitoring; excavation and disposal of soil impacted by contaminants of concern.
Dermal contact, ingestion, and inhalation of impacted soil by future occupants	Excavation and disposal of soil impacted by COPC; capping; excavation restrictions through a deed restriction.
Ingestion and dermal contact of contaminated groundwater by construction workers	Implementation of HASP; construction monitoring.
Ingestion and dermal contact of contaminated groundwater by future occupants	Groundwater use restriction.
Dermal contact, ingestion, and inhalation of impacted soil by construction workers	Implementation of HASP; construction monitoring; excavation and disposal of soil impacted by contaminants of concern.
Dermal contact, ingestion, and inhalation of impacted soil by future occupants	Excavation and disposal of soil impacted by contaminants of concern; capping; excavation restrictions through a deed restriction.
Inhalation of soil vapors and methane by construction workers and future occupants.	Field screening for VOC vapors and methane, and installation of vapor and methane mitigation systems and vapor barrier.

8.1 Reporting Requirements

The VCP project manager will be notified in writing or electronically within five calendar days of the beginning RAP implementation activities. Monthly RAP Implementation Progress Reports will be submitted to the VCP documenting RAP activities. These monthly RAP Implementation Progress Reports will generally be submitted by the 15th day of the following month. At the completion of the RAP implementation of each phase of the development, details of the site development, on-site construction monitoring, and clean materials information will be

submitted in a RAP Completion Report of the development phase, and will include a written request for issuance of the COC for the completed development phase.

Sampling work plans, clean imported fill work plans, and/or RAP addenda will be submitted to the MDE VCP for review and approval. Clean imported fill work plans will be prepared in general accordance with the MDE's *VCP – Clean Imported Fill Material Fact Sheet*.

8.2 Maintenance

The proposed remedy includes the installation of asphalt and concrete caps that will require periodic maintenance activities. Landscaped capping of areas of the subject property will also require periodic maintenance activities. The proposed buildings will also be equipped with vapor barrier and vapor mitigation systems. The maintenance plan that will be implemented by future owners or occupants of the site is presented below.

Physical maintenance requirements will include maintenance of the capped areas to prevent degradation of the cap and unacceptable exposure to the underlying soil. Quarterly inspections of the cap will be conducted. The property owner will be responsible for onsite cap maintenance inspections, performing maintenance to the cap, and maintaining all cap inspection records. Maintenance records will include, at a minimum, the date of the inspection, name of the inspector, any noted issues, and subsequent resolution of the issues. Areas of the asphalt cap that have degraded to a Pavement Condition Index of 4.0 will be repaired in a timely manner. A *Cap Inspection Form* is attached in *Appendix D*. All other capped areas will have similar indexes.

Physical maintenance requirements for the vapor systems will include maintenance of the building slabs and vapor ventilation systems. In the event that active vapor systems are installed, the active system will also be inspected to assure that they are operating in accordance to the manufactures specifications. Yearly inspections of the vapor systems will be conducted. The property owner will be responsible for vapor system maintenance inspections, performing maintenance to the vapor system, and maintaining all vapor system inspection records. Maintenance records will include, at a minimum, the date of the inspection, name of the inspector, any noted issues, and subsequent resolution of identified issues.

MDE will be verbally or electronically notified within 24 hours following the discovery of unplanned emergency conditions at the subject property which will penetrate the cap, and will be provided with written documentation within 10 days of the repair. In addition, MDE will be provided written notice a minimum of five business days prior to planned activities at the site that will penetrate the cap, with the repairs completed within 15 days, and written documentation submitted to MDE within 10 days of the repair. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation(s), health and safety protocols (as required), MDE certified clean fill source and documentation (as required), and proposed characterization and disposal requirements (as required). The property owner will maintain on-site records of the yearly inspections and will include information on any repairs to the capping. The property owner or occupants will be required to notify MDE in writing of any proposed construction or excavation activities that breech any site cap.

8.3 Excavations

Soil excavated from the site is anticipated to be utilized elsewhere on-site beneath a capped area or removed from the site for disposal, at a regulated facility. Documentation of the disposed materials will be provided to the MDE following construction. Generalized details regarding soil relocation of impacted soil are presented in *Section 6.1.2*. Once final development plans are available these documents will be submitted to the MDE VCP and a RAP addendum will be prepared and submitted for approval concerning relocation of impacted soil. Clean backfill documentation will be provided to the MDE prior to its use on the property. During any future excavation activity that breeches a site cap, a HASP will be in place outlining appropriate measures to protect worker health and safety. Excavated material will be disposed in accordance with applicable local, State, and federal laws and regulations. Efforts will be made to removed bulk soil attached to excavated concrete foundations prior to its removal to an off-site disposal facility or being crushed and remaining on-site as fill material. Demolition activities at the site will be performed in accordance with applicable local, State, and federal laws and regulations regarding asbestos contaminated material and lead-based paint.

In order to ensure that the site is returned to a condition that complies with the Cleanup Criteria outlined in *Section 6.0*, potentially impacted soil encountered during intrusive activities should be managed as described in the following sections.

8.3.1 Reuse of Soils Within Landscaped Areas

All soil excavated from the upper two feet of landscaped areas (above the geotextile marker fabric) should be stockpiled separately from any soils excavated from below the geotextile marker fabric. Soil that is excavated from the upper two feet (above the geotextile marker fabric) in landscaped areas will have been certified as MDE approved clean when first placed and may be used at any depth at any locations on the site. Soil that is excavated from below the geotextile fabric (i.e., at depths greater than two feet bgs) must be re-used under an appropriate engineering control such as hardscape or two feet of MDE certified clean soil cover underlain by geotextile marker fabric. Handling of this material will be consistent with the procedures indicated in *Section 6.1.2.*

8.3.2 Reuse of Soils Below Hardscape

All soil that is excavated from below hardscape such as building slab or parking areas must be reused on-site as backfill below an appropriate engineering control such as hardscape or two feet of MDE certified clean soil cover underlain by geotextile marker fabric. Handling of this material will be consistent with the procedures indicated in *Section 6.1.2.*

9.0 PERMITS, NOTIFICATIONS, AND CONTINGENCIES

The Client will comply with federal, State and local laws and regulations by obtaining necessary approvals and permits to conduct activities and implement this RAP. The MDE VCP will be verbally notified within 48 hours (72 hours in writing) of planned changes to the RAP implementation schedule. However, in the event of unplanned or emergency changes to the RAP implementation schedule such as previously undiscovered contamination, previously undiscovered storage tanks and other oil-related issues, and citations from regulatory entities related to health and safety practices, the MDE VCP and OCP will be verbally notified within 24

hours. Notifications shall be made to the VCP project manager and/or VCP Division Chief at 410-537-3493, and the MDE OCP at (410) 537-3442.

The MDE VCP and OCP will be provided with documentation and analytical reports generated as a result of any unidentified contamination. The Client understands that previously undiscovered contamination and/or previously undiscovered storage tanks or other oil-related issues may require an amendment to this RAP.

10.0 HEALTH AND SAFETY

10.1 Site Security

The subject property will be secured with fencing prior to beginning construction activities in order to prevent trespassing during non-working hours. Excavations resulting from redevelopment work must be secured with perimeter fencing if they are to be left open for more than one workday. Any breaches to the fence required by construction activities must be promptly re-secured.

10.2 Health and Safety Plan

A site-specific HASP must be developed, implemented, and maintained on-site. The HASP must itemize environmental risks, such as dust inhalation, soil vapors (especially VOCs, petroleum, and methane), and the potential for encountering contaminated soil. A PID will be used to monitor VOCs, and appropriate field instrumentation will be used to monitor methane (e.g. Lower Explosive Limit) during on-site intrusive activities. Personnel must be made aware of the HASP. The HASP must be submitted to the MDE prior to the commencement of work.

10.3 Air Monitoring Requirements

Air monitoring requirements must be included in the site-specific HASP. The OSHA permissible exposure limits (PELs) for Particulates Not Otherwise Regulated (PNOR)/nuisance dust) is 15 mg/m^3. However; in order to minimize risks associated with dust emissions generated during general construction operations and cap construction activities, a conservative level of PNOR/nuisance dust of 3 mg/m^3 will be used as the action level to determine the need to implement dust suppression techniques. Dust suppression techniques will use Best Management

Practices (BMPs) and will likely consist of water application on a routine basis determined by day to day weather conditions. Activities that generate dust will not occur unless the appropriate dust suppression equipment (e.g. water truck, misting hose, etc.) are on-site and fully functional. Dust control will also be necessary during weekends and holidays if contaminated soil is exposed. A windsock or other device to determine prevailing wind direction will be installed at the subject property.

When site development activities requiring soil movement are conducted, dust monitoring will be performed using a real time dust monitoring instrumentation, specifically a DustTrak DRX aerosol monitor. Dust monitoring will be conducted continually, each day of soil movement activities. Readings will be collected from the immediate vicinity of the work, from the center of the work area, and from the boundary of the work area downwind of the work. If the 3 mg/m^3 action level is exceeded, operations should be stopped and additional dust suppression BMPs performed (e.g. additional wetting or misting, water truck application, etc.) until dust levels are reduced to below the 3 mg/m^3 action level. Operations may be resumed once dust has been reduced indicating that dust concentrations are below the 3 mg/m^3 action level. However, as a conservative measure, air monitoring will be conducted during intrusive operations involving soil excavation, grading, and soil relocation operations.

In order to document PNOR/nuisance dust concentrations in the dust generated, three dust sample events will be collected during initial site grading and building improvement excavation activities. A minimum of three samples should be collected during each event. One sample should be collected from the immediate vicinity of the earthwork, one from the center of the work area, and one from the boundary of the work area downwind of the earthwork. The samples should be collected over an 8-hour period using pumps and a filter assembly and should be analyzed for PNOR/nuisance dust. The results of the analysis will be compared to the 3 mg/m^3 action level. An exceedance of the 3 mg/m^3 action level will require additional dust control measures and additional monitoring. If no PNOR/nuisance dust is detected in the dust samples at a concentration above the 3 mg/m^3 action level, the sampling will be discontinued until the next sampling event activity commences, with approval from MDE VCP. Dust control measures will be implemented in accordance with local regulations/permits and BMPs.

11.0 IMPLEMENTATION SCHEDULE

The VCP project manager will be notified in writing within five calendar days of the beginning RAP implementation activities, and monthly RAP Implementation Progress Reports will be submitted to the VCP project manager during the implementation of this RAP. The VCP project manager will be verbally notified within 48 hours (72 hours in writing) of any changes (planned or emergency) to the RAP implementation schedule.

The proposed schedule to implement the RAP is presented below. The VCP may request a new implementation schedule if RAP activities have not begun within 12 months of the participant receiving approval of this RAP.

RAP Implementation Schedule

RESPONSE ACTION ACTIVITY	TENTATIVE SCHEDULE*
RAP Review/Approval	November 2015 – May 2016
Public Participation Period	November 2015 –December 2015 (30 days)
MDE RAP Kickoff Meeting	May 2016
Submit and maintain RAP security (Letter of Credit, Performance Bond, ect.)	10 Days after receiving RAP approval and annually thereafter (dependent on type of RAP security)
Building Demolition	2nd Quarter 2016
Building Slab Removal (assumes removal of all of the slab at once)	2nd Quarter 2016
Begin Submittal of Monthly RAP Progress Reports	June 2016
Begin Earthwork	3rd Quarter 2016
Begin Site Utilities	3rd Quarter 2016
Begin Importing MDE Certified Clean Fill	3rd Quarter 2016
Auger Cast Pile Installation	4th Quarter 2016
Slab on Grade/Building Construction	4th Quarter 2016
Complete Construction	1st Quarter 2017 for the 1st Phase, market will dictate future Phase completion dates.
RAP Completion Report to MDE	1st Quarter 2017 for the 1st Phase, market will dictate future Phase completion dates.
Initial Request issuance of COC	1st Quarter 2017 for the 1st Phase, market will dictate future Phase completion dates.

(*) = The tentative schedule presented above is subject to change beyond the Applicant's control. Deviations from this proposed schedule will be communicated to MDE.

It should be noted that the construction schedule is highly contingent on the site development team, which is currently under consideration for the proposed development. Once selected, GTA will review the above RAP Implementation Schedule with the site development team and will submit a revised schedule to the MDE VCP. As requested, the revised schedule will

be more specific with regards to site development methodology, duration of soil exposure, and auger cast pile and utility installation timing.

12.0 ADMINISTRATIVE REQUIREMENTS

12.1 Written Agreement

If the RAP is approved by the MDE, the Participant agrees, subject to the withdrawal provisions of Section 7-512 of the Environment Article, to comply with the provisions of the RAP. The Participant understands that if he fails to implement and complete the requirements of the approved RAP and schedule, the MDE may reach an agreement with the Participant to revise the schedule of completion in the approved RAP or, if an agreement cannot be reached, the Department may withdraw approval of the RAP. A *Written Agreement* from the Participant is included as *Appendix B.*

12.2 Zoning Certification

TRP-MCB 5601 Eastern LLC certifies that the subject property meets all applicable provisions and zoning requirements, as required by Section 7, Subtitle 5 of the Environmental Article, *Annotated Code of Maryland*. A certified statement from TRP-MCB 5601 Eastern LLC is included as *Appendix E*.

12.3 Public Participation

On behalf of TRP-MCB 5601 Eastern LLC, GTA submitted an MDE-approved RAP public notice to *The Baltimore Daily Record* and *the Baltimore Sun,* weekly newspapers with coverage that includes Baltimore, Maryland.

The RAP public notice indicated that TRP-MCB 5601 Eastern LLC will hold a public informational meeting on the proposed RAP at Best Western, 5625 O'Donnell Street, Baltimore, Maryland 21224 on November 30, 2015 at 6:30 PM. The site history, detected on-site contamination, planned future use of the site, and a description of the proposed remedies will be presented at the meeting.

During the 30-day public comment period after publishing the public notice, a property sign was placed along Eastern Avenue. This sign depicted the same information provide in the public notice outlined above. The sign will be removed following the 30-day public comment period. Documentation of the sign placement and legibility will be provided to the MDE for approval.

12.4 Performance Bond or Other Security

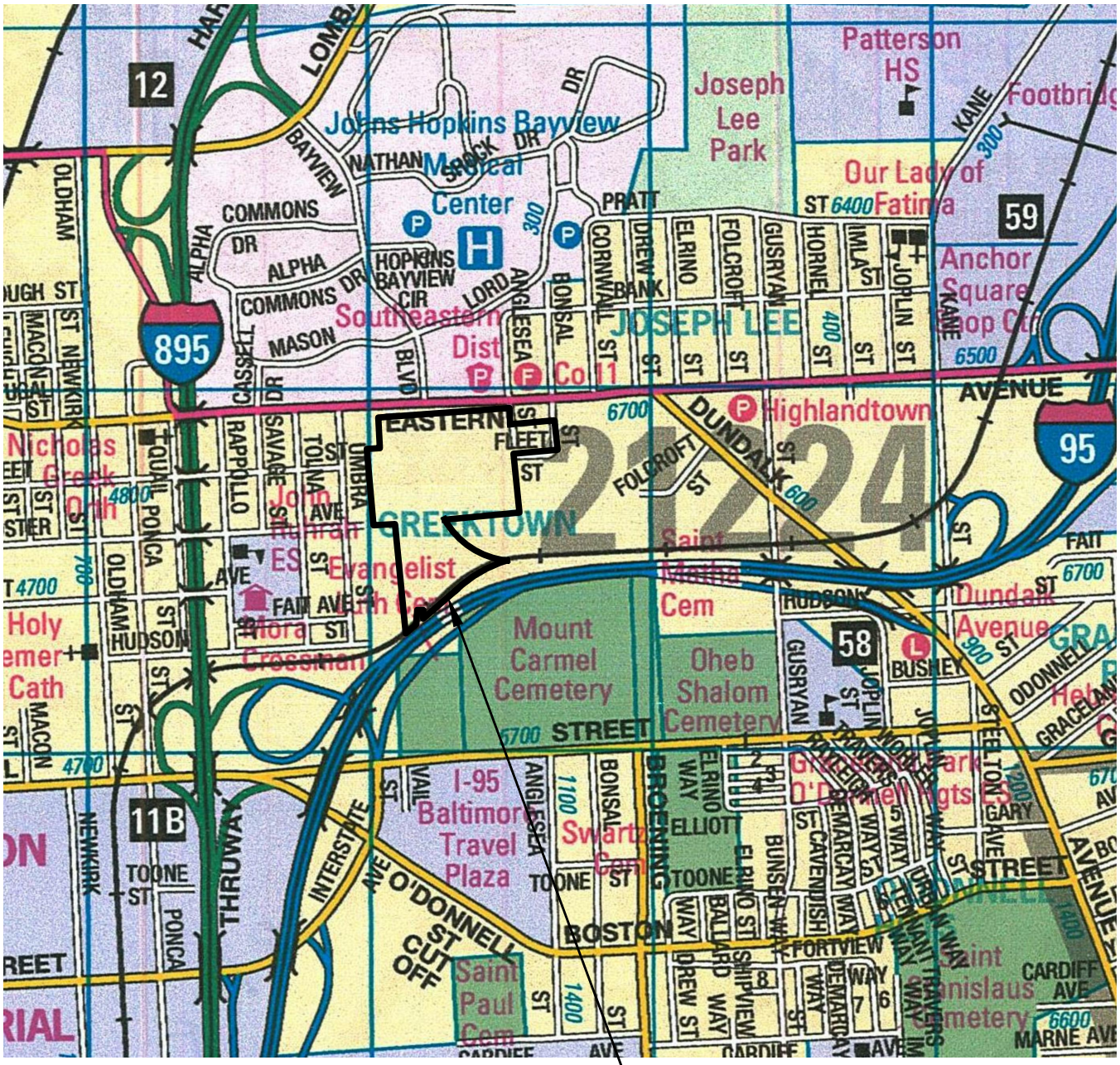
As required by the VCP, TRP-MCB 5601 Eastern LLC will provide either a Performance Bond or Letter of Credit in the amount of $25,000 to MDE covering the cost of securing and stabilizing the property. The site is currently surrounded by a locked six-foot high chain-linked fence. Securing and stabilizing the property includes activities necessary to:

ACTION ACTIVITY	ESTIMATED COST
• Restrict access to contaminated portions of the property, fence repair where needed (approximately 5,400 linear feet)	$2,500
• Notification signage every 200 feet	$1,000
• Prevent and abate any other dangerous conditions prior to building demolition	$6,500
• Where applicable, abandon monitoring wells, and backfill open excavations	$10,000
• Seed, grass, and straw across the site to prevent dust generation.	$5,000

TRP-MCB 5601 Eastern LLC understands that the obligation for the performance bond or other security remains in effect for the subject property and does not become void until issuance of the final Certificate of Completion for the subject property, or 16 months after withdrawal of this application from the VCP. TRP-MCB 5601 Eastern LLC acknowledges that failure to maintain the performance bond or other security for the property will result in the withdrawal of the application from the VCP.

******* END OF REPORT *******

FIGURES



NOTES

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(410) 792-9446 OR (301) 470-4470
FAX: (410) 792-7395
WWW.GTAENG.COM

5601 EASTERN AVENUE
BALTIMORE CITY, MARYLAND

SITE LOCATION MAP

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 1,000'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 1

NOTES

BASE IMAGE OBTAINED FROM GOOGLE EARTH (©GOOGLE 2015)

0 500 1,000

APPROXIMATE SCALE
1 INCH = 1,000 FEET

NORTH

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5601 EASTERN AVENUE

BALTIMORE CITY, MARYLAND

2009 AERIAL PHOTOGRAPH

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 1,000'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 2

SITE AERIAL

N.T.S.

NOTE: THREE DIMENSIONAL AERIAL WAS OBTAINED FROM GOOGLE EARTH. COPYRIGHT 2015

LEGEND

APPROXIMATE SUBJECT PROPERTY BOUNDARY

APPROXIMATE EXTENTS OF CRYSTAL HILL, BASED ON HISTORICAL DATA, AND INFORMATION PROVIDED IN PREVIOUS ENVIRONMENTAL REPORTS FOR THE SITE.

1 — USTS REPORTEDLY CLOSED IN PLACE:
- 1 - 500-GALLON #2 OIL
- 2 - 500-GALLON #2 OIL
- 3 - 12,000-GALLON #2 OIL
- 4 - 12,000-GALLON #2 OIL
- 5 - 12,000-GALLON #2 OIL

8 — USTS REPORTEDLY REMOVED:
- 6 - 1,000-GALLON DIESEL FUEL
- 7 - 500-GALLON GASOLINE
- 8 - #2 OIL, UNKNOWN CAPACITY

AREA OF PROPOSED GEOPHYSICAL EVALUATION

Notes

1. BASE MAP WAS OBTAINED FROM ELECTRONIC COPIES OF THE SITE PLANS PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), THE PROJECT CIVIL ENGINEER.

0 30 60

APPROXIMATE SCALE
1 INCH = 60 FEET

North

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5601 EASTERN AVENUE
BALTIMORE, MARYLAND

EXISTING CONDITIONS PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 60'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 3

EXPLORATION LOCATION PLAN
SCALE: 1" = 60'

LEGEND

APPROXIMATE SUBJECT PROPERTY BOUNDARY

APPROXIMATE EXTENTS OF CRYSTAL HILL, BASED ON HISTORICAL DATA, AND INFORMATION PROVIDED IN PREVIOUS ENVIRONMENTAL REPORTS FOR THE SITE.

NOTES

1. BASE MAP WAS OBTAINED FROM ELECTRONIC COPIES OF THE SITE PLANS PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), THE PROJECT CIVIL ENGINEER.

Minimum Density: Southeast View over Eastern Avenue

MCB Real Estate LLC
2701 N Charles Street | Suite 404
Baltimore, Maryland 21218
www.mcbrealestate.com

5601 Eastern Avenue
October 9, 2014

Morris & Ritchie Associates, Inc
1220-C East Joppa Road, Suite 307
Towson, Maryland 21286
T: 410.821.1690
www.mragta.com

Brown Craig Turner
10 N Charles Street | 18th Floor
Baltimore, Maryland 21201
T: 410.837.2727
www.bctarchitects.com

Minimum Density: Boulevard View

MCB Real Estate LLC
2701 N Charles Street | Suite 404
Baltimore, Maryland 21218
www.mcbrealestate.com

5601 Eastern Avenue
October 9, 2014

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0 30 60

APPROXIMATE SCALE
1 INCH = 60 FEET

North

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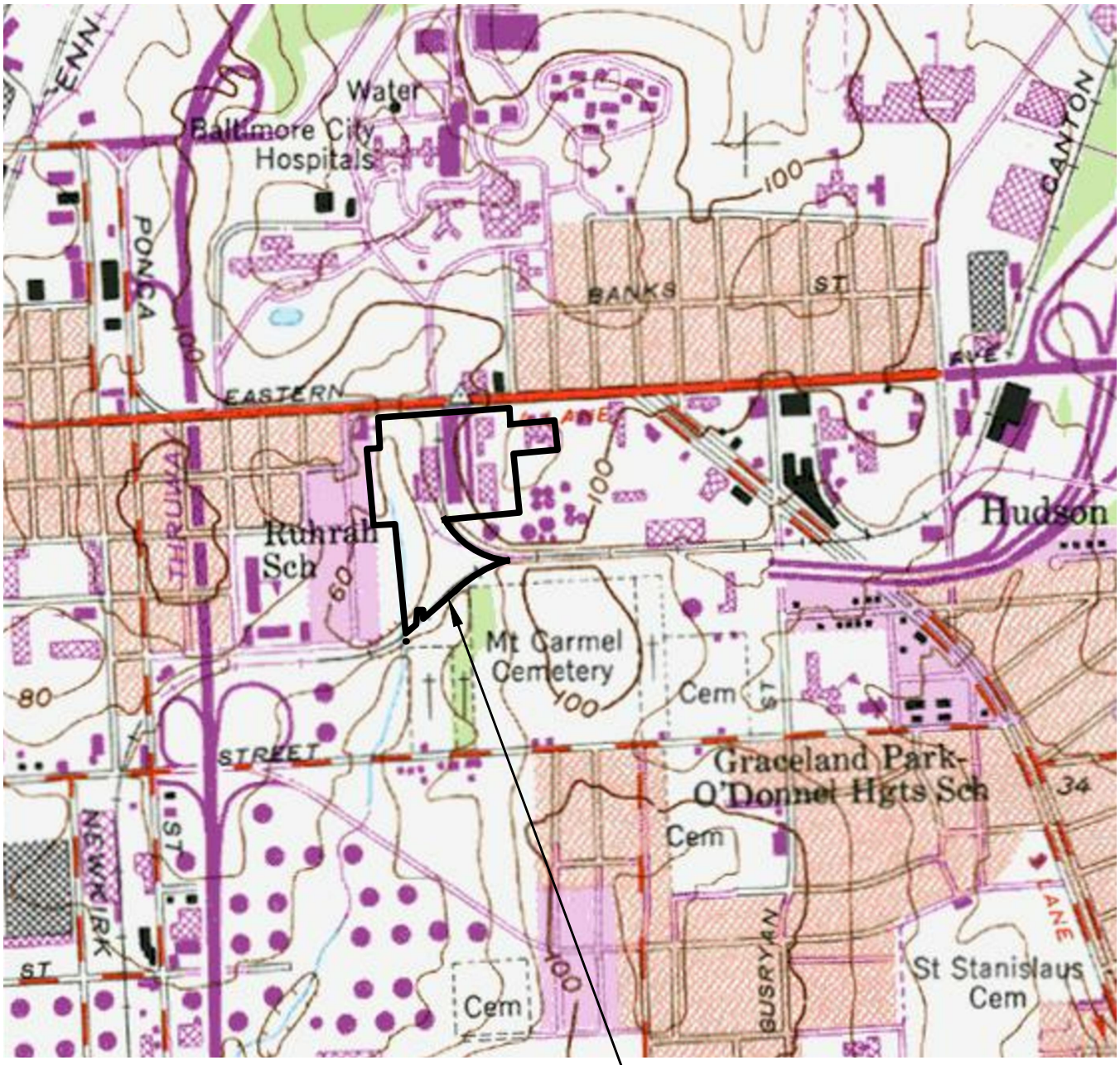
5601 EASTERN AVENUE

BALTIMORE, MARYLAND

PROPOSED CONDITIONS PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 60'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 4



NOTES

1. BASED ON THE USGS BALTIMORE EAST, MD 7.5 MINUTE QUADRANGLE MAP.
2. COPYRIGHT 2013 MYTOPO, INC.

0 500 1,000
APPROXIMATE SCALE
1 INCH = 1,000 FEET

NORTH

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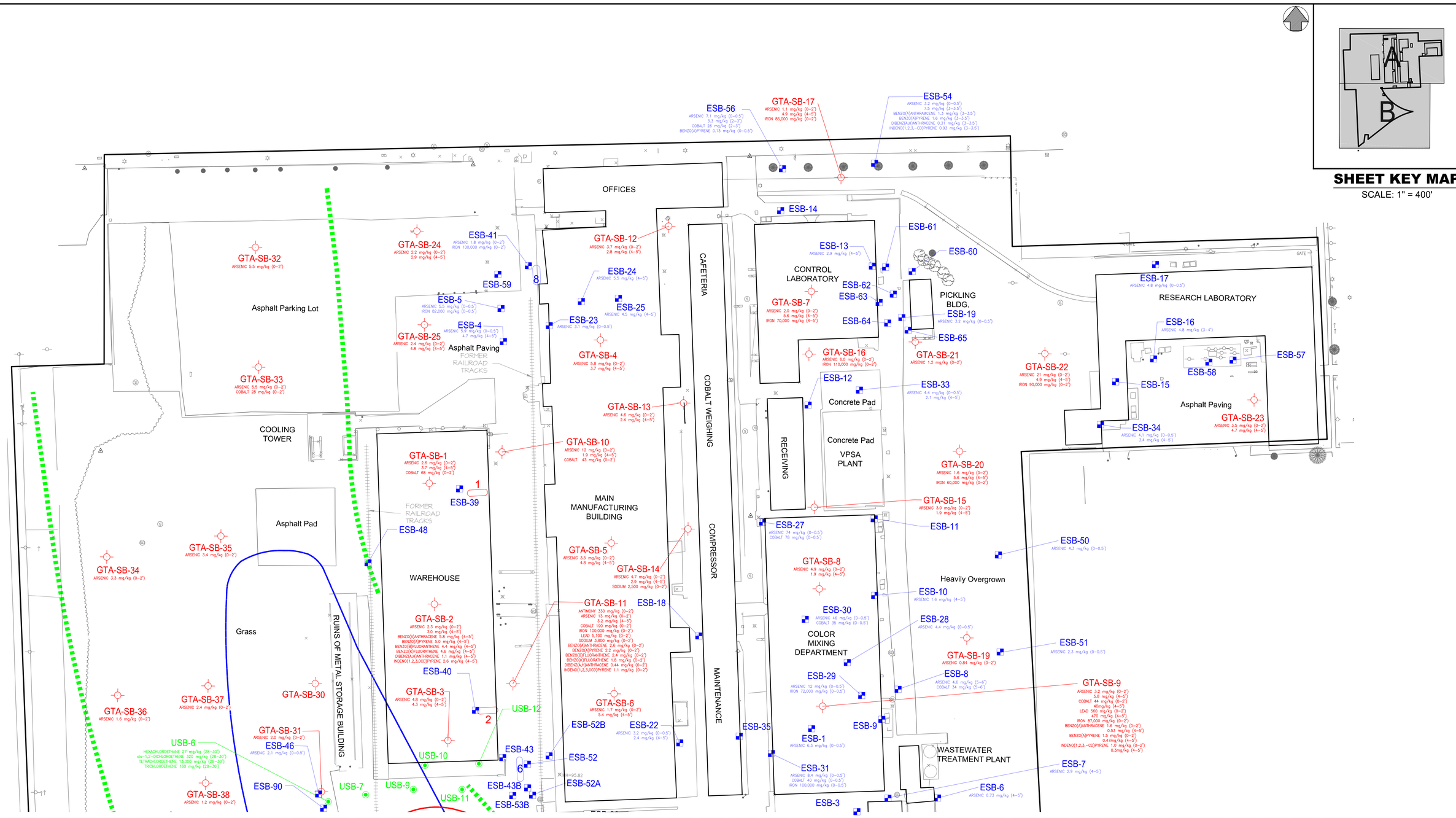
5601 EASTERN AVENUE
BALTIMORE CITY, MARYLAND

TOPOGRAPHIC MAP

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 1,000'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 5



SHEET KEY MAP

SCALE: 1" = 400'

MATCHLINE (SEE SHEET 2B FOR CONTINUATION)

LEGEND:

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- ESB-59 — SOIL SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013)
- ESB-59 (ARSENIC 5.3 mg/kg) — SOIL SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013) EXCEEDANCES OF THE USEPA REGION 3 RESIDENTIAL RSLS
- USB-7 — SOIL SAMPLE LOCATIONS PERFORMED BY OTHERS (URBAN GREEN, 2013)
- USB-7 (ARSENIC 5.3 mg/kg) — SOIL SAMPLE LOCATIONS PERFORMED BY OTHERS (URBAN GREEN, 2013) EXCEEDANCES OF THE USEPA REGION 3 RESIDENTIAL RSLS
- GTA-SB-30 — SOIL SAMPLE LOCATIONS PERFORMED BY GTA
- GTA-SB-31 (ARSENIC 5.3 mg/kg) — SOIL SAMPLE LOCATIONS PERFORMED BY GTA EXCEEDANCES OF THE USEPA REGION 3 RESIDENTIAL RSLS
- APPROXIMATE EXTENT OF CRYSTAL HILL
- APPROXIMATE EXTENT OF VOC IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
- APPROXIMATE EXTENT OF METHANE IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
- 1 — USTS REPORTEDLY CLOSED IN PLACE:
  - 1 - 500-GALLON #2 OIL
  - 2 - 500-GALLON #2 OIL
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  - 4 - 12,000-GALLON #2 OIL
  - 5 - 12,000-GALLON #2 OIL
- 8 — USTS REPORTEDLY REMOVED:
  - 6 - 1,000-GALLON DIESEL FUEL
  - 7 - 500-GALLON GASOLINE
  - 8 - #2 OIL, UNKNOWN CAPACITY

NOTES:

1. BASED ON PLANS PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), SAMPLE LOCATION PLANS PREPARED BY OTHERS, AND SITE OBSERVATIONS.
2. PROPERTY BOUNDARIES AND SITE FEATURES ARE APPROXIMATE.
3. REFER TO THE *SVOCS AND PCBS SOIL CHARACTERIZATION SUMMARY TABLE* (*TABLE 4*), THE *VOCS SOIL CHARACTERIZATION SUMMARY TABLE (TABLE 3)*, AND THE *METALS SOIL CHARACTERIZATION SUMMARY TABLE* (*TABLE 5*) FOR COMPLETE SOIL DATA SUMMARY.
4. GTA'S SAMPLE LOCATIONS WERE SELECTED AND STAKED IN THE FIELD BY GTA USING A HANDHELD GPS UNIT. GTA'S SAMPLE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

0' 10' 20' 30' 60'

SCALE: 1"=30'

NORTH

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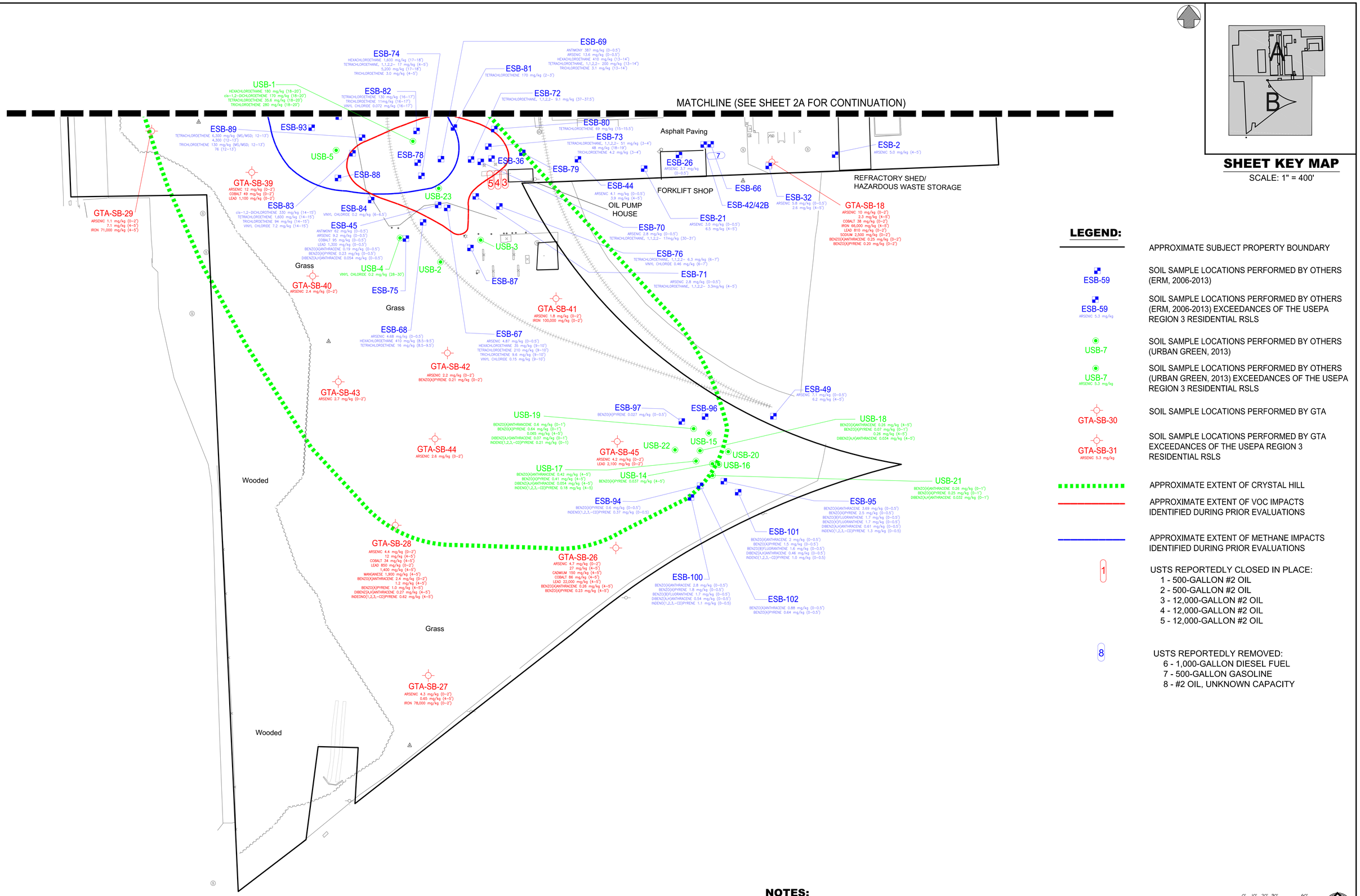
5601 EASTERN AVENUE

BALTIMORE CITY, MARYLAND

SOIL SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 30'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 6a



SHEET KEY MAP

SCALE: 1" = 400'

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  - 5 - 12,000-GALLON #2 OIL
- 8 — USTS REPORTEDLY REMOVED:
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  - 7 - 500-GALLON GASOLINE
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NOTES:

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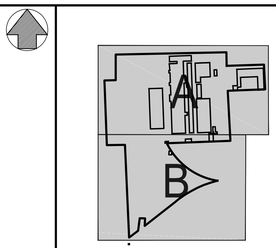
5601 EASTERN AVENUE

BALTIMORE CITY, MARYLAND

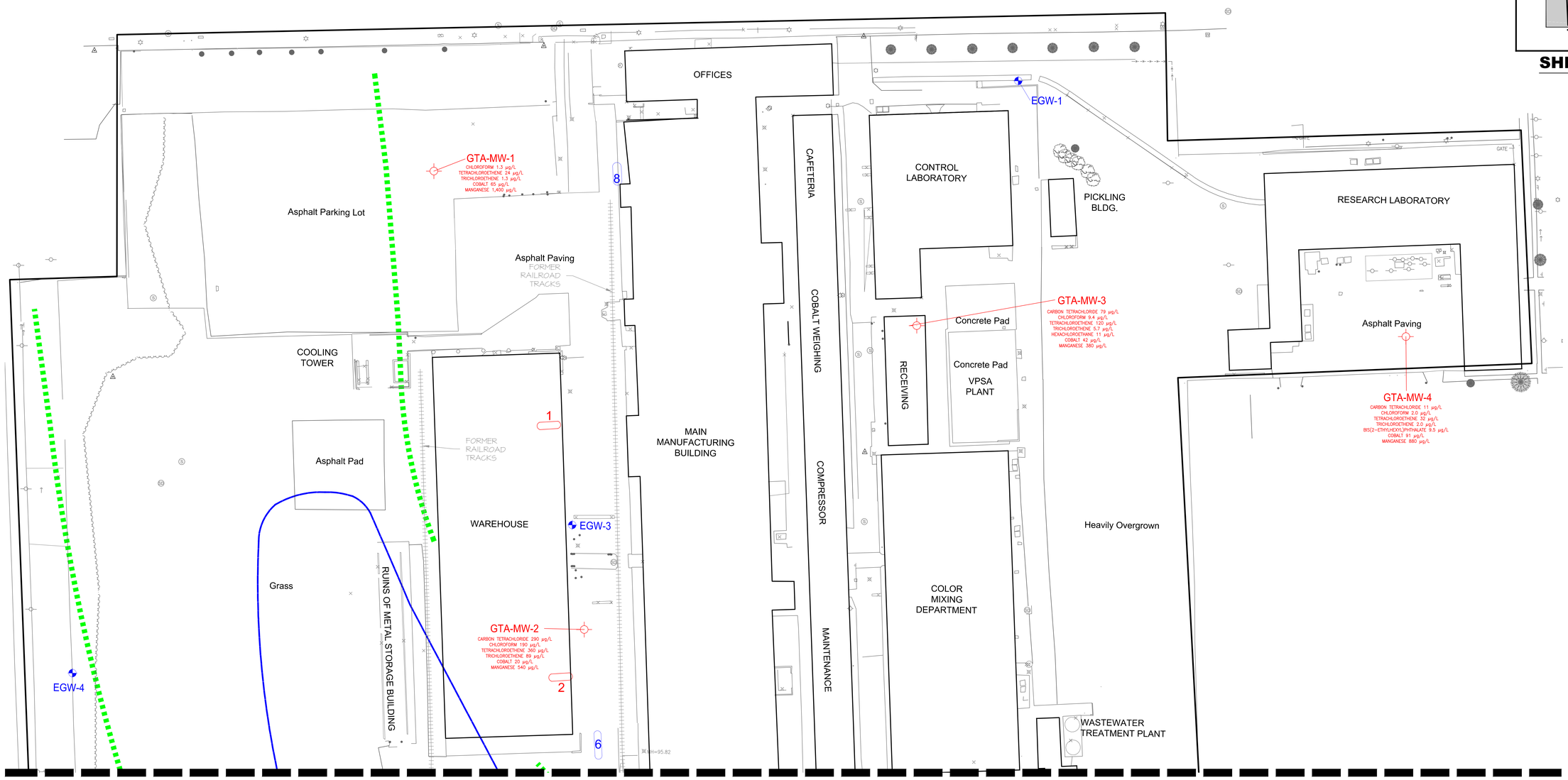
SOIL SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 30'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 6b



SHEET KEY MAP

SCALE: 1" = 400'



MATCHLINE (SEE SHEET 1B FOR CONTINUATION)

LEGEND:

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- EGW-9D — GROUNDWATER SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013)
- EGW-10 (ACROLEIN 5.3 µg/L) — GROUNDWATER SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013) EXCEEDANCES OF THE USEPA REGION 3 TAPWATER RSLS COMPARISON VALUES
- GTA-MW-1 — GROUNDWATER SAMPLE LOCATIONS PERFORMED BY GTA (DECEMBER 18 - 20, 2014)
- GTA-MW-1 (ACROLEIN 5.3 µg/L) — GROUNDWATER SAMPLE LOCATIONS PERFORMED BY GTA (DECEMBER 18 - 20, 2014) EXCEEDANCES OF THE USEPA REGION 3 TAPWATER RSLS COMPARISON VALUES
- APPROXIMATE EXTENT OF CRYSTAL HILL
- APPROXIMATE EXTENT OF VOC IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
- APPROXIMATE EXTENT OF METHANE IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
- 1 — USTS REPORTEDLY CLOSED IN PLACE:
  - 1 - 500-GALLON #2 OIL
  - 2 - 500-GALLON #2 OIL
  - 3 - 12,000-GALLON #2 OIL
  - 4 - 12,000-GALLON #2 OIL
  - 5 - 12,000-GALLON #2 OIL
- 8 — USTS REPORTEDLY REMOVED:
  - 6 - 1,000-GALLON DIESEL FUEL
  - 7 - 500-GALLON GASOLINE
  - 8 - #2 OIL, UNKNOWN CAPACITY

NOTES:

1. BASED ON PLANS PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), SAMPLE LOCATION PLANS PREPARED BY OTHERS, AND SITE OBSERVATIONS.
2. PROPERTY BOUNDARIES AND SITE FEATURES ARE APPROXIMATE.
3. REFER TO THE *AGGREGATE VOC AND SVOC GROUNDWATER CHARACTERIZATION SUMMARY TABLE* (*TABLE 6*) AND THE *METALS GROUNDWATER CHARACTERIZATION SUMMARY TABLE* (*TABLE 7*) FOR COMPLETE GROUNDWATER DATA SUMMARY.
4. GTA'S SAMPLE LOCATIONS WERE SELECTED AND STAKED IN THE FIELD BY GTA USING A HANDHELD GPS UNIT. GTA'S SAMPLE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

0' 10' 20' 30' 60'

SCALE: 1"=30'

NORTH

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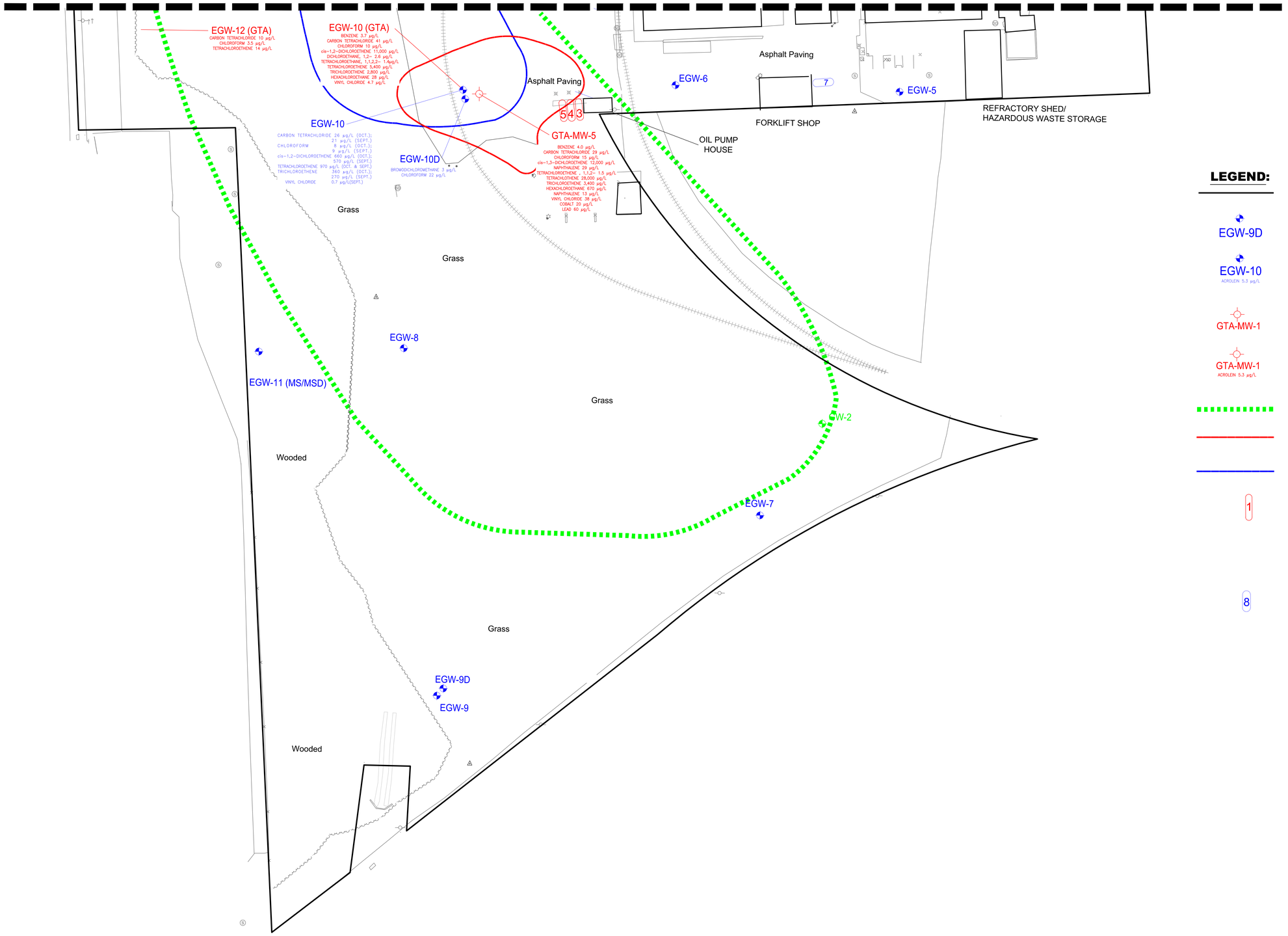
5601 EASTERN AVENUE

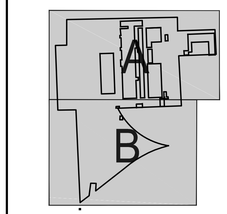
BALTIMORE CITY, MARYLAND

GROUNDWATER SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 30'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 7a

MATCHLINE (SEE SHEET 1A FOR CONTINUATION)





SHEET KEY MAP

SCALE: 1" = 400'

LEGEND:

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- EGW-9D — GROUNDWATER SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013)
- EGW-10 (ACROLEIN 5.3 µg/L) — GROUNDWATER SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013) EXCEEDANCES OF THE USEPA REGION 3 TAPWATER RSLS COMPARISON VALUES
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  - 4 - 12,000-GALLON #2 OIL
  - 5 - 12,000-GALLON #2 OIL
- 8 — USTS REPORTEDLY REMOVED:
  - 6 - 1,000-GALLON DIESEL FUEL
  - 7 - 500-GALLON GASOLINE
  - 8 - #2 OIL, UNKNOWN CAPACITY

NOTES:

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0' 10' 20' 30' 60'
SCALE: 1"=30'
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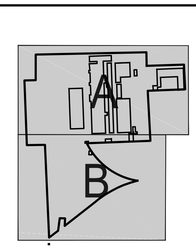
GROUNDWATER SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 30'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 7b



SHEET KEY MAP

SCALE: 1" = 400'

ESG-25
OFFICES
GTA-SV-3
ESG-24
ESG-23
CHLOROFORM 36 µg/m³
8
GTA-SV-6
CONTROL LABORATORY
GTA-SV-10
ESG-7
ACROLEIN 4.1 µg/m³
TRICHLOROETHENE 500 µg/m³
PICKLING BLDG.
RESEARCH LABORATORY
GTA-SV-11
ESG-5
GTA-SV-16
Asphalt Paving
Asphalt Parking Lot
GTA-SV-12
GTA-SV-13
Asphalt Paving
FORMER RAILROAD TRACKS
CAFETERIA
GTA-SV-4
COBALT WEIGHING
ESG-16
CHLOROFORM 51 µg/m³
TRICHLOROETHENE 1,300 µg/m³
GTA-SV-15
Concrete Pad
RECEIVING
Concrete Pad
VPSA PLANT
COOLING TOWER
ESG-1
1
MAIN MANUFACTURING BUILDING
COMPRESSOR
ESG-17
FORMER RAILROAD TRACKS
GTA-SV-1
Asphalt Pad
WAREHOUSE
Heavily Overgrown
GTA-SV-8
COLOR MIXING DEPARTMENT
GTA-SB-37
ESG-13
Grass
RUINS OF METAL STORAGE BUILDING
ESG-10
ESG-6/8
ACROLEIN 5.3 µg/m³
GTA-SV-5
ESG-18
BENZENE 160 µg/m³
CHLOROFORM 48 µg/m³
TRICHLOROETHENE, 1,1,1- 39 µg/m³
TRICHLOROETHENE 250 µg/m³
GTA-SV-9
ESG-11
ESG-2
ESG-14
GTA-SV-2
ESG-8
ESG-12
2
ESG-33
ESG-9
MAINTENANCE
GTA-SV-7
WASTEWATER TREATMENT PLANT
ESG-31
BENZENE 696 µg/m³
6
ESG-35
TETRACHLOROETHENE 1,140,000 µg/m³
TRICHLOROETHENE 140,000 µg/m³
ESG-34
ESG-26
EX. STORM MANHOLE=95.82
EX. STORM MANHOLE=91.86

MATCHLINE (SEE SHEET 3B FOR CONTINUATION)

LEGEND:

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- ESG-6 (ACROLEIN 5.3 µg/m³) — ERM SOIL VAPOR SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013) EXCEEDANCES OF THE RESIDENTIAL COMPARISON VALUES FOR TIER I SOIL VAPOR
- GTA-SV-1 — PROPOSED GTA SOIL VAPOR SAMPLE LOCATIONS (TO BE PERFORMED DURING RAP)
- APPROXIMATE EXTENT OF CRYSTAL HILL
- APPROXIMATE EXTENT OF VOC IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
- APPROXIMATE EXTENT OF METHANE IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
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  - 1 - 500-GALLON #2 OIL
  - 2 - 500-GALLON #2 OIL
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  - 4 - 12,000-GALLON #2 OIL
  - 5 - 12,000-GALLON #2 OIL
- 8 — USTS REPORTEDLY REMOVED:
  - 6 - 1,000-GALLON DIESEL FUEL
  - 7 - 500-GALLON GASOLINE
  - 8 - #2 OIL, UNKNOWN CAPACITY

NOTES:

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4. GTA'S SAMPLE LOCATIONS WERE SELECTED AND STAKED IN THE FIELD BY GTA USING A HANDHELD GPS UNIT. GTA'S SAMPLE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

0' 10' 20' 30' 60'

SCALE: 1"=30'

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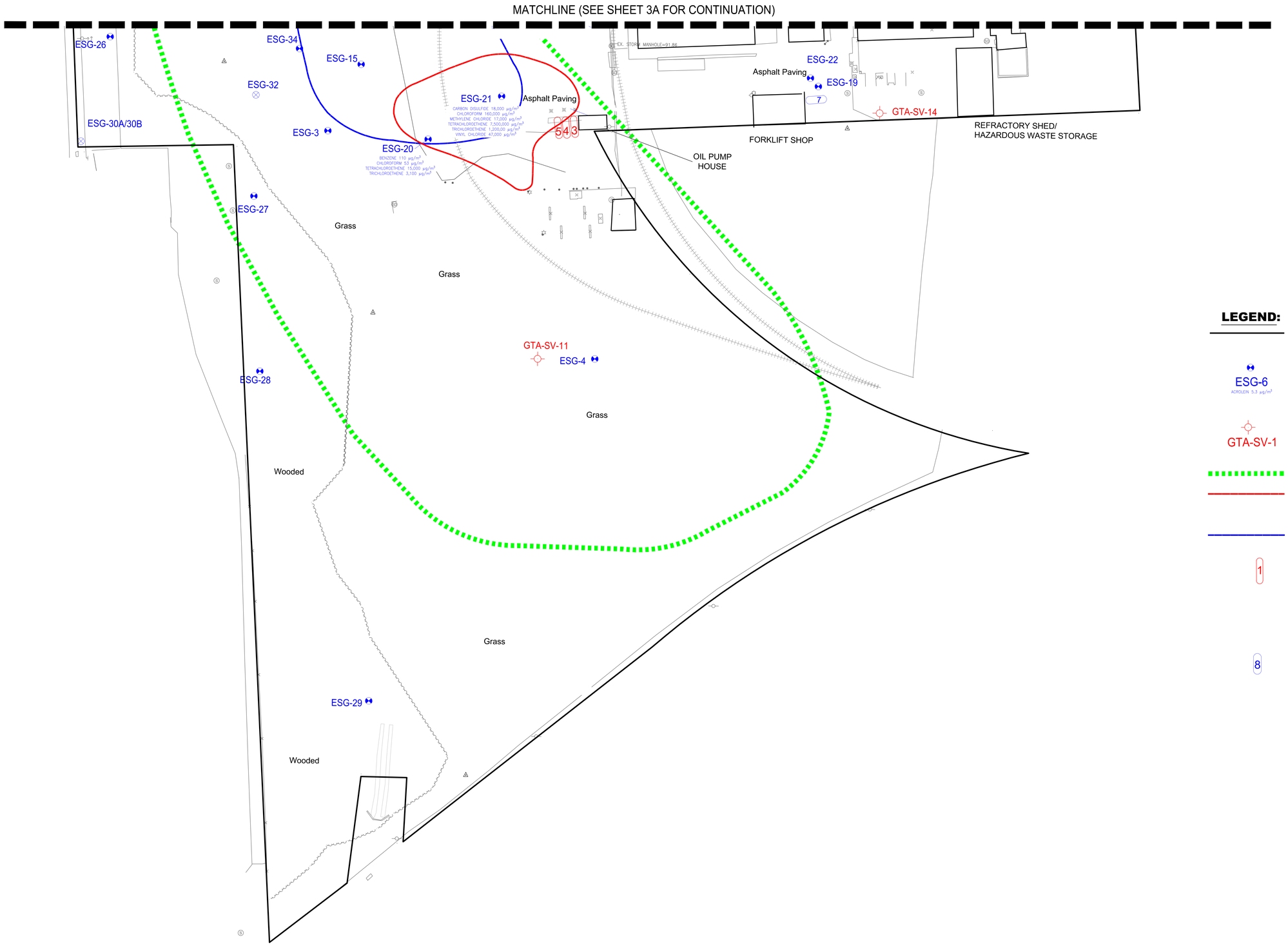
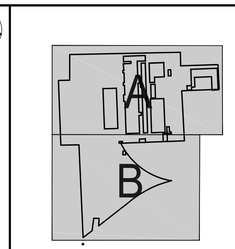
SOIL VAPOR SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 30'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 8a





SHEET KEY MAP

SCALE: 1" = 400'

LEGEND:

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- ESG-6 (ACROLEIN 5.3 µg/m³) — ERM SOIL VAPOR SAMPLE LOCATIONS PERFORMED BY OTHERS (ERM, 2006-2013) EXCEEDANCES OF THE RESIDENTIAL COMPARISON VALUES FOR TIER I SOIL VAPOR
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  - 4 - 12,000-GALLON #2 OIL
  - 5 - 12,000-GALLON #2 OIL
- 8 — USTS REPORTEDLY REMOVED:
  - 6 - 1,000-GALLON DIESEL FUEL
  - 7 - 500-GALLON GASOLINE
  - 8 - #2 OIL, UNKNOWN CAPACITY

NOTES:

1. BASED ON PLANS PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), SAMPLE LOCATION PLANS PREPARED BY OTHERS, AND SITE OBSERVATIONS.
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0' 10' 20' 30' 60'
SCALE: 1"=30'

NORTH

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SOIL VAPOR SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 30'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 8b

LEGEND:

- APPROXIMATE SUBJECT PROPERTY BOUNDARY
- GTA-MM-14 — APPROXIMATE LOCATION OF GTA'S METHANE PROBE SAMPLE LOCATIONS
- APPROXIMATE EXTENT OF CLOSED LANDFILL
- APPROXIMATE EXTENT OF VOC IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
- APPROXIMATE EXTENT OF METHANE IMPACTS IDENTIFIED DURING PRIOR EVALUATIONS
- 1 — USTS REPORTEDLY CLOSED IN PLACE:
  - 1 - 500-GALLON #2 OIL
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  - 4 - 12,000-GALLON #2 OIL
  - 5 - 12,000-GALLON #2 OIL
- 8 — USTS REPORTEDLY REMOVED:
  - 6 - 1,000-GALLON DIESEL FUEL
  - 7 - 500-GALLON GASOLINE
  - 8 - #2 OIL, UNKNOWN CAPACITY

NOTES:

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0' 25' 50' 100'

SCALE: 1"=50'

NORTH

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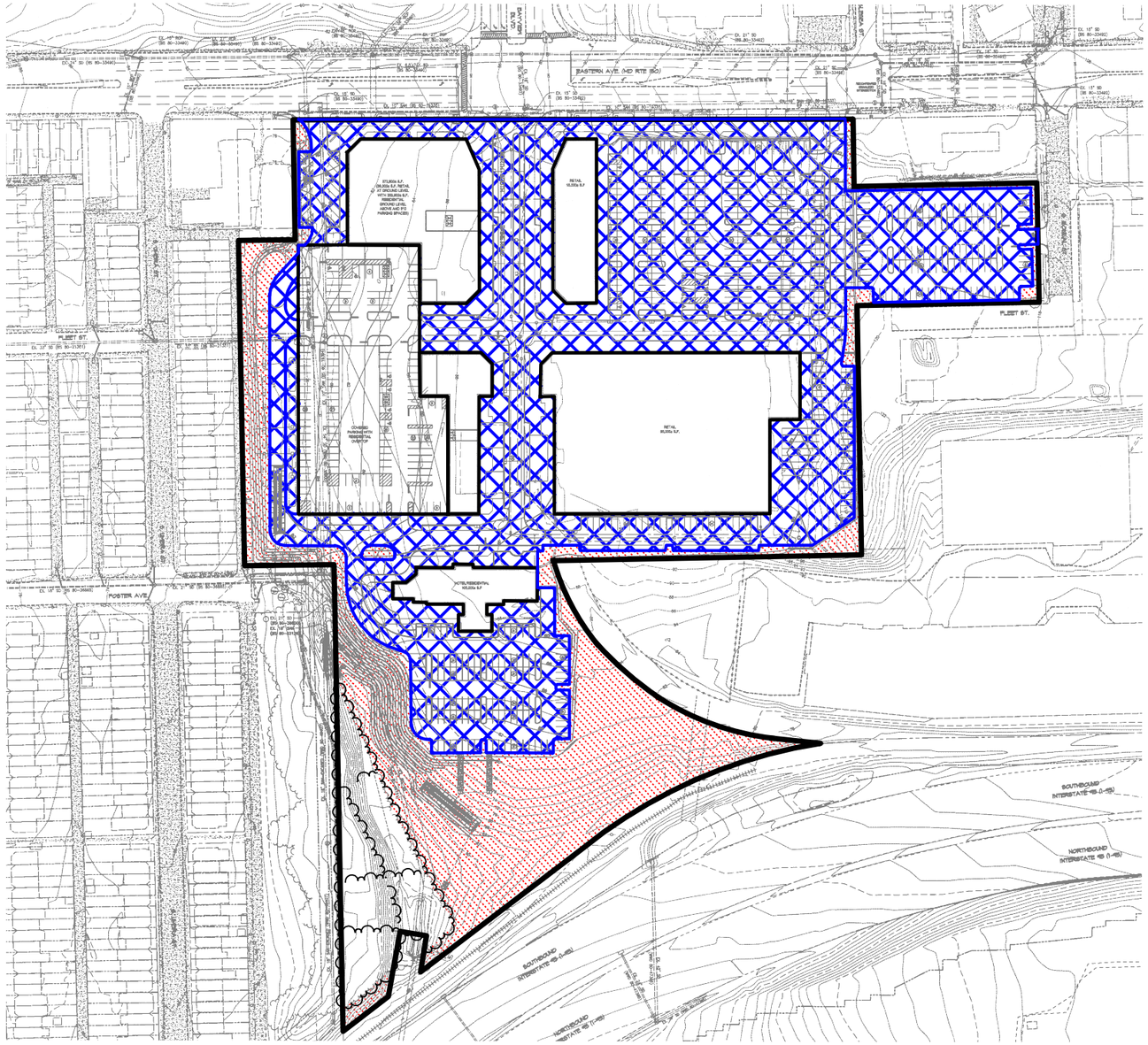
METHANE SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 50'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 9



LEGEND

- SUBJECT PROPERTY BOUNDARY
- LANDSCAPED CAPPED AREAS
- HARDSCAPED CAPPED AREAS
- NON-DISTURBED FORESTED BUFFER AREA
- PROPOSED BUILDING (CAPPING METHOD TO BE DETERMINED)

NOTES

1. BASE IMAGE OBTAINED FROM ELECTRONIC COPIES OF THE SITE PLANS PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), THE PROJECT CIVIL ENGINEER.
2. PROPERTY BOUNDARIES AND SITE FEATURES ARE APPROXIMATE.

0 100 200
Approximate Scale
1 inch = 200 feet

NORTH

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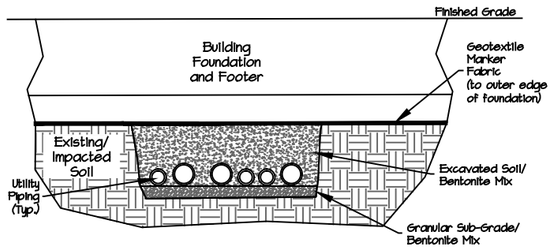
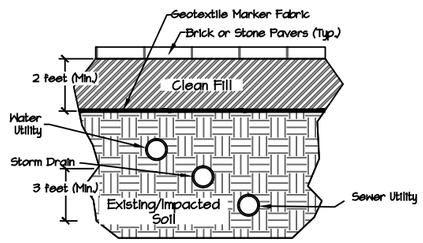
DESIGNATED CAPPED AREAS

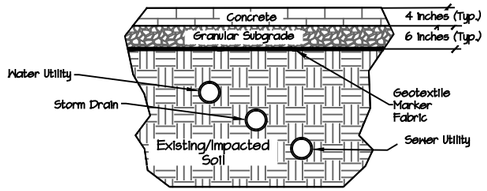
PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 200'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 10



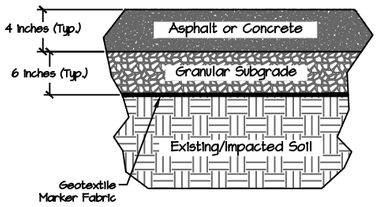
UTILITY TRENCH BUILDING PENETRATION
Typical Section



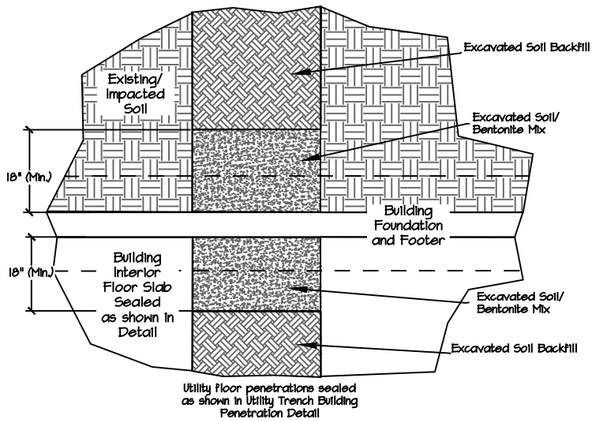
LANDSCAPED AREA (SOIL)
Typical Section



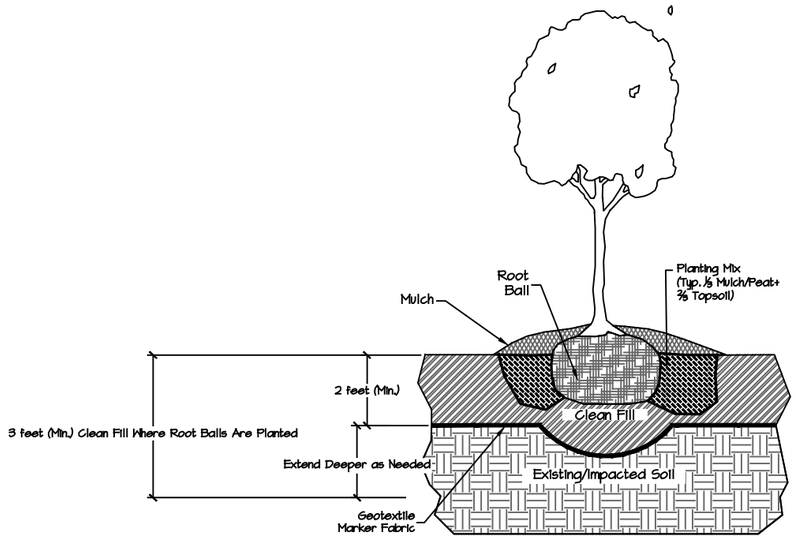
HARDSCAPED AREA (CONCRETE)
Typical Section



HARDSCAPED AREA (PAVED)
Typical Section



UTILITY TRENCH BUILDING PENETRATION
Typical Plan View



LANDSCAPE AREA (PLANTING)
Typical Section

GEOTEXTILE MARKER FABRIC SPECIFICATIONS

THE GEOTEXTILE MARKER FABRIC SHOULD BE 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 MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPAL DIRECTION. VALUES FOR APPARENT OPENING SIZE (AOS) REPRESENT MAXIMUM AVERAGE ROLL VALUES.

TABLE 1

MINIMUM PHYSICAL REQUIREMENTS FOR MARKER GEOTEXTILE

PROPERTY	UNITS	ACCEPTABLE VALUES	TEST METHOD
GRAB STRENGTH	LBS	160X160	ASTM D 4632
MULLEN BURST	PSI	350	ASTM D 3786
CBR PUNCTURE	LBS	75	ASTM D 4833
TRAPEZOID TEAR	LBS	75	ASTM D 4533
APPARENT OPENING SIZE	U.S. SIEVE	30	ASTM D 4751
PERMITTIVITY	SEC -1	0.05	ASTM D 4491
ULTRAVIOLET DEGRADATION	PERCENT	80 AT 500 HRS	ASTM D 4355

NOTES

1. DEPTH/WIDTH OF UTILITY TRENCH WILL VARY.
2. DETAILS ARE NOT FOR CONSTRUCTION.
3. DETAILS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND ARE SUBJECT TO FINAL DESIGN.
4. GRANULAR SUBGRADE BENEATH ASPHALT/CONCRETE IS MDE APPROVED CLEAN STONE/FILL.

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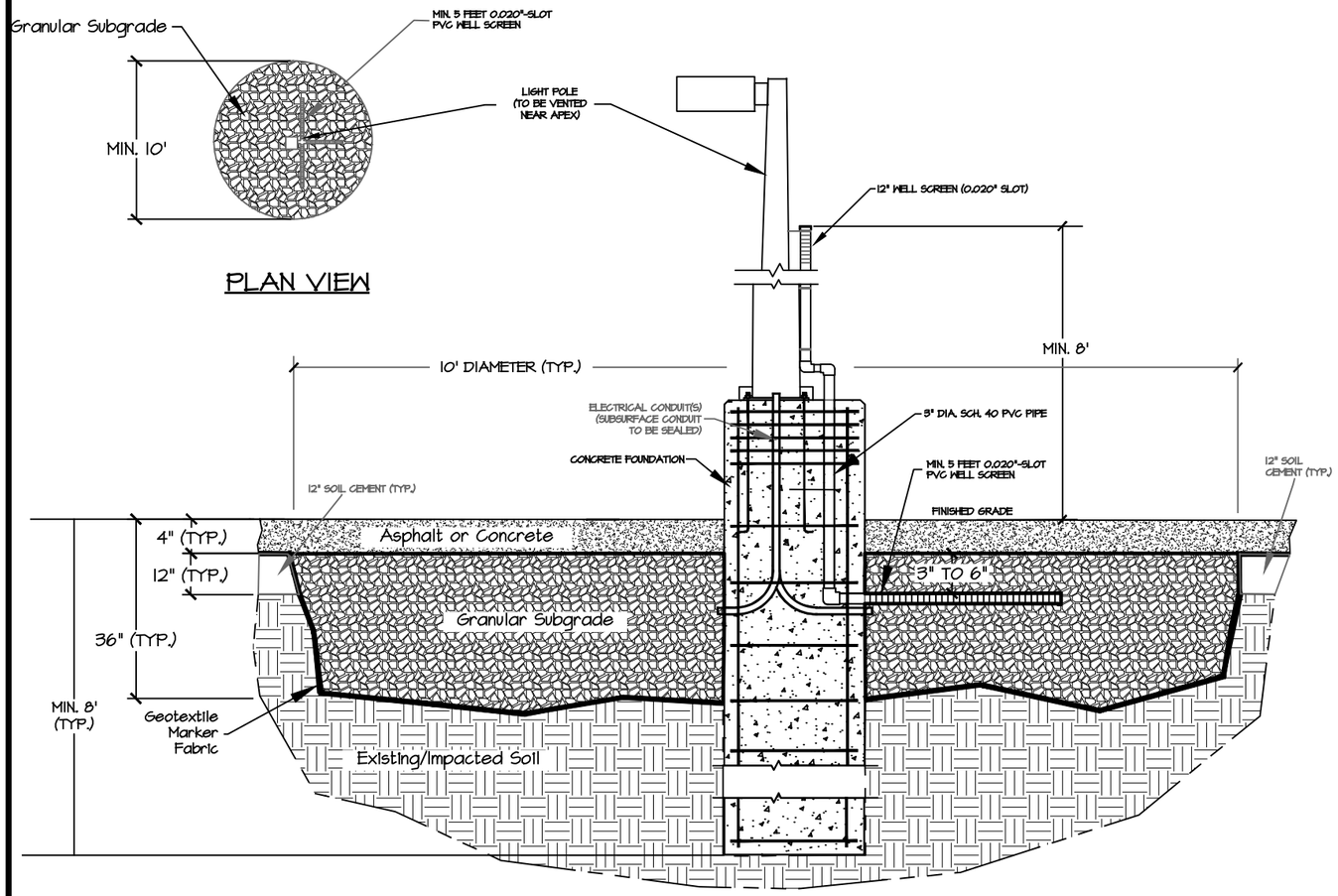
BALTIMORE CITY, MARYLAND

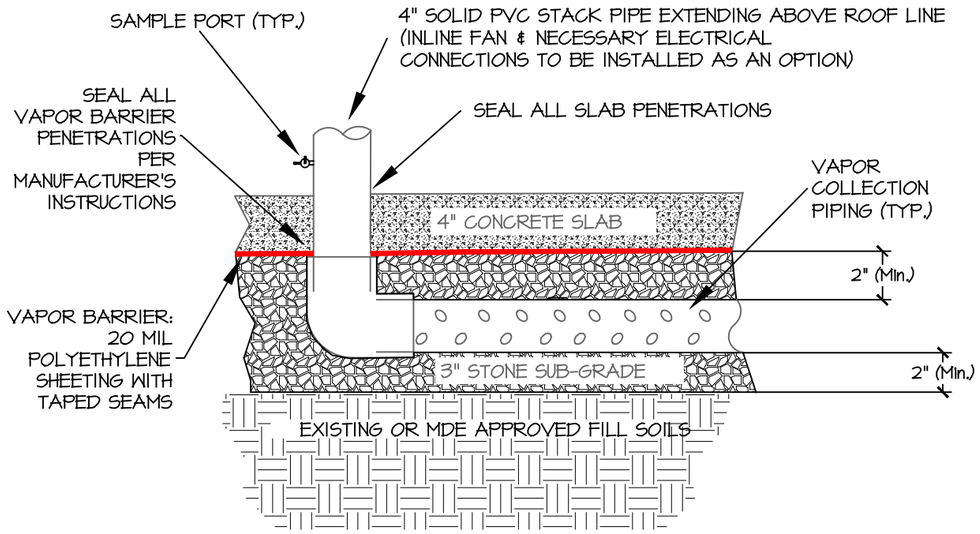
CAPPING DETAILS

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: AS SHOWN	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 11



IMPERVIOUS PAVEMENT VAPOR VENT AREA

Typical Section



SUB-SLAB VENTING SYSTEM

Typical Section

NOTES:

1. VAPOR BARRIER SHALL CONSIST OF 20 MIL (0.020 INCH) POLYVINYL CHLORIDE (PVC) OR POLYETHYLENE (PE) SHEETING WITH SEAMS OVERLAPPED A MINIMUM OF 12 INCHES AND TAPED. BARRIER SHALL BE SEALED AT THE FOUNDATION INTERFACE USING A NON-SHRINK POLYURETHANE.
2. STONE SUBGRADE SHALL CONSIST OF OPEN GRADED STONE (TYPICAL #57 STONE).
3. JOINTS IN FOUNDATION WALLS AND FLOORS SHALL BE SEALED UTILIZING A NON-CRACKING POLYURETHANE OR EQUIVALENT.
4. ANY DUCTWORK (SUCH AS ELECTRICAL CONDUIT OR SANITARY SEWER) THAT IS ROUTED BENEATH THE BUILDING SHALL BE PROPERLY TAPED OR SEALED.
5. VENT PIPES TO BE LOCATED IN HIDDEN AREAS OF THE BUILDING.
6. VENT STACKS SHALL BE ADEQUATELY SUPPORTED, GAS TIGHT, THROUGH ENCLOSED AREAS OF BUILDING.

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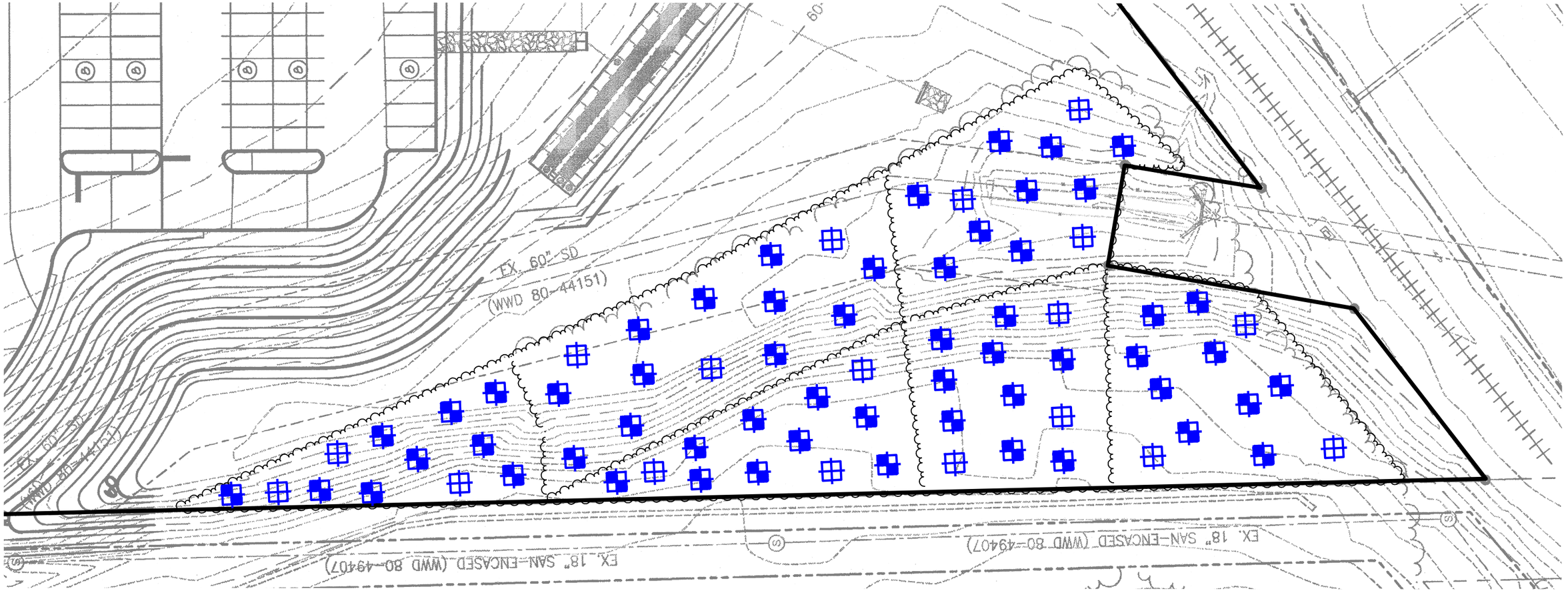
BALTIMORE CITY, MARYLAND

GENERIC VAPOR VENTING DETAILS

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: AS SHOWN	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 12



LEGEND

SUBJECT PROPERTY BOUNDARY

NON-DISTURBED FORESTED BUFFER AREA.

PROPOSED FORESTED BUFFER SURFACE SAMPLING LOCATIONS (TO BE ANALYZED FOR METALS, TPH GRO, TPH DRO, SVOCS, AND VOCS).

PROPOSED FORESTED BUFFER SURFACE SAMPLING LOCATIONS (TO BE ANALYZED FOR METALS AND SVOCS).

0 20 40
Approximate Scale
1 inch = 40 feet

NORTH

NOTES

1. BASE IMAGE OBTAINED FROM ELECTRONIC COPIES OF THE SITE PLANS PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), THE PROJECT CIVIL ENGINEER.
2. PROPERTY BOUNDARIES AND SITE FEATURES ARE APPROXIMATE.

GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
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LAUREL, MARYLAND 20707
(410) 792-9446 OR (301) 470-4470
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5601 EASTERN AVENUE
BALTIMORE CITY, MARYLAND

FORESTED BUFFER SAMPLE LOCATION PLAN

PROJECT: 140080	DATE: OCTOBER 2015	SCALE: 1" = 40'	DESIGN BY: MDP	REVIEW BY: KPP	FIGURE: 13

TABLES

Table 1
Characterization Sampling Key

Soil Tables (Tables 2 through 4)

ERM Samples (ESB) collected in 2006-2007.
Urban Green Samples (USB) collected in 2013.
GTA samples (GTA) collected in 2014.
Results in milligrams per kilogram (mg/kg), or parts per million (ppm)
Only detected compounds shown
-- = Not detected at or above the laboratory's reporting limit
NA = Not applicable, USEPA Region 3 standard not established.
NE = USEPA Region 3 standard not established
Blank Cell = Not analyzed
RSL = Regional Screening Level
USEPA Region 3 Resident Soil RSLs = United States Environmental Protection Agency Region 3 Residential Soil RSLs (Regional Screening Level Summary Table, TR=1E-6, HQ=1, June 2015)
Shaded and bold values represent exceedance of the USEPA Region 3 Residential Soil RSLs
SVOCs = Semi-Volatile Organic Compounds
PCBs = Polychlorinated Biphenyls
VOCs = Volatile Organic Compounds
* = NI (not defined in Urban Green Report)
B = Analyte not detected substantially above concentration found in the laboratory or field blank
J = Indicates estimated value, result is less than the adjusted reporting limit but greater than zero
K = Analyte present, the reported value is biased high actual value is expected lower.
L = Analyte present, the reported value is biased low, actual value is expected higher.
N = Presumptive evidence of a compound (TICs only)

Groundwater Tables (Tables 5 and 6)

ERM samples (EGW) collected in 2010.
GTA samples (GTA) collected in 2015.
Results in micrograms per liter (µg/L), similar to parts per billion (ppb)
Only detected compounds are shown
-- = Not detected at or above the laboratory's reporting limit
NE = USEPA Region 3 standard not established
Blank Cell = Not analyzed
RSL = Regional Screening Level
USEPA Region 3 Tapwater RSLs = United States Environmental Protection Agency Region 3 Tapwater RSLs (Regional Screening Level Summary Table, TR=1E-6, HQ=1, June 2015)
Shaded and bold values represent exceedance of the USEPA Region 3 Tapwater RSLs
SVOCs = Semi-Volatile Organic Compounds
VOCs = Volatile Organic Compounds
TAL Metals = Target Analyte List Metals
TAL Metals results are expressed as dissolved metals concentrations, then total metals concentrations in (parentheses). Only exceedances of dissolved TAL Metals are indicated.
E = The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
J = Indicates estimated value, result is less than the adjusted reporting limit but greater than zero
U = analyte not detected.
L = Analyte present, the reported value is biased low, actual value is expected higher.
Dup = Duplicate sample
MS/MSD = Matrix Spike /Matrix Spike Duplicate

Table 1
Characterization Sampling Key

Soil Vapor Table (Table 7)

ERM Samples (ESB) collected in 2006-2007.
GTA attempted to collect samples in 2014, sample location are proposed.
Results expressed in micrograms per cubic meter ($\mu g/m^3$)
-- = Not detected at or above the laboratory's reporting limit
Only detected compounds shown
Blank Cell = Not analyzed
VOCs = Volatile Organic Compounds
RSL = Regional Screening Level, from USEPA June 2015
Adjusted RSL uses CR = 10^{-5} rather than 10^{-6}
Residential Tier 1 Target Soil Vapor calculated using the Adjusted RSL x 20 (per MDE guidance), equivalent to $\alpha = 0.05$
NE = No published guidance value
CR = cancer risk (increase in cancer risk due to exposure to chemical of potential concern)
Non-carcinogens are expressed with hazard index (HI) = 1.0
J = Indicates estimated value, result is less than the adjusted reporting limit but greater than zero

Methane Table (Table 8)

NA - Not applicable
>>> = indicates that the %LEL is greater than 100%
Atm. Press. = barometric pressure
* = indicates that the monitoring probe installation was attempted; however due to complications during drilling operations it was not installed
** = indicates that monitoring probe was damaged and was unrepairable and not re-installed
*** = indicates that monitoring probe was damaged and repaired at a later date
Methane probes were installed using GTA's track-mounted CME-45 SPT drill rig.
Screening was used from a depth of approximately 2 feet below existing grade to the termination
The methane concentrations reported above indicate the maximum concentrations (in percent by
The relative pressures shown above indicate the approximate, stabilized pressure/vacuum (+/-)
-- = relative pressure was not recorded at time of the field screening

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-1	GTA-SB-2	GTA-SB-3	GTA-SB-4	GTA-SB-5	GTA-SB-6	GTA-SB-7	GTA-SB-8	GTA-SB-9	GTA-SB-10	GTA-SB-11	GTA-SB-12	GTA-SB-13	GTA-SB-14
Depth (feet)		4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5
VOCs	(mg/kg)														
Acetone	61,000	--	--	--	--	--	--	--	--	--	--	0.03	--	--	--
Benzene	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanol	7,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)	27,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	770	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.65	0.0062	0.018	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.32	0.012	0.008	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160	--	--	0.0047	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	6,500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene, 1,2-	1,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene,1,3-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	5.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanone, 2-(MBK)	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m&p-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	24	--	0.012	0.280	--	--	--	--	--	--	--	--	--	--	--
Toluene	4,900	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.94	--	--	0.015	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	730	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.059	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-15	GTA-SB-16	GTA-SB-17	GTA-SB-18	GTA-SB-19	GTA-SB-20	GTA-SB-21	GTA-SB-22	GTA-SB-23	GTA-SB-24	GTA-SB-25	GTA-SB-26	GTA-SB-27	GTA-SB-28
Depth (feet)		4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5
VOCs	(mg/kg)														
Acetone	61,000	--	--	--	--	--	--	--	--	--	--	0.023	0.04	--	0.065
Benzene	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanol	7,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)	27,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	770	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160	--	--	--	--	--	--	--	--	--	--	--	0.028	--	--
Cyclohexane	6,500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene, 1,2-	1,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene,1,3-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	5.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanone, 2-(MBK)	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m&p-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	24	--	--	--	--	--	--	--	--	--	--	--	0.0082	--	--
Toluene	4,900	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	NE	--	--	--	--	--	--	--	--	--	--	--	0.013	--	--
Trichloroethene	0.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	730	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.059	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-DUP 1	GTA-SB-DUP 2	ESB-2	ESB-2	ESB-6	ESB-6	ESB-7	ESB-8	ESB-8 dup	ESB-16	ESB-16	ESB-17	ESB-18	ESB-19
Depth (feet)				0-0.5	4-5	0-0.5	4-5	4-5	9-10	9-10	3-4	9-10	0-0.5	0-0.5	0-0.5
VOCs	(mg/kg)														
Acetone	61,000	--	--	--	--	--	--	--	--	--	--	--	0.062	--	--
Benzene	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanol	7,800	--	--	--	--	--	--	--	--	--	--	--	0.002	--	--
Butanone, 2- (MEK)	27,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	770	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160	--	--	--	--	--	--	--	--	--	--	--	--	--	0.003
Cyclohexane	6,500	--	--	--	--	--	--	0.027	--	--	--	--	--	--	--
Dichlorobenzene, 1,2-	1,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene,1,3-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	5.8	--	--	--	--	--	--	0.014	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanal	NE	--	--	--	--	--	--	--	--	--	--	--	0.064	--	--
Hexanone, 2-(MBK)	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	NE	--	--	--	--	--	--	0.007	--	--	--	--	--	--	--
m&p-Xylene	650	--	--	--	--	--	--	0.065	--	--	--	--	--	--	--
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	NE	--	--	--	--	--	--	4.3 K	--	--	--	--	--	--	--
Methylene chloride	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	650	--	--	--	--	--	--	0.023	--	--	--	--	--	--	--
Pentanal	NE	--	--	--	--	--	--	--	--	--	--	--	0.008	--	--
Tetrachloroethane, 1,1,2,2-	0.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	24	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	4,900	--	--	--	--	--	--	0.005 J	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.94	--	--	--	--	--	--	--	--	--	--	--	--	--	0.091
Trichlorofluoromethane	730	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.059	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-22	ESB-22	ESB-34	ESB-34	ESB-35	ESB-42B	ESB-44	ESB-44	ESB-47	ESB-53B	ESB-54	ESB-54	ESB-54 Dup	ESB-56
Depth (feet)		0-0.5	4-5	0-0.5	4-5	4-5	14-15	0-0.5	4-5	3-4	11-12	0-0.5	3-3.5	3-3.5	0-0.5
VOCs	(mg/kg)														
Acetone	61,000	--	--	--	--	--	--	--	--	--	0.025 K	--	--	--	0.03
Benzene	1.2	--	--	--	--	--	0.74 K	--	--	--	--	--	--	--	--
Butanol	7,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)	27,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	770	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160	--	--	--	--	--	--	--	--	0.003 K	--	--	--	--	--
Cyclohexane	6,500	--	--	--	--	--	0.07 K	--	--	--	--	--	--	--	--
Dichlorobenzene, 1,2-	1,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene,1,3-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	5.8	--	--	--	--	--	0.17 K	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanone, 2-(MBK)	200	--	--	--	--	--	0.086 K	--	--	--	--	--	--	--	--
Isopropylbenzene	NE	--	--	--	--	--	0.009 K	--	--	--	--	--	--	--	--
m&p-Xylene	650	--	--	--	--	--	0.500 K	--	--	--	--	--	--	--	--
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--	--	--	--	--	0.043 K	--	--	--	--	--	--	--	--
Methylcyclohexane	NE	--	--	--	--	--	0.026 K	--	--	--	--	--	--	--	--
Methylene chloride	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	0.12 K	0.007 K	--	--	--	--	--	--	--
o-Xylene	650	--	--	--	--	--	0.22 K	--	--	--	--	--	--	--	--
Pentanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	24	--	--	--	--	--	--	--	0.039 K	0.045 K	--	--	--	--	--
Toluene	4,900	--	--	--	--	--	1.5 K	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.94	--	--	--	--	--	--	--	--	0.022 K	--	--	--	--	--
Trichlorofluoromethane	730	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.059	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-56	ESB-59	ESB-60	ESB-60	ESB-61	ESB-61	ESB-62	ESB-62	ESB-63	ESB-63	ESB-64	ESB-64 Dup	ESB-64	ESB-65
Depth (feet)		2-3	0-0.83	9-10	19-20	2-3	14-15	3-4	14-15	7-8	14-15	5-6	5-6	14-15	8-9
VOCs	(mg/kg)														
Acetone	61,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanol	7,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)	27,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	770	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.65	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	6,500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene, 1,2-	1,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene,1,3-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	5.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanone, 2-(MBK)	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m&p-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	24	--	--	0.59	--	--	--	--	--	--	--	--	--	--	--
Toluene	4,900	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.94	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	730	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.059	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-65	ESB-66	ESB-67	ESB-68	ESB-69	ESB-69	ESB-70	ESB-71	ESB-72	ESB-73	ESB-73	ESB-74	ESB-74	ESB-74
Depth (feet)		**14-15**	**27.5-28.5**	**9-10**	**8.5-9.5**	**13-14**	**28-29**	**30-31**	**4-5**	**37-37.5**	**3-4**	**18-19**	**4-5**	**17-18**	**25-26**
VOCs	**(mg/kg)**														
Acetone	61,000	--	--	0.11	0.015 J	0.027	--	--	--	--	--	--	--	--	--
Benzene	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanol	7,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)	27,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon Disulfide	770	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.65	--	--	--	--	0.005 J	--	--	--	--	--	--	--	--	--
Chlorobenzene	280	--	--	0.005 J	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.32	--	--	0.12	0.004 J	0.072	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	160	--	--	11	0.75	1.0	0.017	--	--	0.3 J	1.6	--	2	--	1.3
Cyclohexane	6,500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene, 1,2-	1,800	--	--	0.003 J	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene,1,3-	NE	--	--	0.004 J	--	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	NE	--	--	0.012	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	5.8	--	0.005 J	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	**35 J,N**	**15 J,N**	**410 J**	0.041 J,N	--	--	1.1 J,N	--	--	--	**1,600 J,N**	--
Hexanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanone, 2-(MBK)	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m&p-Xylene	650	--	0.014 J	--	--	--	--	--	--	--	--	--	--	--	--
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	57	--	--	0.042	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	0.002 J	0.005 J	--	0.045	--	3.6	--	0.24 J	--	--	--	--	--
o-Xylene	650	--	0.009 J	--	--	--	--	--	--	--	--	--	--	--	--
Pentanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.6	--	--	0.017	--	**200 J**	0.024	**17**	**3.3**	**9.1**	**51**	**48**	**17**	**5,200**	0.36 J
Tetrachloroethene	24	--	--	**210 J**	**16**	--	--	--	--	--	--	--	--	--	--
Toluene	4,900	--	0.033 J	0.004 J	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	NE	--	--	0.17	0.011	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.94	--	--	**9.6**	0.67	**3.1**	0.006	--	0.25	0.58	**4.2**	--	**3**	--	--
Trichlorofluoromethane	730	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.059	--	--	**0.15**	--	--	--	--	--	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-75	ESB-75	ESB-76	ESB-76	ESB-76 Dup	ESB-78	ESB-79	ESB-80	ESB-81	ESB-82	ESB-83	ESB-84	ESB-87	ESB-88
Depth (feet)		**4-5**	**27-28**	**6-7**	**20-21**	**20-21**	**65-65.3**	**5-6**	**15-15.5**	**2-3**	**16-17**	**14-15**	**6-6.5**	**12-13**	**14-15**
VOCs	**(mg/kg)**														
Acetone	61,000	--	--	--	--	0.011 J	--	--	--	--	0.016 L	0.44 L	0.013 L	0.053 L	--
Benzene	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanol	7,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)	27,000	--	--	--	--	--	--	--	--	--	--	--	0.16 L	--	--
Carbon Disulfide	770	--	--	--	--	--	--	--	--	--	--	0.031 J	0.009 L	--	--
Carbon tetrachloride	0.65	--	--	--	--	--	--	0.003 J	0.022	--	--	--	--	--	--
Chlorobenzene	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	0.32	--	--	--	--	--	--	--	0.024	0.002 J	0.17	--	--	0.004 J	--
cis-1,2-Dichloroethene	160	--	0.42	--	--	0.003 J	0.21	--	0.037	0.26	8.6 K	**330 K**	3.4 K	0.11	0.004 J
Cyclohexane	6,500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene, 1,2-	1,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorobenzene,1,3-	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	NE	--	--	--	--	--	--	--	--	--	--	--	0.003 J	--	--
Ethylbenzene	5.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	0.26 J	--
Hexanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexanone, 2-(MBK)	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m&p-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylcyclohexane	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	57	--	--	--	--	--	0.002	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	0.003 J	0.01	--	--	--	0.003 L	0.022 L	--	--	--
o-Xylene	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pentanal	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.6	--	--	**6.3**	--	--	--	--	--	--	--	0.097 J	--	--	--
Tetrachloroethene	24	--	--	--	0.49 J	0.19 J	5.2	3.4 K	**69 K**	**170 K**	**130 K**	**1,600 K**	2.4 K	18 K	0.006 J
Toluene	4,900	--	--	--	--	--	--	--	--	--	0.012 L	0.022 J	--	--	--
trans-1,2-Dichloroethene	NE	--	--	--	--	--	0.017	--	--	0.005 J	--	2.8 K	0.031 L	--	--
Trichloroethene	0.94	--	--	--	--	0.011	0.72 J	0.013 J	0.24 J	0.25 J	**11 K**	**94 K**	0.29	0.22 J	0.005 J
Trichlorofluoromethane	730	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	0.059	--	--	**0.46**	--	--	0.015	--	--	--	**0.072**	**7.2 K**	**0.2**	--	0.025 J
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-88 Dup	ESB-89 MS/MSD	ESB-89A	ESB-90	ESB-93	EB-1	TB-1	USB-1	USB-2	USB-3	USB-4	USB-5	USB-6	USB-7
Depth (feet)		**14-15**	**12-13**	**12-13**	**8-9**	**14-15**	**Unk**	**Unk**	**18-20**	**26-28**	**4-6**	**28-30**	**14-16**	**28-30**	**4-6**
VOCs	**(mg/kg)**														
Acetone	61,000	--													
Benzene	1.2	--													
Butanol	7,800	--													
Butanone, 2- (MEK)	27,000	--													
Carbon Disulfide	770	--													
Carbon tetrachloride	0.65	--													
Chlorobenzene	280	--													
Chloroform	0.32	--													
cis-1,2-Dichloroethene	160	0.003 J	--	--	--	--	--	--	**170**	--	--	0.096	--	**210**	0.7
Cyclohexane	6,500	--													
Dichlorobenzene, 1,2-	1,800	--													
Dichlorobenzene,1,3-	NE	--													
Dichloroethene, 1,1-	NE	--													
Ethylbenzene	5.8	--													
Hexachloroethane	1.8	--													
Hexanal	NE	--													
Hexanone, 2-(MBK)	200	--													
Isopropylbenzene	NE	--													
m&p-Xylene	650	--													
Methyl, 4-Pentanone, -2- (MIBK)	5,300	--													
Methylcyclohexane	NE	--													
Methylene chloride	57	--													
Naphthalene	3.8	--													
o-Xylene	650	--													
Pentanal	NE	--													
Tetrachloroethane, 1,1,2,2-	0.6	--													
Tetrachloroethene	24	0.005 J	**6,300**	**4,300**	--	0.004 J	--	--	**35.6**	0.014	16	0.01	0.02	**13,000**	5.6
Toluene	4,900	--													
trans-1,2-Dichloroethene	NE	--													
Trichloroethene	0.94	0.003 J	**130**	**76**	--	--	--	--	**280**	--	0.75	--	--	**160**	0.59
Trichlorofluoromethane	730	--													
Vinyl Chloride	0.059	0.021 J	--	--	--	--	--	--	--	--	--	**0.2**	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
VOCs Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	USB-8	USB-9	USB-10	USB-11	USB-12	USB-13	Dup
Depth (feet)		24-26	8-10	8-10	0-2	10-12	16-18	Unknown
VOCs	(mg/kg)							
Acetone	61,000							
Benzene	1.2							
Butanol	7,800							
Butanone, 2- (MEK)	27,000							
Carbon Disulfide	770							
Carbon tetrachloride	0.65							
Chlorobenzene	280							
Chloroform	0.32							
cis-1,2-Dichloroethene	160	0.029	0.72	--	--	--	--	--
Cyclohexane	6,500							
Dichlorobenzene, 1,2-	1,800							
Dichlorobenzene,1,3-	NE							
Dichloroethene, 1,1-	NE							
Ethylbenzene	5.8							
Hexachloroethane	1.8							
Hexanal	NE							
Hexanone, 2-(MBK)	200							
Isopropylbenzene	NE							
m&p-Xylene	650							
Methyl, 4-Pentanone, -2- (MIBK)	5,300							
Methylcyclohexane	NE							
Methylene chloride	57							
Naphthalene	3.8							
o-Xylene	650							
Pentanal	NE							
Tetrachloroethane, 1,1,2,2-	0.6							
Tetrachloroethene	24	0.018	4.6	19	3.5	0.026	0.29	--
Toluene	4,900							
trans-1,2-Dichloroethene	NE							
Trichloroethene	0.94	--	--	--	--	--	--	--
Trichlorofluoromethane	730							
Vinyl Chloride	0.059	**0.39**	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-1	GTA-SB-1	GTA-SB-2	GTA-SB-2	GTA-SB-3	GTA-SB-3	GTA-SB-4	GTA-SB-4	GTA-SB-5	GTA-SB-5	GTA-SB-6	GTA-SB-6	GTA-SB-7	GTA-SB-7
Depth (feet)		**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	1.30	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	18,000	--	--	--	2.70	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	0.16	--	--	--	**5.80**	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.016	--	--	--	**5.00**	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1.6	--	--	--	**4.40**	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	NA	--	--	--	2.50	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	1.6	--	--	--	**4.60**	--	--	--	--	--	--	--	--	--	--
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl) ether	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbazole	NA	--	--	--	1.50	--	--	--	--	--	--	--	--	--	--
Chrysene	16	--	--	--	5.80	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	0.016	--	--	--	**1.10**	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	73	--	--	--	0.76	--	--	--	--	--	--	--	--	--	--
Fluoranthene	2,400	--	--	--	12.00	--	--	--	--	--	--	--	--	--	--
Fluorene	2,400	--	--	--	1.40	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16	--	--	--	**2.6**	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-	240	--	--	--	0.24	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	0.36	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NA	--	--	--	11	--	--	--	--	--	--	--	--	--	--
Pyrene	1,800	--	--	--	11	--	--	--	--	--	--	--	--	--	--
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
All PCBs	Varies														

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-8	GTA-SB-8	GTA-SB-9	GTA-SB-9	GTA-SB-10	GTA-SB-10	GTA-SB-11	GTA-SB-11	GTA-SB-12	GTA-SB-12	GTA-SB-13	GTA-SB-13	GTA-SB-14	GTA-SB-14
Depth (feet)		**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	--	--	--	0.32	--	--	--	--	--	--	--
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	18,000	--	--	0.33	--	--	--	0.94	--	--	--	--	--	--	--
Benzo(a)anthracene	0.16	--	--	**1.60**	**0.53**	--	--	**2.60**	--	--	--	--	--	--	--
Benzo(a)pyrene	0.016	--	--	**1.50**	**0.47**	--	--	**2.20**	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1.6	--	--	1.50	0.48	--	--	**2.40**	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	NA	--	--	0.88	0.26	--	--	1.00	--	--	--	--	--	--	--
Benzo(k)fluoranthene	1.6	--	--	1.10	0.46	--	--	**1.80**	--	--	--	--	--	--	--
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl) ether	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbazole	NA	--	--	--	--	--	--	0.33	--	--	--	--	--	--	--
Chrysene	16	--	--	1.70	0.56	--	--	2.70	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	0.016	--	--	--	--	--	--	**0.44**	--	--	--	--	--	--	--
Dibenzofuran	73	--	--	--	--	--	--	0.230	--	--	--	--	--	--	--
Fluoranthene	2,400	--	--	2.30	0.91	--	--	4.700	--	--	--	--	--	--	--
Fluorene	2,400	--	--	--	--	--	--	0.410	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16	--	--	**1.00**	**0.30**	--	--	**1.200**	--	--	--	--	--	--	--
Methylnaphthalene, 2-	240	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NA	--	--	1.40	0.54	--	--	3.300	--	--	--	--	--	--	--
Pyrene	1,800	--	--	2.20	0.86	--	--	3.900	--	--	--	--	--	--	--
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
All PCBs	Varies					--	--								

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-15	GTA-SB-15	GTA-SB-16	GTA-SB-16	GTA-SB-17	GTA-SB-17	GTA-SB-18	GTA-SB-18	GTA-SB-19	GTA-SB-19	GTA-SB-20	GTA-SB-20	GTA-SB-21	GTA-SB-21
Depth (feet)		**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	18,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	0.16	--	--	--	--	--	--	**0.250**	--	--	--	--	--	--	--
Benzo(a)pyrene	0.016	--	--	--	--	--	--	**0.200**	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl) ether	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbazole	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	16	--	--	--	--	--	--	0.240	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	2,400	--	--	--	--	--	--	0.520	--	--	--	--	--	--	--
Fluorene	2,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-	240	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NA	--	--	--	--	--	--	0.580	--	--	--	--	--	--	--
Pyrene	1,800	--	--	--	--	--	--	0.470	--	--	--	--	--	--	--
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
All PCBs	Varies				--	--									

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-22	GTA-SB-22	GTA-SB-23	GTA-SB-23	GTA-SB-24	GTA-SB-24	GTA-SB-25	GTA-SB-25	GTA-SB-26	GTA-SB-26	GTA-SB-27	GTA-SB-27	GTA-SB-28	GTA-SB-28
Depth (feet)		**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	18,000	--	--	--	--	--	--	--	--	--	--	--	--	--	0.300
Benzo(a)anthracene	0.16	--	--	--	--	--	--	--	--	--	**0.260**	--	--	**0.240**	**1.200**
Benzo(a)pyrene	0.016	--	--	--	--	--	--	--	--	--	**0.230**	--	--	--	**1.000**
Benzo(b)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	0.210	--	--	--	1.000
Benzo(g,h,i)perylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	0.640
Benzo(k)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	0.220	--	--	0.230	0.900
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl) ether	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbazole	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	16	--	--	--	--	--	--	--	--	--	0.310	--	--	0.290	1.300
Dibenz(a,h)anthracene	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.270**
Dibenzofuran	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	2,400	--	--	--	--	--	--	--	--	--	0.480	--	--	0.390	1.700
Fluorene	2,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.620**
Methylnaphthalene, 2-	240	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NA	--	--	--	--	--	--	--	--	--	0.450	--	--	0.230	1.300
Pyrene	1,800	--	--	--	--	--	--	--	--	--	0.590	--	--	0.520	2.400
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
All PCBs	Varies						--	--							

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-29	GTA-SB-29	GTA-SB-30	GTA-SB-31	GTA-SB-32	GTA-SB-33	GTA-SB-34	GTA-SB-35	GTA-SB-36	GTA-SB-37	GTA-SB-38	GTA-SB-39	GTA-SB-40	GTA-SB-41
Depth (feet)		**0-2**	**4-5**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	18,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl) ether	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbazole	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	2,400	--	--	--	--	--	--	--	--	--	--	--	0.380	--	--
Fluorene	2,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-	240	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	1,800	--	--	--	--	--	--	--	--	--	--	--	0.420	--	--
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
All PCBs	Varies														

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-42	GTA-SB-43	GTA-SB-44	GTA-SB-45	GTA-SB-DUP 1	GTA-SB-DUP 2	GTA-SB-DUP 3	GTA-SB-DUP 4	ESB-2	ESB-2	ESB-6	ESB-6	ESB-7	ESB-8
Depth (feet)		**0-2**	**0-2**	**0-2**	**0-2**					**0-0.5**	**4-5**	**0-0.5**	**4-5**	**4-5**	**5-6**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	18,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.016	**0.210**	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	1.6	0.200	--	--	--	--	--	--	--	--	--	--	--	--	--
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl) ether	0.23	--	--	--	--	--	--	--	--	--	--	--	--	0.043 J	--
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbazole	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	16	0.210	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	0.016	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	2,400	0.310	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	2,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--		--	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16	--	0.200	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-	240	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	NA	0.19	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	1,800	0.350	--	--	--	--	--	--	--	--	--	--	--	--	--
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
All PCBs	Varies					--									

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-8 Dup	ESB-10	ESB-13	ESB-16	ESB-17	ESB-21	ESB-21	ESB-22	ESB-22	ESB-26	ESB-33	ESB-34	ESB-34	ESB-42B
Depth (feet)		**5-6**	**4-5**	**4-5**	**3-4**	**0-0.5**	**0-0.5**	**4-5**	**0-0.5**	**4-5**	**0-0.5**	**4-5**	**0-0.5**	**4-5**	**14-15**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	18,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	0.16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.016	--	--	--	--	--	--	--	--	--	-- J	--	--	--	--
Benzo(b)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	-- J	--	--	--	--
Benzo(g,h,i)perylene	NA	--	--	--	--	--	--	--	--	--	-- J	--	--	--	--
Benzo(k)fluoranthene	1.6	--	--	--	--	--	--	--	--	--	-- J	--	--	--	--
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl) ether	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbazole	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	0.016	--	--	--	--	--	--	--	--	--	-- J	--	--	--	--
Dibenzofuran	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	2,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	2,400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16	--	--	--	--	--	--	--	--	--	-- J	--	--	--	--
Methylnaphthalene, 2-	240	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	0.096 J
Phenanthrene	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	1,800	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs															
All PCBs	Varies														

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-44	ESB-44	ESB-45	ESB-46	ESB-47	ESB-49	ESB-53B	ESB-54	ESB-54	ESB-54 Dup	ESB-56	ESB-56	ESB-57	ESB-58
Depth (feet)		**0-0.5**	**4-5**	**0-0.5**	**0-0.5**	**10-11**	**4-5**	**11-12**	**0-0.5**	**3-3.5**	**3-3.5**	**0-0.5**	**2-3**	**0-0.5**	**0-0.5**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	--	--	--	--	--	--	0.320 J	--	0.042 J	--		
Acenaphthylene	NA	--	--	--	--	--	--	--	--	--	--	--	--		
Anthracene	18,000	--	--	--	--	--	--	--	--	0.460 J	--	--	--		
Benzo(a)anthracene	0.16	--	--	**0.190 J**	--	--	--	--	--	**1.30 J**	--	0.130 J	-- J		
Benzo(a)pyrene	0.016	--	--	**0.230**	--	--	--	--	-- J	**1.600 J**	**0.044 J**	**0.130 J**	-- J		
Benzo(b)fluoranthene	1.6	--	--	0.280 J	--	--	0.039 J	--	-- J	1.400 J	--	0.110 J	-- J		
Benzo(g,h,i)perylene	NA	--	--	0.180 J	--	--	--	--	-- J	1.000 J	--	0.061 J	-- J		
Benzo(k)fluoranthene	1.6	--	--	0.160 J	--	--	0.046 J	--	-- J	1.300 J	--	0.130 J	-- J		
Biphenyl	47	--	--	--	--		--						--		
Bis(2-chloroethyl) ether	0.23	--	--	--	--		--						--		
Bis(2-Ethylhexyl)phthalate	39	--	--	--	--		--						-- J		
Carbazole	NA	--	--	--	--		--						--		
Chrysene	16	--	--	0.220 J	--	--	0.048 J	--	--	1.300 J	0.046 J	0.130 J	-- J		
Dibenz(a,h)anthracene	0.016	--	--	**0.054 J**	--	--	--	--	--	**0.310 J**	--	-- J	-- J		
Dibenzofuran	73	--	--	--	--		--						--		
Fluoranthene	2,400	--	--	0.330 J	--	--	0.075 J	--	--	2.300 J	0.066 J	0.270 J	--		
Fluorene	2,400	--	0.110 J	--	--	--	--	--	--	0.240 J	--	--	--		
Hexachloroethane	1.8	--	--	1.50	--		--						--		
Indeno(1,2,3,-cd)pyrene	0.16	--	--	0.15 J	--	--	--	--	--	**0.930 J**	--	0.060 J	-- J		
Methylnaphthalene, 2-	240	--	0.370 J	--	--	--	--	--	--	0.070 J	--	--	--		
Naphthalene	3.8	--	0.075 J	--	--	--	--	--	--	0.240 J	--	--	--		
Phenanthrene	NA	--	0.220 J	0.16 J	--	--	0.043 J	--	--	1.700 J	0.042 J	0.140 J	--		
Pyrene	1,800	--	0.051 J	0.39	--	--	0.074 J	--	--	2.000 J	0.080 J	0.260 J	-- J		
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--		
PCBs															
All PCBs	Varies													--	--

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-58 Dup	ESB-94	ESB-95 MS/MSD	ESB-96	ESB-97	ESB-100	ESB-101	ESB-102	EB-1	TB-1	USB-1	USB-2	USB-3	USB-4
Depth (feet)		**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**Unk**	**Unk**	**18-20**	**26-28**	**4-6**	**28-30**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600		0.120	0.980	--	--	0.43	0.54	--	--	--				
Acenaphthylene	NA		--	0.039	--	--	0.056	--	--	--	--				
Anthracene	18,000		0.250	1.800	--	0.0073	1.1	0.99	--	--	--				
Benzo(a)anthracene	0.16		0.82	**3.60**	0.0086	0.028	**2.8**	**2**	**0.88**	--	--				
Benzo(a)pyrene	0.016		**0.60**	**2.50**	0.0086	**0.027**	**1.8**	**1.5**	**0.64**	--	--				
Benzo(b)fluoranthene	1.6		0.75	**1.70**	0.012	0.036	**1.7**	**1.6**	0.8	--	--				
Benzo(g,h,i)perylene	NA		0.43	1.30	0.0064	0.016	1.2	1.2	0.48	--	--				
Benzo(k)fluoranthene	1.6		0.38	**1.70**	0.0082	0.028	1.4	1.1	0.44	--	--				
Biphenyl	47		--	--	--	--	--	--	--	--	--				
Bis(2-chloroethyl) ether	0.23				--	--	--	--		--	--				
Bis(2-Ethylhexyl)phthalate	39				--	--	--	--		--	--				
Carbazole	NA		--	--	--	--	--	--	--	--	--				
Chrysene	16		0.690	3.100	0.0097	0.031	2.4	1.8	0.76	--	--				
Dibenz(a,h)anthracene	0.016		0.170	**0.610**	--	0.0073	**0.54**	**0.46**	--	--	--				
Dibenzofuran	73				--	--	--	--	--	--	--				
Fluoranthene	2,400		1.70	8.000	0.014	0.046	6.5	5.4	1.9	--	--				
Fluorene	2,400		0.120	0.880	--	--	0.51	0.63	--	--	--				
Hexachloroethane	1.8				--	--	--	--		--	--	**180**	--*	--*	--*
Indeno(1,2,3,-cd)pyrene	0.16		**0.370**	**1.300**	0.006	0.016	**1.1**	**1**	--	--	--				
Methylnaphthalene, 2-	240		--	0.260	--	--	0.06	0.14	--	--	--				
Naphthalene	3.8		--	0.980	--	--	0.2	0.55	--	0.00014	--				
Phenanthrene	NA		1.000	7.600	0.0041	0.018	4.8	4.7	0.096	--	--				
Pyrene	1,800		1.100	6.000	0.012	0.045	5.2	4.8	1.4	--	--				
Remaining SVOCs	Varies		--	--	--	--	--	--	--	--	--				
PCBs															
All PCBs	Varies	--													

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	USB-5	USB-6	USB-7	USB-8	USB-9	USB-10	USB-11	USB-12	USB-13	USB-14	USB-14	USB-15	USB-15	USB-16
Depth (feet)		14-16	28-30	4-6	24-26	8-10	8-10	0-2	10-12	16-18	0-1	4-5	0-1	4-5	0-1
SVOCs	(mg/kg)														
Acenaphthene	3,600										--	--	--	--	--
Acenaphthylene	NA										--	--	--	--	--
Anthracene	18,000										--	--	--	--	--
Benzo(a)anthracene	0.16										0.009	0.033	0.007	0.012	0.006
Benzo(a)pyrene	0.016										0.008	**0.037**	0.006	0.013	0.005
Benzo(b)fluoranthene	1.6										0.018	0.083	0.015	0.03	0.011
Benzo(g,h,i)perylene	NA										0.009	0.049	0.006	0.03	--
Benzo(k)fluoranthene	1.6										0.008	0.028	0.007	0.007	--
Biphenyl	47										--	--	--	--	--
Bis(2-chloroethyl) ether	0.23										--	--	--	--	--
Bis(2-Ethylhexyl)phthalate	39										--	--	--	--	--
Carbazole	NA										--	--	--	--	--
Chrysene	16										0.011	0.042	0.008	0.025	0.006
Dibenz(a,h)anthracene	0.016										--	0.013	--	0.005	--
Dibenzofuran	73										--	--	--	--	--
Fluoranthene	2,400										0.024	0.044	0.015	0.018	0.012
Fluorene	2,400										--	--	--	--	--
Hexachloroethane	1.8	--*	**27.00**	--*	--*	--*	--*	--*	--*	--*	--	--	--	--	--
Indeno(1,2,3,-cd)pyrene	0.16										0.008	0.040	0.005	0.016	--
Methylnaphthalene, 2-	240										--	--	--	0.092	--
Naphthalene	3.8										--	--	--	0.059	--
Phenanthrene	NA										0.015	0.020	0.007	0.051	0.007
Pyrene	1,800										0.021	0.039	0.015	0.023	0.012
Remaining SVOCs	Varies										--	--	--	--	--
PCBs															
All PCBs	Varies														

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	USB-16	USB-17	USB-17	USB-18	USB-18	USB-19	USB-19	USB-20	USB-20	USB-21	USB-21	USB-22	USB-22	USB-23
Depth (feet)		**4-5**	**0-1**	**4-5**	**0-1**	**4-5**	**0-1**	**4-5**	**0-1**	**4-5**	**0-1**	**4-5**	**0-1**	**4-5**	**Unknown**
SVOCs	**(mg/kg)**														
Acenaphthene	3,600	--	--	0.032	--	0.025	0.056	--	--	0.010	0.024	--	--	--	
Acenaphthylene	NA	--	--	0.015	0.006	0.011	0.025	--	--	0.010	0.007	--	--	--	
Anthracene	18,000	--	--	0.150	0.015	0.084	0.2	0.013	--	0.026	0.083	--	--	--	
Benzo(a)anthracene	0.16	--	0.005	**0.420**	0.070	**0.260**	**0.600**	0.049	0.007	0.100	**0.260**	0.010	--	--	
Benzo(a)pyrene	0.016	--	--	**0.410**	**0.070**	**0.260**	**0.640**	**0.065**	0.007	0.010	**0.250**	0.010	--	--	
Benzo(b)fluoranthene	1.6	--	0.008	0.660	0.140	0.390	1.100	0.120	0.012	0.020	0.390	0.012	--	--	
Benzo(g,h,i)perylene	NA	--	--	0.190	0.058	0.120	0.240	0.075	0.005	0.038	0.100	0.006	--	--	
Benzo(k)fluoranthene	1.6	--	--	0.210	0.043	0.120	0.370	0.040	--	0.063	0.130	0.080	--	--	
Biphenyl	47	--	--	--	--	--	--	--	--	--	--	--	--	--	
Bis(2-chloroethyl) ether	0.23	--	--								--	--			
Bis(2-Ethylhexyl)phthalate	39	--	--								--	--			
Carbazole	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	
Chrysene	16	--	0.005	0.43	0.091	0.3	0.67	0.086	0.008	0.170	0.26	0.01	--	--	
Dibenz(a,h)anthracene	0.016	--	--	**0.054**	0.015	**0.034**	**0.07**	0.016	--	0.012	**0.032**	--	--	--	
Dibenzofuran	73	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fluoranthene	2,400	--	0.011	0.98	0.15	0.61	1.30	0.11	0.013	0.270	0.60	0.023	--	--	
Fluorene	2,400	--	--	0.037	--	0.029	0.065	0.006	--	0.011	0.024	--	--	--	
Hexachloroethane	1.8	--	--									--			--*
Indeno(1,2,3,-cd)pyrene	0.16	--	--	**0.18**	0.051	0.11	**0.21**	0.055	--	0.038	0.098	--	--	--	
Methylnaphthalene, 2-	240	--	--	0.028	0.016	0.032	0.17	0.01	--	0.051	0.006	--	--	--	
Naphthalene	3.8	--	--	0.03	0.012	0.036	0.12	0.012	--	0.056	0.009	--	--	--	
Phenanthrene	NA	--	0.006	0.55	0.072	0.45	0.97	0.054	--	0.210	0.34	0.017	--	--	
Pyrene	1,800	--	0.011	0.82	0.15	0.62	1.20	0.11	0.013	0.230	0.54	0.022	--	--	
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	
PCBs															
All PCBs	Varies														

Table 3
SVOC and PCB Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	Dup
Depth (feet)		Unknown
SVOCs	**(mg/kg)**	
Acenaphthene	3,600	--
Acenaphthylene	NA	--
Anthracene	18,000	--
Benzo(a)anthracene	0.16	--
Benzo(a)pyrene	0.016	--
Benzo(b)fluoranthene	1.6	--
Benzo(g,h,i)perylene	NA	--
Benzo(k)fluoranthene	1.6	--
Biphenyl	47	--
Bis(2-chloroethyl) ether	0.23	--
Bis(2-Ethylhexyl)phthalate	39	--
Carbazole	NA	--
Chrysene	16	
Dibenz(a,h)anthracene	0.016	
Dibenzofuran	73	--
Fluoranthene	2,400	--
Fluorene	2,400	--
Hexachloroethane	1.8	--*
Indeno(1,2,3,-cd)pyrene	0.16	--
Methylnaphthalene, 2-	240	--
Naphthalene	3.8	--
Phenanthrene	NA	--
Pyrene	1,800	--
Remaining SVOCs	Varies	--
PCBs		
All PCBs	Varies	

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-1	GTA-SB-1	GTA-SB-2	GTA-SB-2	GTA-SB-3	GTA-SB-3	GTA-SB-4	GTA-SB-4	GTA-SB-5	GTA-SB-5	GTA-SB-6	GTA-SB-6	GTA-SB-7	GTA-SB-7
Depth (feet)		**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	7,600	8,800	5,600	7,800	12,000	7,200	11,000	13,000	9,400	19,000	6,200	13,000	6,500	10,000
Antimony	31	--	--	--	3.3	--	--	3.5	--	--	--	--	--	--	--
Arsenic	0.68	**2.6**	**3.7**	**2.3**	**3.0**	**4.8**	**4.3**	**5.8**	**3.7**	**3.5**	**4.8**	**1.7**	**5.4**	**2.0**	**5.6**
Barium	15,000	34	40	15	35	35	24	290	49	40	66	47	78	32	56
Beryllium	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	71	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	NE	4,100	460	98	640	380	520	11,000	530	570	680	440	680	410	450
Chromium (Total)	120,000	28	29	19	20	22	32	19	21	27	34	14	37	21	35
Chromium (Hexavalent)	0.3														
Cobalt	23	**68**	9.1	4.0	13	6.6	9.7	10	4.0	7.7	7.0	6.0	13	6.5	20
Copper	3,100	43	26	16	11	20	26	28	16	25	21	16	29	12	46
Iron	55,000	34,000	46,000	24,000	19,000	30,000	53,000	27,000	26,000	41,000	40,000	16,000	50,000	24,000	**70,000**
Lead	400	13	5.4	6.9	49	34	14	30	15	24	11	15	20	4.3	17
Magnesium	NE	350	430	170	580	1,000	290	1,000	810	320	910	180	290	290	400
Manganese	1,800	49	66	61	49	97	180	92	48	76	60	36	120	22	140
Mercury	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury (elemental)	9.4														
Nickel	NE	16	22	8.9	11	11	18	12	9.2	13	13	14	29	15	49
Potassium	NE	870	1,100	330	620	840	480	1,200	1,100	840	1,200	410	650	990	1,200
Selenium	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	2,300	270	71	140	270	140	70	600	310	320	390	140	290	--	85
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	46	55	36	25	37	46	37	36	53	58	22	57	54	60
Zinc	23,000	19	32	31	50	110	330	27	19	34	28	26	45	24	85
Other Metals															
Lithium	160														
Strontium	47,000														
Titanium	NA														
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-8	GTA-SB-8	GTA-SB-9	GTA-SB-9	GTA-SB-10	GTA-SB-10	GTA-SB-11	GTA-SB-11	GTA-SB-12	GTA-SB-12	GTA-SB-13	GTA-SB-13	GTA-SB-14	GTA-SB-14
Depth (feet)		0-2	4-5	0-2	4-5	0-2	4-5	0-2	4-5	0-2	4-5	0-2	4-5	0-2	4-5
Target Analyte List Metals	(mg/kg)														
Aluminum	77,000	20,000	7,700	7,000	5,500	8,400	7,300	14,000	7,800	6,900	4,800	8,500	7,300	10,000	6,100
Antimony	31	--	--	24	14	--	--	**330**	22	--	--	--	--	4.6	--
Arsenic	0.68	**4.9**	**1.9**	**3.2**	**5.8**	**12**	**1.9**	**13**	**3.2**	**3.7**	**2.8**	**4.6**	**2.4**	**4.7**	**2.9**
Barium	15,000	28	66	64	72	140	32	790	110	39	28	59	44	75	32
Beryllium	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	71	--	--	19	19	--	--	65	4.6	--	--	--	--	--	--
Calcium	NE	320	220	6,000	5,200	24,000	440	6,000	680	270	65	390	--	820	150
Chromium (Total)	120,000	29	12	80	81	24	22	90	20	31	29	34	35	29	37
Chromium (Hexavalent)	0.3														
Cobalt	23	20	4.7	**44**	**40**	**43**	6.7	**190**	23	7.8	--	13	13	11	5.2
Copper	3,100	14	12	53	78	46	19	110	50	20	10	30	25	17	14
Iron	55,000	33,000	6,700	32,000	**87,000**	20,000	20,000	**100,000**	15,000	42,000	27,000	46,000	47,000	18,000	52,000
Lead	400	13	4.5	**560**	**470**	190	9.6	**5,100**	250	11	5.7	45	7.2	56	12
Magnesium	NE	480	200	470	440	3,500	910	810	380	380	460	330	260	1,700	300
Manganese	1,800	190	30	160	410	110	54	340	42	48	26	100	83	83	39
Mercury	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury (elemental)	9.4														
Nickel	NE	11	5.9	41	52	23	11	100	15	16	4.5	22	28	19	7.6
Potassium	NE	570	1,200	500	570	790	540	2,500	640	640	360	1,300	1,000	1,100	360
Selenium	390	--	--	--	--	--	--	6.9	--	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	2,300	130	73	100	130	560	150	**3,800**	540	160	100	260	110	**2,500**	400
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	36	15	19	21	38	37	24	27	55	52	40	31	41	64
Zinc	23,000	13	14	140	140	110	27	12,000	550	80	--	59	51	73	16
Other Metals															
Lithium	160														
Strontium	47,000														
Titanium	NA														
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-15	GTA-SB-15	GTA-SB-16	GTA-SB-16	GTA-SB-17	GTA-SB-17	GTA-SB-18	GTA-SB-18	GTA-SB-19	GTA-SB-19	GTA-SB-20	GTA-SB-20	GTA-SB-21	GTA-SB-21
Depth (feet)		**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	3,900	6,600	9,600	6,600	7,800	11,000	14,000	5,800	5,200	7,300	9,100	10,000	8,900	7,500
Antimony	31	--	--	--	--	--	--	19	--	--	--	--	--	--	--
Arsenic	0.68	**3.0**	**1.9**	**6.0**	0.61	**1.1**	**4.9**	**10**	**2.3**	**0.84**	--	**1.6**	**5.6**	**1.2**	0.64
Barium	15,000	50	41	34	40	44	36	510	24	35	41	55	61	55	44
Beryllium	160	--	--	3.9	--	--	2.4	--	--	--	--	--	--	--	--
Cadmium	71	4.9	--	--	--	--	--	3.8	--	3.9	--	--	--	--	--
Calcium	NE	740	770	950	150	4,400	55	4,900	110	9,100	280	250	100	7,400	130
Chromium (Total)	120,000	26	33	52	22	25	39	40	43	17	20	25	40	20	13
Chromium (Hexavalent)	0.3														
Cobalt	23	12	11	18	4.7	6.4	14	**38**	6.1	11	3.4	4.1	7.1	6.7	4.5
Copper	3,100	44	42	42	6.6	14	23	57	15	15	7.5	30	28	15	12
Iron	55,000	35,000	39,000	**110,000**	18,000	24,000	**85,000**	39,000	**66,000**	25,000	12,000	40,000	**60,000**	17,000	6,800
Lead	400	190	22	11	2.6	4.9	10	**810**	4.7	22	8.0	11	6.0	14	3.2
Magnesium	NE	150	170	140	220	1,700	180	680	89	5,300	190	180	170	500	240
Manganese	1,800	150	72	98	28	44	96	130	29	71	31	29	42	42	18
Mercury	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury (elemental)	9.4														
Nickel	NE	17	21	47	9.0	12	32	41	15	9.0	5.3	9.9	17	14	6.8
Potassium	NE	560	900	880	1,200	1,200	880	1,200	480	550	880	1,200	1,100	1,300	1,500
Selenium	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	4.0	--	--	--	--	--	--	--
Sodium	2,300	--	45	--	--	79	68	**2,500**	83	--	--	--	--	62	--
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	49	83	150	18	27	59	35	73	19	15	69	82	26	15
Zinc	23,000	77	31	65	16	18	50	3,900	22	64	--	20	26	31	15
Other Metals															
Lithium	160														
Strontium	47,000														
Titanium	NA														
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-22	GTA-SB-22	GTA-SB-23	GTA-SB-23	GTA-SB-24	GTA-SB-24	GTA-SB-25	GTA-SB-25	GTA-SB-26	GTA-SB-26	GTA-SB-27	GTA-SB-27	GTA-SB-28	GTA-SB-28
Depth (feet)		**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**	**0-2**	**4-5**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	9,100	4,900	5,800	7,800	7,800	8,600	7,200	6,000	22,000	18,000	12,000	5,400	6,300	8,100
Antimony	31	--	--	--	--	--	--	--	--	--	22	--	--	--	4.7
Arsenic	0.68	**21**	**4.9**	**3.5**	**4.7**	**2.2**	**2.9**	**2.4**	**4.8**	**4.7**	**27**	**4.3**	**0.65**	**4.4**	**12**
Barium	15,000	17	20	29	17	20	31	48	28	140	990	42	18	83	190
Beryllium	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	71	--	--	--	--	--	--	--	--	--	**150**	--	--	6.7	19
Calcium	NE	240	130	6,200	490	990	190	35,000	360	1,300	16,000	950	110	80,000	50,000
Chromium (Total)	120,000	95	57	15	15	17	24	15	40	30	96	86	9.8	22	29
Chromium (Hexavalent)	0.3														
Cobalt	23	11	7.8	23	--	3.7	4.5	4.8	--	11	**86**	15	18	13	**34**
Copper	3,100	24	17	32	12	14	19	29	24	19	120	34	7.7	22	42
Iron	55,000	**90,000**	49,000	33,000	12,000	14,000	27,000	13,000	34,000	26,000	19,000	**78,000**	7,900	18,000	18,000
Lead	400	8.6	12	27	5.2	110	15	33	10	63	**22,000**	17	5.1	**850**	**1,400**
Magnesium	NE	250	170	2,200	320	990	600	2,100	250	2,200	3,500	270	99	3,300	5,000
Manganese	1,800	170	190	260	18	39	48	150	31	780	210	32	27	92	**1,900**
Mercury	NE	--	--	--	--	--	--	--	--	--	0.33	--	--	0.31	0.23
Mercury (elemental)	9.4														
Nickel	NE	24	18	22	4.2	7.6	9.8	8.1	5.9	18	160	31	20	15	32
Potassium	NE	270	250	520	480	520	570	420	520	1,100	2,100	620	300	600	990
Selenium	390	--	--	--	--	--	--	--	--	--	4.2	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	16
Sodium	2,300	--	--	--	75	260	170	87	170	--	1,800	91	--	390	260
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	73	62	22	26	25	40	18	56	41	42	200	19	34	33
Zinc	23,000	51	24	48	11	20	16	57	13	62	1,400	67	37	75	220
Other Metals															
Lithium	160														
Strontium	47,000														
Titanium	NA														
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-29	GTA-SB-29	GTA-SB-30	GTA-SB-31	GTA-SB-32	GTA-SB-33	GTA-SB-34	GTA-SB-35	GTA-SB-36	GTA-SB-37	GTA-SB-38	GTA-SB-39	GTA-SB-40	GTA-SB-41
Depth (feet)		**0-2**	**4-5**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**	**0-2**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	4,800	7,100	8,500	5,900	10,000	5,300	8,800	13,000	3,300	3,800	3,400	25,000	5,300	5,200
Antimony	31	--	--	--	--	--	7.6	--	--	--	--	--	12	--	--
Arsenic	0.68	**1.1**	**7.1**	--	**2.0**	**5.5**	**5.5**	**3.3**	**3.4**	**1.6**	**2.4**	**1.2**	**12**	**2.4**	**1.8**
Barium	15,000	46	24	29	33	200	220	62	58	14	27	16	250	35	25
Beryllium	160	--	--	--	--	--	--	--	--	--	--	--	--	--	2.7
Cadmium	71	--	--	--	--	--	--	--	--	--	--	--	12	--	--
Calcium	NE	490	350	310	280	2,800	9,100	1,700	1,100	230	1,200	230	8,100	550	740
Chromium (Total)	120,000	39	92	14	22	27	21	15	16	21	24	29	47	27	64
Chromium (Hexavalent)	0.3														
Cobalt	23	--	3.2	4.0	5.9	16	**28**	3.4	9.1	2.4	3.5	2.6	**49**	6.0	6.1
Copper	3,100	4.0	16	9.8	15	36	55	21	13	8.3	14	12	69	23	21
Iron	55,000	16,000	**71,000**	13,000	22,000	23,000	25,000	9,100	17,000	20,000	34,000	19,000	29,000	31,000	**100,000**
Lead	400	12	14	5.3	14	43	250	41	17	7.5	43	6.3	**1,100**	9.5	9.4
Magnesium	NE	220	150	130	150	610	2,000	610	730	100	200	120	6,100	250	180
Manganese	1,800	12	84	31	40	95	150	84	62	35	45	43	850	50	56
Mercury	NE	--	--	--	--	--	0.12	--	--	--	--	--	--	--	--
Mercury (elemental)	9.4														
Nickel	NE	--	5.4	4.3	6.5	25	33	8.4	16	6.0	6.1	4.8	110	15	13
Potassium	NE	730	450	560	890	1,100	520	1,300	950	360	350	400	1,500	900	540
Selenium	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	2,300	--	--	86	260	220	140	--	--	--	--	--	130	130	240
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	26	130	12	39	48	20	27	29	38	42	39	48	43	65
Zinc	23,000	--	--	12	23	96	350	39	56	13	20	12	360	22	22
Other Metals															
Lithium	160														
Strontium	47,000														
Titanium	NA														
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	GTA-SB-42	GTA-SB-43	GTA-SB-44	GTA-SB-45	GTA-SB-DUP 1	GTA-SB-DUP 2	GTA-SB-DUP 3	GTA-SB-DUP 4	ESB-1	ESB-2	ESB-2	ESB-4	ESB-4	ESB-5
Depth (feet)		**0-2**	**0-2**	**0-2**	**0-2**					**0-0.5**	**0-0.5**	**4-5**	**0-0.5**	**4-5**	**0-0.5**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	5,900	6,900	5,200	13,000	6,700	5,200	4,800	18,000	6,600 L	5,100	5,900 L	9,600 L	11,000 L	7,200 L
Antimony	31	--	--	--	--	--	--	--	**270**	--	-- L	--	-- L	-- L	--
Arsenic	0.68	**2.2**	**2.7**	**2.6**	**4.2**	**2.9**	**1.9**	**9.2**	**22**	**6.3**	0.65 B	**5**	**5.9 J**	**4.7 J**	**5.5**
Barium	15,000	38	39	34	74	20	27	13	1,900	64	29	37 B	41	41	39 B
Beryllium	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	71	--	--	--	4.4	--	--	--	**2,300**	--	--	--	--	--	--
Calcium	NE	1,600	1,000	670	1,500	370	77	160	9,200	1,500	310 L	120 B	590 L	200 L	410 B
Chromium (Total)	120,000	27	37	20	26	11	32	29	380	32	18 J	44	23 J	33 J	78
Chromium (Hexavalent)	0.3														--
Cobalt	23	5.6	5.6	3.9	12	--	12	4.7	**6,200**	16	--	7.7 B	4.8	--	9.7 B
Copper	3,100	24	24	15	18	8.1	5.4	22	440	28	6.2 L	31	42 L	18 L	32
Iron	55,000	28,000	33,000	23,000	27,000	14,000	23,000	**58,000**	33,000	37,000	8,800	51,000	23,000	39,000	**82,000**
Lead	400	29	7.9	6.3	**2,100**	5.9	13	7.9	**14,000**	54	3.4 L	11	20 L	9.6 L	42
Magnesium	NE	290	420	240	1,100	270	180	110	1,300	460	160 L	210	840 L	340 L	200
Manganese	1,800	100	63	37	240	13	44	65	460	110	15 K	150	44 K	29 K	60
Mercury	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury (elemental)	9.4														
Nickel	NE	13	15	9.6	14	3.1	13	5.5	490	15	3.6	15 B	9.4	5	23 B
Potassium	NE	810	940	730	830	420	`	310	2,300	670	780 K	310 B	940 K	750 K	410 B
Selenium	390	--	--	--	--	--	--	--	74	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	2,300	--	--	--	64	93	--	--	**4,600**	160 B	88 B	66 B	690 L	350 B	--
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	39	55	37	39	19	69	47	100	42	23 K	68	42 K	61 K	190
Zinc	23,000	22	20	13	48	--	27	20	16,000	95	--	26	--	--	52
Other Metals															
Lithium	160										2.85	5.25	29	3.89	2.81
Strontium	47,000										46.7 K	62.4	20.5 K	40.2 K	24.4
Titanium	NA										20 J	120	93 J	31 J	170
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-6	ESB-7	ESB-8	ESB-8 dup	ESB-10	ESB-13	ESB-16	ESB-16 dup	ESB-17	ESB-19	ESB-21	ESB-21	ESB-22	ESB-22
Depth (feet)		**4-5**	**4-5**	**5-6**	**5-6**	**4-5**	**4-5**	**3-4**	**3-4**	**0-0.5**	**0-0.5**	**0-0.5**	**4-5**	**0-0.5**	**4-5**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	5,000	5,800 L	6,400	5,600	5,500	5,900	7,000 L	7,200 L	6,600 L	8,000 K	5,100	6,900	7,300 L	6,900
Antimony	31	--	-- L	-- L	-- L	-- L	-- L	--	--	--	-- L	--	--	-- L	-- L
Arsenic	0.68	**0.73 B**	**2.9**	**4.6**	**3.2**	**1.6**	**2.9**	**4.8**	**4**	**4.8**	**3.2 J**	**3**	**6.5**	**3.2 J**	**2.4 J**
Barium	15,000	25 B	23	46 K	45 K	44	45 K	35	38	41	38	15	24	25	36
Beryllium	160	--	--	--	5.3	--	--	--	--	--	--	--	--	--	3
Cadmium	71	--	--	56 K	3.1 K	--	--	--	--	--	--	--	--	--	--
Calcium	NE	140 B	700 L	7,600	2,000	590	1,900	5,000 J	18,000 J	560	920 L	850	1,600	590 L	-- L
Chromium (Total)	120,000	19	34 J	43	51	27	26	31 J	65 J	16	35 J	23	37	24 J	25 J
Chromium (Hexavalent)	0.3														
Cobalt	23	2.9 B	9.8	**34**	**29**	9.1	9.5	3	3.9	3.9	14	4	3.4	3	11
Copper	3,100	8.6	35 L	41	53	10	19	14 J	23 J	41	22 L	29	17	9.3 L	26 L
Iron	55,000	7,600	44,000	48,000	39,000	24,000	33,000	16,000	19,000	14,000	44,000 K	27,000	21,000	25,000	48,000
Lead	400	--	5 L	190 J	42 J	5.3 J	37 J	21 J	35 J	48	6 L	11	6.4	7.4 L	5.1 L
Magnesium	NE	140	380 L	2,300 J	640 J	220 J	450 J	2,500 J	7,700 J	590	280 L	530	1,100	230 L	160 L
Manganese	1,800	34	89 K	200 J	79 J	67 J	87 J	44	48	62	100 K	45	47	19 K	72 K
Mercury	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury (elemental)	9.4														
Nickel	NE	4.4 B	25	75 K	50 K	17 K	21 K	6.4 J	11 J	8.8	34	7	8	5.5	21
Potassium	NE	740	790 K	1,300 J	990 J	1,200 J	1,200 J	780	810	490	1,300 K	280	300	620 K	830 K
Selenium	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	2,300	--	51 B	81 B	--	66 B	120 B	--	--	--	-- L	--	--	180 B	270 B
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	17	96 K	65 J	60 J	22 J	32 J	28	30	26	58 K	38	36	39 K	34 K
Zinc	23,000	--	41 J	82 K	110 K	--	70 K	--	35	41	58 J	--	--	26 K	62 J
Other Metals															
Lithium	160	7.32	26.3	14.1	9.51	12.6	10.8	6.5 J	15.7 J	6.9				7.55	2.99
Strontium	47,000	38.5	38.9 K	83.8	101	81.6	66.8	20.3 J	46.7 J	243				23.3 K	36.5 K
Titanium	NA	35	110 J	150	110	47	60	94	82	90				41 J	88 J
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-23	ESB-24	ESB-25	ESB-26	ESB-27	ESB-28	ESB-29	ESB-30	ESB-31	ESB-32	ESB-32	ESB-33	ESB-33	ESB-34
Depth (feet)		**0-0.5**	**4-5**	**4-5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**4-5**	**0-0.5**	**4-5**	**0-0.5**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	9,000	3,400	7,700 L	8,100	18,000 L	3,800	6,400	16,000 L	4,900	7,800 L	6,600 L	8,000	6,100	6,300
Antimony	31	-- L	-- L	-- L	--	3.6 B	--	--	2.8 B	8.3	-- L	-- L	--	--	-- L
Arsenic	0.68	**3.1 J**	**5.5 J**	**4.5 J**	**3.7**	**74**	**4.4**	**12**	**46**	**8.4**	**5.8 J**	**2.6 J**	**4.4**	**2.1**	**4.1 J**
Barium	15,000	28	21	38	41	54 B	40	56	27 B	130	25	29	130	37	17
Beryllium	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	71	--	--	--	--	--	--	3.7	--	--	--	--	8.2	--	--
Calcium	NE	510 L	190 L	380 L	4,600	1,700	1,700	4,900	1,500	2,000	640 L	-- L	9,200	2,700	400 L
Chromium (Total)	120,000	22 J	8.4	32 J	35	35	22	67	26	67	48 J	33 J	33	30	23 J
Chromium (Hexavalent)	0.3							--		--					
Cobalt	23	4	--	7.7	17	**78**	8.6	18	**35**	**40**	6	5.4	22	8.5	6.6
Copper	3,100	14 L	74 L	31 L	79	15	20	67	13	100	30 L	11 L	27	18	27 L
Iron	55,000	14,000	8,400	38,000	37,000	31,000	11,000	**71,000**	24,000	**100,000**	49,000	29,000	49,000	37,000	32,000
Lead	400	8.8 L	63 L	7.6 L	10	11	16	45	7.8	380	11 L	6.4 L	320	16	6.1 L
Magnesium	NE	940 L	180 L	300 L	360	730	280	430	600	390	220 L	150 L	2,300	610	250 L
Manganese	1,800	57 K	40 K	47 K	130	850	50	93	240	410	82 K	19 K	210	52	150 K
Mercury	NE	--	--	--	--	--	--	--	--	--	--	--	0.39	--	--
Mercury (elemental)	9.4												0.054 L		
Nickel	NE	8.9	--	18	31	14 B	11	83	11 B	56	12	8.3	37	18	14
Potassium	NE	1,500 K	330 K	920 K	670	1,100	1,100	920	940	510	390 K	540 K	1,500	1,400	400 K
Selenium	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	2,300	600 L	86 B	180 B	83 B	160 B	190 B	190 B	140 B	150 B	79 B	54 B	320 B	110 B	-- L
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	36 K	14 K	61 K	61	140	41	110	79	50	65 K	74 K	44	36	54 K
Zinc	23,000	--	--	31 J	120	--	--	66	--	820	--	--	150	40	--
Other Metals															
Lithium	160	8.95	4.33	5.4		98	6.28	7.4	41.9	11.9	3.48	1.6			2.15
Strontium	47,000	20.8 K	11.4 K	34.1 K		132	63.9	64.9	99.9	62.9	26.6 K	27.3 K			15.4 K
Titanium	NA	190 J	41 J	44 J		140	11	240	140	74	110 J	23 J			96 J
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-34	ESB-44	ESB-44	ESB-44 Dup	ESB-45	ESB-46	ESB-49	ESB-49	ESB-50	ESB-51	ESB-54	ESB-54	ESB-54 Dup	ESB-56
Depth (feet)		**4-5**	**0-0.5**	**4-5**	**4-5**	**0-0.5**	**0-0.5**	**0-0.5**	**4-5**	**0-0.5**	**0-0.5**	**0-0.5**	**3-3.5**	**3-3.5**	**0-0.5**
Target Analyte List Metals	**(mg/kg)**														
Aluminum	77,000	1,900	5,200	5,400	5,000	14,000 L	16,000 L	10,000	6,700	5,300	2,900	5,700 K	8,100 K	6,200 K	19,000 K
Antimony	31	-- L	-- L	-- L	-- L	**62**	12	--	--	--	--	-- L	-- L	-- L	-- L
Arsenic	0.68	**3.4 J**	**4.1 J**	**3.9 J**	**3.8 J**	**9.2**	**2.1**	**7.1**	**6.2**	**4.3**	**2.3**	**3.2 L**	**7.5 L**	**1.7 L**	**7.1 L**
Barium	15,000	7.5	26 K	22 K	29 K	570	150	51	110	27	26	34 J	130 J	48 J	220 J
Beryllium	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	71	--	--	--	--	18	--	--	2.6	--	--	--	11 J	--	4.7 J
Calcium	NE	170	1,500 J	6,900 J	1,200 J	5,800	4,800	1,100	820	350	250	810J	2,300 J	1,200 J	4,600 J
Chromium (Total)	120,000	20 J	23	25	22	58	24	32	22	33	15	21 J	34 J	34 J	29 J
Chromium (Hexavalent)	0.3														
Cobalt	23	7.6	3.8	3.8	4.6	**95**	12	18	9.5	9.8	4.1	4.1 K	12 K	5.3 K	13 K
Copper	3,100	17 L	27	22	24	100	14	44	71	33	13	17 J	92 J	19 J	38 J
Iron	55,000	44,000	28,000	27,000	25,000	45,000	11,000	31,000	20,000	52,000	12,000	24,000	30,000	43,000	29,000
Lead	400	4.6 L	7.1 J	14 J	7.2 J	**1,300**	94	60	99	31	260	33 J	210 J	10 J	350 J
Magnesium	NE	170 L	950 K	3,300 K	880 K	1,200	10,000	990	650	200	120	420 J	790 J	290 J	3,000 J
Manganese	1,800	310 K	41	46	44	200	250	150	87	110	26	59 J	170 J	26 J	520 J
Mercury	NE	--	--	--	--	--	--	--	--	--	--	--	0.18	--	--
Mercury (elemental)	9.4														
Nickel	NE	12	8.4	7.2	12	94	17	26	19	19	8.6	9.4 K	24 K	12 K	22 K
Potassium	NE	130 K	650 K	430 K	680 K	1,400	1,100	690	530	600	300	390 J	570 J	880 J	1,000 J
Selenium	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	390	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	2,300	-- L	190 B	170 B	190 B	860	1,900	95 B	56 B	--	--	89 L	110 L	-- L	180 L
Thallium	0.78	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	390	39 K	44	49	41	59	34	49	30	76	22	33	51	42	31
Zinc	23,000	--	--	28	27	1,700	210	76	70	44	28	--	--	34	320
Other Metals															
Lithium	160	0.83	6.25	4.16	5.85	18.2	60.5	14.2	11.7	6.3	3.48				
Strontium	47,000	9.76 K	34.4	29.9	34.6	117	38.6	30.3	19.4	36.8	11				
Titanium	NA	170 J	66 K	71 K	61 K	150	540	110	88	98	48				
Cyanide (Total)	NA														

Table 4
Metals Soil Characterization Summary

Sample Identification	USEPA Region 3 Residential RSLs	ESB-56	ESB-67	ESB-68	ESB-69	ESB-69 Dup	ESB-70	ESB-71	USB-23
Depth (feet)		**2-3**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**0-0.5**	**Unknown**
Target Analyte List Metals	**(mg/kg)**								
Aluminum	77,000	4,300 K	--	--	--	--	--	--	
Antimony	31	-- L	26.6 L	7.89 L	**387 L**	**105 L**	2.35 B	--	
Arsenic	0.68	**3.3 L**	**4.87 J**	**4.68 J**	**13.6 J**	**27.8 J**	**2.8 J**	**3.13 J**	
Barium	15,000	66 J	--	--	--	--	--	--	
Beryllium	160	--	--	--	--	--	--	--	
Cadmium	71	--	4.09 J	--	50 J	20.8 J	--	--	
Calcium	NE	750 J	--	--	--	--	--	--	
Chromium (Total)	120,000	12 J	34.2 L	47.7 L	1,640 L	688 L	28.5 L	20.9	
Chromium (Hexavalent)	0.3	--	--	--	--	--	--	--	
Cobalt	23	**26 K**	--	--	--	--	--	--	
Copper	3,100	31 J	43.3 J	37.1 J	129 J	157 J	14.6 J	20.6	
Iron	55,000	14,000	--	--	--	--	--	--	
Lead	400	62 K	481	137	811	602	39.3	15.6	**2,900**
Magnesium	NE	--	--	--	--	--	--	--	
Manganese	1,800	42	--	--	--	--	--	--	
Mercury	NE	--	--	--	--	--	--	--	
Mercury (elemental)	9.4	--							
Nickel	NE	9.9 K	31.9 B	11.6 B	92.5 L	84.1 L	7.58 B	8.75 B	
Potassium	NE	310 J	--	--	--	--	--	--	
Selenium	390	--	--	--	5.81	2.37 J	--	--	
Silver	390	--	--	--	--	--	--	--	
Sodium	2,300	56 L							
Thallium	0.78	--	--	--	--	--	--	--	
Vanadium	390	22	--	--	--	--	--	--	
Zinc	23,000	280	865 J	91.9 J	6,360 J	15,300 J	65.5 J	83.2 J	
Other Metals									
Lithium	160								
Strontium	47,000								
Titanium	NA								
Cyanide (Total)	NA								

Table 5
VOC and SVOC Groundwater Characterization Summary

Sample Identification	USEPA Region 3 Tapwater RSLs	GTA-MW-1	GTA-MW-2	GTA-MW-3	GTA-MW-4	GTA-MW-5	EGW-9D (GTA)	EGW-10 (GTA)	EGW-12 (GTA)	GTA-GW-Dup
VOCs	**(ug/L)**									
Acetone	14,000	--	--	--						--
Benzene	0.45	--	--	--	--	**4.0**	--	**3.7**	--	--
Bromodichloromethane	0.13	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)	5,600	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	0.45	--	**290**	**79**	**11**	**29**	--	**41**	**10**	--
Chloroform	0.22	**1.3**	**190**	**9.4**	**2.0**	**15**	--	**10**	**3.5**	--
Chloromethane	190	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	36	1.6	18	9.4	2.3	**12,000**	--	**11,000**	--	--
Dibromoethane, 1,2-	0.00075	--	--	--	--	**2.8**	--	--	--	--
Dichloroethane, 1,2-	0.17	--	--	--	--	--	--	**2.6**	--	--
Dichloroethene, 1,1-	280	--	--	--	--	14	--	12	--	--
m,p-Xylenes	190	--	--	--	--	2.5	--	--	--	--
Methylene chloride	120	--	--	--	--	4.2	--	1.6	--	--
Naphthalene	0.17	--	--	--	--	**29**	--	--	--	--
o-Xylene	190	--	--	--	--	1.9	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.076	--	--	--	--	**1.5**	--	**1.4**	--	--
Tetrachloroethene	11	**24**	**360**	**120**	**32**	**28,000**	1.1	**5,400**	**14**	1.1
Toluene	1,100	--	--	--	--	1.4	--	--	--	--
trans-1,2-Dichloroethene	360	--	5.0	--	--	310	--	290	--	--
Trichloroethane, 1,1,2-	0.28	--	--	--	--	2.9	--	4.2	--	--
Trichloroethene	0.49	**1.3**	**89**	**5.7**	**2.0**	**3,400**	--	**2,800**	--	--
Vinyl Chloride	0.019	--	--	--	--	**38**	--	**4.7**	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--
SVOCs	**(ug/L)**									
Bis(2-Ethylhexyl)phthalate	5.6	--	--	--	**9.5**	--	--	--	--	--
Hexachloroethane	0.33	--	--	**11**	--	**670**	--	**28**	--	--
Methylnaphthalene, 2-	360	--	--	--	--	8.3	--	--	--	--
Remaining SVOCs	Varies	--	--	--	--	--	--	--	--	--

Table 5
VOC and SVOC Groundwater Characterization Summary

Sample Identification	USEPA Region 3 Tapwater RSLs	EGW -9D	EGW -10 (Oct.)	EGW-10 (Sept.)	EGW-10 (Dup)	EGW-10D	EGW-10D (Dup)	EGW-11 (MS/MSD)	EGW-11 (Dup)	EGW-12 (MS/MSD)	EGW-12 (Dup)
VOCs	**(ug/L)**										
Acetone	14,000	-- UL	-- UL	-- UL	--	23 L	24	-- UL	--	--	--
Benzene	0.45	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	0.13	--	--	--	--	**3**	**3**	--	--	--	--
Butanone, 2- (MEK)	5,600	-- UL	-- UL	-- UL	--	-- UL	15	-- UL	--	--	--
Carbon tetrachloride	0.45	--	**26**	**21**	**21**	--	--	--	--	**7.7**	**7.9**
Chloroform	0.22	--	**8**	**9**	**9**	**22**	**22**	--	--	--	--
Chloromethane	190	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	36	--	**660**	**570**	**570**	--	--	--	--	--	--
Dibromoethane, 1,2-	0.00075	--	--	--	--	--					
Dichloroethane, 1,2-	0.17	--	--	--	--	--	--	--	--	--	--
Dichloroethene, 1,1-	280	--	3	2	2	--	--	--	--	--	--
m,p-Xylenes	190	--	--	--	--	--	--	--	--	--	--
Methylene chloride	120	--	--	--	--	--	--	--	--	--	--
Naphthalene	0.17	--	--	--	--	--	--	--	--	--	--
o-Xylene	190	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	0.076	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	11	1	**970**	**970**	**970**	4	4	--	--	**12**	**13**
Toluene	1,100	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	360	--	45	40	38	--	--	--	--	--	--
Trichloroethane, 1,1,2-	0.28	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.49	--	**360**	**270**	**280**	--	--	--	--	--	--
Vinyl Chloride	0.019	--	--	**0.6 J**	**0.7 J**	--	--	--	--	--	--
Remaining VOCs	Varies	--	--	--	--	--	--	--	--	--	--
SVOCs	**(ug/L)**										
Bis(2-Ethylhexyl)phthalate	5.6										
Hexachloroethane	0.33										
Methylnaphthalene, 2-	360										
Remaining SVOCs	Varies										

Table 6
Metals Groundwater Characterization Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Sample Identification	USEPA Region 3 Tapwater RSLs	GTA-MW-1	GTA-MW-2	GTA-MW-3	GTA-MW-4	GTA-MW-5	EGW-9D (GTA)	EGW-10 (GTA)	EGW-12 (GTA)	GTA-GW-Dup	GTA-GW-Dup2
Target Analyte List Metals (ug/L)											
Aluminum	2,000	-- , (180)	-- , (210)	140 , (1,100)	280, (2,600)	--, (8,700)	--, (870)	--, (2,600)	--,(--)	--,(820)	--
Antimony	7.8	--,(--)	--,(--)	--,(--)	--,(--)	--, (17)	--,(--)	--,(--)	--,(--)	--,(--)	--
Arsenic	0.052	--,(--)	--,(--)	--,(--)	--, (1.3)	1.7, (3.3)	--,(--)	1.2, (2.2)	--,(--)	--,(--)	--
Barium	3,800	67, (69)	73, (84)	100, (96)	150, (69)	750, (710)	16, (22)	32, (41)	70, (67)	(21)	17
Beryllium	25	--,(--)	--,(--)	2.3, (2.1)	3.2, (1.1)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--
Cadmium	9.2	--,(--)	--,(--)	--,(--)	--,(--)	1.3, (2.4)	--,(--)	--,(--)	--,(--)	--,(--)	--
Calcium	NE	63,000, (48,000)	19,000, (33,000)	9,500, (11,000)	31,000, (9,900)	33,000, (26,000)	11,000, (12,000)	14,000, (15,000)	66,000, (76,000)	(10,000)	11,000
Total Chromium (trivalent)	22,000	1.1, (78)	2.1, (76)	5.0, (340)	6.5, (320)	--, (130)	--, (31)	1.4, (73)	28, (56)	(35)	--
Cobalt	6.0	**65, (73)**	**20, (20)**	**42, (43)**	**91, (37)**	**20, (37)**	--, (1.3)	1.5, (3.3)	--, (1.4)	--,(--)	--
Copper	800	--, (7.7)	--, (6.4)	3.5, (19)	1.3, (37)	2.3, (58)	--, (5.9)	8.6, (18)	1.4, (1.7)	(6.5)	--
Iron	14,000	250, (1,400)	430, (1,100)	300, (8,300)	1,200, (15,000)	900, (18,000)	--, (4,600)	--, (7,800)	--, (210)	(4,800)	--
Lead	15	--, (1.0)	--, (1.1)	--, (4.7)	--, (11)	**60, (1,400)**	--, (13)	1.9, (72)	--,(--)	(12)	--
Magnesium	NE	30,000, (27,000)	9,500, (16,000)	5,000, (4,800)	14,000, (3,400)	25,000, (19,000)	3,400, (3,300)	22,000, (23,000)	8,900, (9,900)	(3,300)	3,500
Manganese	430	**1,400, (1,300)**	**540, (410)**	**380, (480)**	**880, (310)**	300, (260)	220, (280)	29, (43)	6.1, (10)	(280)	240
Mercury	NE	--,(--)	--,(--)	--,(--)	--, (1.0)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--
Nickel	NE	49, (82)	73, (73)	**82, (240)**	**230, (230)**	33, (95)	1.1, (15)	14, (40)	1.0, (16)	(17)	1.2
Potassium	NE	7,500, (6,700)	2,000, (4,500)	2,100 E, (2,800)	2,600, (3,000)	9,600, (9,400)	1,500, (1,400)	8,500, (8,400)	5,800, (5,700)	(1,500)	1,500
Selenium	100	--,(--)	3.5, (7.5)	--,(--)	1.1	3.0, (2.4)	1.7, (1.2)	4.3, (3.0)	13, (9.7)	(1.2)	1.8
Silver	94	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--
Sodium	NE	110,000, (98,000)	100,000, (110,000)	34,000, (35,000)	86,000, (21,000)	620,000, (640,000)	28,000, (55,000)	670,000, (460,000)	28,000, (34,000)	(52,000)	28,000
Thallium	NE	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--,(--)	--
Vanadium	86	--,(--)	--,(--)	--, (18)	--, (51)	--, (53)	--, (26)	16, (47)	--,(--)	(28)	--
Zinc	6,000	47, (59)	47, (47)	150, (150)	200, (120)	3,900, (11,000)	--, (41)	60, (210)	--,(--)	(43)	--

Table 7
Soil Vapor Characterization Summary

Sample Identification	Residential Comparison Values, Tier 1 Target Soil Vapor	ESG-5	ESG-6	ESG-6 dup	ESG-7	ESG-9	ESG-11	ESG-16	ESG-17	ESG-18	ESG-20	ESG-20 dup	ESG-21	ESG-22	ESG-23	ESG-24	ESG-25
Depth (feet)		1-1.5	3.5-4	3.5-4	3.5-4	11.5-12	3-3.5	1.5-2	3-3.5	6.5-7	9.5-10	9.5-10	9.5-10	9.5-10	9.5-10	9.5-10	9.5-10
VOCs	**(µg/m3)**																
Acetone	640,000	78	57 B	59 B	270	35	105	50	28	85 J	220	130 L	22,000 J	660	17	249	587[a] J
Acrolein	0.42	--	**5.3**	**3.2 J**	**4.1 J**	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	72	1.8 J	3.4	2.2 J	4.2	1.4 J	11	16	1.6 J	**160**	**110**	30 L	--	5.2	--	3.2 J	6.7
Bromodichloromethane	15	--	--	--	--	--	--	5 J	--	5.2 J	--	-- L	--	--	--	--	--
Bromomethane	104	--	--	--	--	--	--	--	--	--	--	19 L	--	--	--	--	--
Carbon disulfide	14,600	--	--	--	5.2	0.72 J	6.9	200	0.75 J	69	160	82 L	**18,000 J**	3.9	20	--	14
Carbon tetrachloride	94	--	--	--	--	--	81.8	--	1.8 J	--	33 J	37 L	--	--	--	--	--
Chlorobenzene	1,040	--	--	--	--	--	--	--	--	--	--	12 L	--	--	--	--	--
Chlorodifluoromethane	1,040,000	6.9 J	1.7 J	2.2 J	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	24	--	--	--	4.3 J	--	7.8	**51**	4.8 J	**48**	**53**	**30 L**	**160,000**	--	**36**	6.8 J	23
Chloromethane	1,880	1.3 J	1.3 J	0.99 J	2.6	2.1	--	--	2.4	--	--	21 L	--	--	--	--	--
Isopropylbenzene (Cumene)	8,400	--	3.9 J	--	19	--	--	--	--	5.8	--	-- L	--	--	--	--	--
Dibromoethane, 1,2-	0.94	--	--	--	--	--	--	--	--	--	--	**28 L**	--	--	--	--	--
Dichlorobenzene, 1,2-	4,200	--	--	--	--		--	--	--	--	--	20 L	--	--	--	--	--
Dichlorobenzene, 1,3-	NE	--	--	--	--	--	8.4	14†† K	--††	9.4††	14†† K	31†† L	--	--	--	--	--
Dichlorobenzene, 1,4-	52	--	--	--	--	--	--	--††	1.3†† K	1.3 J	--††	20†† L	--	--	--	--	--
Dichlorodifluoromethane (Freon 12)	2,000	4.8 J	2.4 J	2.2 J	2.9 J	--	2.4 J	--	--	--	--	--			--	--	--
Dichlorofluoromethane	NE	--	--	--	--	--		--	--	--	--	--	--	3.7 J		--	--
Dichloroethane, 1,1-	360	--	--	--	--	--	--	--	--	--	--	20 L	--	--	--	--	--
Dichloroethane, 1,2-	22	--	--	--	--	--	--	--	--	--	--	18 L	--	--	--	--	--
Dichloroethene, 1,1-	4,200	--	--	--	--	--	--	--	--	9.8	--	20 L	--	--	--	--	--
Dichloroethene, cis-1,2-	NE	--	--	--	4.7	--	--	5.2	--	55	7,900	1,700 L	870,000	13	--	--	--
Dichloroethene, trans-1,2-	NE	--	--	--	1.5 J	--	--	--	--	--	28 J	-- L	59,000 J	--	--	--	--
Dichloropropane, 1,2-	56	--	--	--	--	--	--	--	--	--	--	20 L	--	--	--	--	--
cis-1,3-Dichloropropene	NE	--	--	--	--	--	--	--	--	--	--	15 L	--	--	--	--	--
trans-1,3-Dichloropropene	NE	--	--	--	--	--	--	--	--	--	--	14 L	--	--	--	--	--
Ethylbenzene	220	1.1 J	2 J	1.2 J	1.6 J	1.5 J	9.6 B	7.6	0.87	98	44	20 L	--	2.5 J	--	--	4
Ethyltoluene, 4-	NE	1.4 J	0.98	1.6 J	1.7 J	--	4.9 B	--	--	--	--	--	--	--	--	--	--
Heptane	NE	4.3	1.8 J	1.9 J	2 J	--	7.4 B	--	--	--	--	--	--	--	--	7.8	20
Hexane	14,600	1.9 J	2.4 J	1.5 J	2.8 J	--	11 B	--	--	--	--	--	--	--	--	4.2	15
Methyl Acetate	NE	--	--	--	--	--†		--†	--†	91 J	--†	--†	--†	--†	--	--	--
Methylene chloride	12,600	0.87 J	8.3 B	--	--	--	--	13	20	1.1 J	56	65 L	**17,000 J**	1.8 J	--	--	--
Methylcyclohexane	NE	--	--	--	--	--†	--	--†	--†	120 J	80 J	--†	--†	--†	--	--	--
Methyl Isobutyl Ketone (MIK)	62,000	3.8 J	--	--	--	5.3 J	2.7 J	84	--	16	26 J	-- L	--	44	--	--	--
Methyl Butyl Ketone (Hexanone, 2)	NE	--	--	--	--	--	1.8	--	2.7 J	8.2 J	--	-- L	--	--	--	--	--
Methyl Ethyl Ketone (2-Butanone, MEK)	104,000	24	6	7	15	5.1 J	11	8.2	2.8 J	--	46 J	29 L	--	27	--	15	33.3
Methyl t-Butyl Ether	2,200	--	--	--	--	--	--	76	--	410	210	-- L	--	42	--	--	11
Naphthalene	17	--	2.1 J	--	--	--	--	--	--	--	--	-- L	--		--	--	--
Octane	NE	2.4 J	3.2 J	1.7 J	3.7 J	--	7.9 B	--	--	--	--	--	--	--	--	--	--
Pentane	20,000	4.1	9	4.5 J	6.5	--	23	--	--	--	--	--	--	--	--	--	--
Propylene (Propene)	62,000	--	13	6.3 J	27	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	20,000	--	--	--	--	-- J	--	4.1 J	--	--	13 J	19 L	--	--	--	--	--
Tertiary butyl alcohol	NE	--	12	7.2	14	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethane, 1,1,2,2-	10	--	--	--	--	--	--	--	--	--	--	**32 L**	--	--	--	--	--
Tetrachloroethene	840	--	5 J	2.1 J	4.5 J	2.8 J	1.5	87	--	50	**15,000**	**2,800 L**	**7,500,000**	--	--	--	--
Toluene	104,000	8.2	11	9	6.5	7.4	34	68	70	950	580	96 L	14,000 J	16	11	8.7	9.8
1,1,2-Trichloro-1,2,2-trifluoroethane	620,000	--	--	--	--	--	--	--	4.4 J	--	--	-- L	--	--	--	--	--
Trichloroethane, 1,1,1-	104,000	--	--	--	--	--	--	--	--	--	--	28 L	--	--	--	7.6	--
Trichloroethane, 1,1,2-	4	--	--	--	--	--	--	--	--	**39**	--	**20 L**	--	--	--	--	--
Trichloroethene	42	--	1.2 J	--	**500**	1.5 J	--	**1,300**	--	**250**	**3,100**	**850 L**	**1,200,000**	--	--	--	--
Trichlorofluoromethane (Freon 11)	14,600	1.1 J	2.1K	1.2 J	1.3 J	1.3 J	--	1.9 J	15	3 J	--	31 L	--	1.6 J	--	--	--
Trimethylbenzene, 1,2,4-	146	2.3 J	1.7 J	1.5 J	1.4 J	--	16 B	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-	NE	--	--	--	--	--	4.5 B	--	--	--	--	--	--	--	--	--	--
Trimethylpentane, 2,2,4-	NE	1 J	1 J	--	1.2 J	--	2.7 J	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	34	--	--	--	--	--	--	--	--	--	--	15 L	**47,000**	--	--	--	--
Xylene, m&p-	2,000	3.4 J	7.1 J	3.8 J	3.9 J	5.3	33 B	14	1.3 J	150	61	37 L	--	8.8	6.9	6.9	10 J
Xylene, o-	2,000	1.3 J	2.6 J	1.6 J	1.5 J	2.3 J	12 B	9.7	1.1 J	71	37 J	22 L	--	3.1 J	--	--	4.2

Table 7
Soil Vapor Characterization Summary

Sample Identification	Residential Comparison Values, Tier 1 Target Soil Vapor	ESG-26	ESG-26 dup	ESG-26 (2010)	ESG-27	ESG-28	ESG-29	ESG-30A	ESG-30A dup	ESG-31	ESG-32	ESG-32 dup	ESG-33	ESG-34	ESG-34A	ESG-35	TB-1
Depth (feet)		9.5-10	9.5-10	9.5-10	9.5-10	9.5-10	9.5-10	4.5-5	4.5-5	4.5-5	3.4-3.9	3.4-3.9	4-6	4-6	4-6	4-6	Unk
VOCs	**(µg/m3)**																
Acetone	640,000	249	212	13	67	121	461	18	17	--	278	309					
Acrolein	0.42	--	--	--	--	--	--	--	--	--	--	--					
Benzene	72	--	--	--	--	--	--	33.5 J	33.2 J	**696 J**	3.8	4.2					
Bromodichloromethane	15	--	--	--	--	--	--	--	--	--	--	--					
Bromomethane	104	--	--	--	--	--	--	--	--	--	--	--					
Carbon disulfide	14,600	--	--	--	--	--	--	--	--	--	9.7 J	-- U,J					
Carbon tetrachloride	94	--	--	--	--	--	--	--	--	--	3 J	3.1 J					
Chlorobenzene	1,040	--	--	--	--	--	--	--	--	--	2 J	--					
Chlorodifluoromethane	1,040,000	--	--	--	--	--	--	--	--	--	--	--					
Chloroform	24	11	10	6.8	--	--	--	--	--	--	--	--					
Chloromethane	1,880	--	--	--	--	--	--	--	--	--	2.3	1.9					
Isopropylbenzene (Cumene)	8,400	--	--	--	--	--	--	0.88 J	--	--	--	--					
Dibromoethane, 1,2-	0.94	--	--	--	--	--	--	--	--	--	--	--					
Dichlorobenzene, 1,2-	4,200	--	--	--	--	--	--	--	--	--	--	--					
Dichlorobenzene, 1,3-	NE	--	--	6.6	--	--	--	--	--	--	45	49					
Dichlorobenzene, 1,4-	52	--	--	--	--	--	--	--	--	--	--	--					
Dichlorodifluoromethane (Freon 12)	2,000	--	--	2.7 J	--	--	--	2.4 J	2.6 J	--	2.9 J	2.6 J					
Dichlorofluoromethane	NE	--	--	--	--	--	--	--	--	--	--	--					
Dichloroethane, 1,1-	360	--	--	--	--	--	--	--	--	--	--	--					
Dichloroethane, 1,2-	22	--	--	--	--	--	--	--	--	--	--	--					
Dichloroethene, 1,1-	4,200	--	--	--	--	--	--	--	--	--	--	--					
Dichloroethene, cis-1,2-	NE	--	--	--	--	--	--	--	--	--	--	--					
Dichloroethene, trans-1,2-	NE	--	--	--	--	--	--	--	--	--	--	--					
Dichloropropane, 1,2-	56	--	--	--	--	--	--	--	--	--	--	--					
cis-1,3-Dichloropropene	NE	--	--	--	--	--	--	--	--	--	--	--					
trans-1,3-Dichloropropene	NE	--	--	--	--	--	--	--	--	--	--	--					
Ethylbenzene	220	--	--	--	--	--	--	2.9 J	5.2 J	28 J	6.5 B	6.1 B					
Ethyltoluene, 4-	NE	--	--	2.7 B	--	--	--	--	--	--	4.4 B	4.9 B					
Heptane	NE	--	--	--	--	--	--	72.5 J	78.3 J	1,020 J	2.4 B	2.4 B					
Hexane	14,600	--	--	--	--	--	--	182 J	178 J	1,910	3.2 B	3.5 B					
Methyl Acetate	NE	--	--	--	--	--	--	--	--	--	--	--					
Methylene chloride	12,600	--	--	--	16	--	--	--	--	--	--	--					
Methylcyclohexane	NE	--	--	--	--	--	--	--	--	--	--	--					
Methyl Isobutyl Ketone (MIK)	62,000	--	--	--	--	--	--	--	--	--	2.3 J	--					
Methyl Butyl Ketone (Hexanone, 2)	NE	--	--	--	--	--	--	--	--	--	--	--					
Methyl Ethyl Ketone (2-Butanone, MEK)	104,000	8.3	5.3	--	--	--	16	4.4	4.7	--	24	25					
Methyl t-Butyl Ether	2,200	--	--	--	--	--	--	--	--	--	--	--					
Naphthalene	17	--	--	--	--	--	--	--	--	--	--	--					
Octane	NE	--	--	--	--	--	--	--	--	--	6.1 B	8.4 B					
Pentane	20,000	--	--	--	--	--	--	--	--	--	--	--					
Propylene (Propene)	62,000	--	--	--	--	--	--	--	--	--	--	--					
Styrene	20,000	--	--	--	--	--	--	--	--	--	--	--					
Tertiary butyl alcohol	NE	--	--	--	--	--	--	--	--	--	--	--					
Tetrachloroethane, 1,1,2,2-	10	--	--	--	--	--	--	--	--	--	--	--					
Tetrachloroethene	840	27	22	47	11	--	15	--	--	--	8.1	8.1	122	101 B	20.1 B	**1,140,000 B**	--
Toluene	104,000	4.9 J	4.9 J	6 B	6.4	--	6.4	24 J	31	656 J	20	19					
1,1,2-Trichloro-1,2,2-trifluoroethane	620,000	--	--	--	--	--	--	--	--	--	--	--					
Trichloroethane, 1,1,1-	104,000	--	--	--	--	--	--	--	--	--	--	--					
Trichloroethane, 1,1,2-	4	--	--	--	--	--	--	--	--	--	--	--					
Trichloroethene	42	--	--	2.4	--	6.4 J	--	--	1.4 J	--	--	--	24.5	11.2	6.02	**146,000**	--
Trichlorofluoromethane (Freon 11)	14,600	--	--	--	7.3 J	--	--	--	--	--	3 J	--					
Trimethylbenzene, 1,2,4-	146	--	--	11 B	--	--	--	11 J	6.9 J	18 J	16 B	14 B					
Trimethylbenzene, 1,3,5-	NE	--	--	3.1 B	--	--	--	2.5 J	2 J	4.8 J	4.6 B	3.6 B					
Trimethylpentane, 2,2,4-	NE	--	--	--	--	--	--	196	191	2700	--	--					
Vinyl chloride	34	--	--	--	--	--	--	--	--	--	--	--					
Xylene, m&p-	2,000	6.1 J	5.6 J	10 B	6.9	--	6.9	9.6 J	17 J	73.4 J	23 B	23 B					
Xylene, o-	2,000	--	--	4.3 B	--	--	--	4.3 J	6.5 J	20 J	9.1 B	8.7 B					

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	1/15/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	61.7	>>>	12.7	0	29.94	--
GTA-MM-2	6.4	>>>	0.8	8	29.94	--
GTA-MM-3	0	0	0.1	20.4	29.94	--
GTA-MM-4	0	0	1.2	19.7	29.94	--
GTA-MM-5	***NA					
GTA-MM-6	0.1	3	3.1	0.5	29.94	--
GTA-MM-7	0	0	0.5	18.6	29.94	--
GTA-MM-8	0	0	2.1	15.4	29.94	--
GTA-MM-9	**NA					
GTA-MM-10	***NA					
GTA-MM-11	*NA					
GTA-MM-12	0	0	0.5	18.4	29.94	--
GTA-MM-13	***NA					
GTA-MM-14	0	0	0.8	18.3	29.94	--
GTA-MM-15	0	0	0.2	20.1	29.94	--
GTA-MM-16	0	0	5.9	15.2	29.94	--

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	1/29/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	12.3	>>>	3.3	16.6	31.21	--
GTA-MM-2	22	42	0.4	13.4	31.19	--
GTA-MM-3	0	0	0	20.8	30.21	--
GTA-MM-4	0	0	1.8	19.9	30.21	--
GTA-MM-5	***NA					
GTA-MM-6	0	0.4	3.2	>>>	30.24	--
GTA-MM-7	0.1	0.1	0.8	18.1	30.24	--
GTA-MM-8	0	0	0.4	20.1	30.23	--
GTA-MM-9	**NA					
GTA-MM-10	***NA					
GTA-MM-11	*NA					
GTA-MM-12	0	0	0.5	19.2	30.24	--
GTA-MM-13	***NA					
GTA-MM-14	0	0	0.2	15.1	30.24	--
GTA-MM-15	0	0	0.1	20.6	30.29	--
GTA-MM-16	0	0	0.2	20.7	30.23	--

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	2/16/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	8.9	>>>	2.5	19.2	30	--
GTA-MM-2	6.1	>>>	0.7	8.5	30	--
GTA-MM-3	0.2	3	0	22	30.08	--
GTA-MM-4	0.2	3	0.7	21.5	30.05	--
GTA-MM-5	***NA					
GTA-MM-6	0.2	3	1.8	8	30	--
GTA-MM-7	0	0	0.3	20.4	30.08	--
GTA-MM-8	0	0	0.4	20.8	30.05	--
GTA-MM-9	**NA					
GTA-MM-10	***NA					
GTA-MM-11	*NA					
GTA-MM-12	0	0	0.1	20.8	30.08	--
GTA-MM-13	***N/A					
GTA-MM-14	0.2	3	0.5	20.5	30.08	--
GTA-MM-15	0	0	0	21.7	30.08	--
GTA-MM-16	0.2	4	0.3	21.8	30.05	--

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	3/9/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	16.3	>>>	7.5	3.8	30.08	0
GTA-MM-2	2.1	42	0.2	13.7	30.08	0
GTA-MM-3	0	0	0	20.8	30.08	0.22
GTA-MM-4	0	0	0.5	20.1	30.08	0
GTA-MM-5	0	1	1.4	15.9	30.08	0.02
GTA-MM-6	0	1	2.1	2.7	30.08	0
GTA-MM-7	0	0	0.1	20.7	30.08	0.02
GTA-MM-8	0	0	2.3	14.2	30.08	0.02
GTA-MM-9	**NA					
GTA-MM-10	0	0	0.9	4.1	30.08	0
GTA-MM-11	*NA					
GTA-MM-12	0	0	0	20.1	30.08	0
GTA-MM-13	0	0	0	20.1	30.08	0
GTA-MM-14	0	1	0.2	17.7	30.08	0.08
GTA-MM-15	0	0	0.2	20.6	30.08	0
GTA-MM-16	0	0	0.2	20.1	30.08	0

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	3/23/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	27.9	>>>	9	10.2	30.14	0.02
GTA-MM-2	0.1	2	0.1	22.2	30.14	-0.06
GTA-MM-3	0	0	0.1	22.2	30.14	0.02
GTA-MM-4	0.1	2	0.8	21.7	30.14	0
GTA-MM-5	0	1	0.1	22	30.14	-0.08
GTA-MM-6	0.1	2	0.1	21.9	30.14	-0.02
GTA-MM-7	0	0	0.1	22	30.14	0
GTA-MM-8	0	0	0.1	22.2	30.14	0.02
GTA-MM-9	**NA					
GTA-MM-10	0	0	4.6	14.7	30.14	-0.08
GTA-MM-11	*NA					
GTA-MM-12	0	0	0.1	21	30.14	0
GTA-MM-13	0	0	0.1	21.5	30.14	-0.44
GTA-MM-14	0	0	2.7	8.8	30.14	0
GTA-MM-15	0	0	0.1	22	30.14	-0.04
GTA-MM-16	0	0	0.2	22.1	30.14	0.02

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	4/17/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	24.1	>>>	8.8	11.5	29.96	0.02
GTA-MM-2	7.8	>>>	0.7	2.2	29.96	0.01
GTA-MM-3	0	0	0.1	20	29.96	0
GTA-MM-4	0	1	0.7	21.6	29.96	0
GTA-MM-5	0.1	1	2.1	16.9	29.96	0.30
GTA-MM-6	0.1	1	1.7	1.4	29.96	0.01
GTA-MM-7	0	0	0.2	18.7	29.96	0.01
GTA-MM-8	0	0	0.1	21	29.96	0.02
GTA-MM-9	**NA					
GTA-MM-10	0	0	0.8	15.2	29.96	-0.04
GTA-MM-11	*NA					
GTA-MM-12	0	0	0	20.4	29.96	0.01
GTA-MM-13	0	1	0.1	20.5	29.96	-0.20
GTA-MM-14	0	0	0.1	20	29.96	0.1
GTA-MM-15	0	0	3.4	17.9	29.96	0.02
GTA-MM-16	0	0	0.1	20.2	29.96	0.1

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	5/27/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	17.3	>>>	7.7	13.0	30.00	0.02
GTA-MM-2	0.4	9	0.3	18.2	30.00	-0.01
GTA-MM-3	0	0	0	20.0	30.00	0
GTA-MM-4	0	1	0,5	22.6	30.00	0
GTA-MM-5	0	0	3.0	15.4	30.00	0
GTA-MM-6	0.1	0	1.0	20.1	30.00	0.02
GTA-MM-7	0	0	0.1	18.6	30.00	0.02
GTA-MM-8	0.1	0	0	21.2	30.00	0.01
GTA-MM-9	**NA					
GTA-MM-10	0	1	0.6	16.2	30.00	-0.02
GTA-MM-11	*NA					
GTA-MM-12	0	0	0	20.6	30.00	0.01
GTA-MM-13	0	0	1.3	15.8	30.00	0
GTA-MM-14	0	0	0.1	20.0	30.00	0
GTA-MM-15	0	0	0.4	20.8	30.00	0.02
GTA-MM-16	0	0	0.1	20.0	30.00	0.01

Table 8
Methane Field Screening Summary

5601 Eastern Avenue
City of Baltimore, Maryland
GTA Project No. 140080

Location	7/23/2015					
	CH_4	CH_4	CO_2	O_2	Atm. Press. ("Hg)	Relative Pressure
	(% VOL)	(% LEL)	(% VOL)	(% VOL)	("Hg)	(in. H2O)
GTA-MM-1	15.7	>>>	14.6	5.1	29.90	0
GTA-MM-2	0.5	18	0.9	16.2	29.90	0
GTA-MM-3	0	0	0.1	19.1	29.90	0
GTA-MM-4	0	0	1.4	18.3	29.90	0
GTA-MM-5	0	0	0.1	19.9	29.90	0
GTA-MM-6	0	0	0	20.0	29.90	0
GTA-MM-7	0	0	0.6	17.7	29.90	0
GTA-MM-8	0	0	0	18.6	29.90	0
GTA-MM-9	**NA					
GTA-MM-10	0	0	0.1	16.4	29.90	0
GTA-MM-11	*NA					
GTA-MM-12	0	0	0	19.4	29.90	0
GTA-MM-13	0	0	2.3	14.5	29.90	0
GTA-MM-14	0	0	0	17.8	29.90	0
GTA-MM-15	0	0	0.1	17.8	29.90	0
GTA-MM-16	0	0	0	20.1	29.90	0

APPENDIX A

VCP ACCEPTANCE LETTER

MDE

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101 • www.mde.maryland.gov

Larry Hogan
Governor

Boyd Rutherford
Lieutenant Governor

Ben Grumbles
Secretary

August 12, 2015

CERTIFIED MAIL

David Frederick, Member
TRP-MCB 5601 Eastern LLC
2701 North Charles Street, Suite 404
Baltimore, Maryland 21218

Re: Voluntary Cleanup Program Application
PEMCO Property
5601 Eastern Avenue
Baltimore, Maryland 21224

Dear Mr. Frederick:

The Voluntary Cleanup Program ("VCP") of the Maryland Department of the Environment ("Department") has finished its evaluation of the complete VCP application package submitted for the PEMCO Property located at 5601 Eastern Avenue in Baltimore, Maryland. The Department accepts the 19.97-acre property into the VCP and reaffirms the inculpable person status of TRP-MCB 5601 Eastern LLC for this property pursuant to Title 7, Subtitle 5 of the Environment Article, Annotated Code of Maryland.

Since the property does not qualify for a No Further Requirements Determination, a proposed response action plan ("RAP") must be developed, approved by the Department, and implemented to address risks to human health and the environment resulting from elevated levels of contaminants in the soil, soil gas and groundwater at the site.

Submission of the proposed RAP and implementation of all statutory requirements must occur within 18 months of receipt of this letter. The guidelines for preparation of the proposed RAP have been enclosed and the statutory requirements can be found in Section 7-508 of the Environment Article. Simultaneously with submission of the proposed RAP to the Department for review and approval, you must comply with the public participation requirements by posting a sign at the property and publishing a notice in a daily or weekly newspaper of general circulation in the geographic area where the participating property is located. Both notices for the proposed RAP must include the date and location of the public informational meeting. A summary of the public participation requirements, as well as a template for the public notice in the newspaper and the sign on the property, has also been enclosed.

You are requested to forward a draft of the sign and newspaper notice for the proposed RAP to the VCP for review and approval prior to publication and posting at the property. Please contact Barbara Brown, the project manager, to discuss development of the proposed RAP, the exact date for submitting

the proposed RAP, and draft public notice language to the Department for review and approval.

Upon satisfactory implementation and completion of the requirements set forth in the approved RAP and any subsequent addendums, the Department will issue a Certificate of Completion for the property which must be recorded in the land records of Baltimore City within 30 days following receipt.

In accordance with the provisions of Section 7-506(g)(1) of the Environment Article, you are requested to inform the Department in writing, within 30 days of receipt of this letter, whether TRP-MCB 5601 Eastern LLC intends to proceed as a participant in the VCP. If the Department does not receive the notice of intent to proceed within the 30-day period, the application for participation in the VCP shall be deemed withdrawn pursuant to Section 7-506(g)(2) of the Environment Article.

If you have any questions regarding the requirements, development of the proposed RAP or other aspects of the program, please contact Barbara Brown, the project manager or me at 410-537-3493.

Sincerely,

James R. Carroll, Administrator
Land Restoration Program

Enclosures

cc: Mr. Leonard Hotham, EPA Region III
Trent Zivkovich, Esq., Whiteford, Taylor & Preston
Mr. Kevin Plocek, Geo-Technology Associates, Inc.
Ms. Hilary Miller
Ms. Barbara H. Brown

APPENDIX B

WRITTEN AGREEMENT

WRITTEN AGREEMENT

"If the RAP is approved by the MDE, the participant agrees, subject to the withdrawal provisions of Section 7-512 of the Environment Article, to comply with the provisions of the response action plan. Participant understands that if he fails to implement and complete the requirements of the approved plan and schedule, the Maryland Department of the Environment may reach an agreement with the participants to revise the schedule of completion in the approved response action plan or, if an agreement cannot be reached, the Department may withdraw approval of the plan."

DFrederick

TRP-MCB 5601 Eastern LLC
David Frederick
Member

11/3/15

Date

APPENDIX C

DEMOLITION MATERIALS MANAGEMNT PLAN

GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing GBA Member Firm

November 6, 2015

Maryland Department of the Environment
Voluntary Cleanup Program
1800 Washington Boulevard
Baltimore, Maryland 21230

Attn: Ms. Barbara Brown

Re: Demolition Materials Management Plan
5601 Eastern Avenue
City of Baltimore, Maryland

Dear Ms. Brown:

Geo-Technology Associates, Inc. (GTA) has prepared a Demolition Materials Management Plan (DMMP) of the above referenced property ("subject property"). This DMMP has been prepared to address the reuse of "recycled materials," in conjunction with the redevelopment of the subject property.

GTA appreciates the opportunity to be of assistance on this project. Should you have any questions regarding this information, or should you require additional information, please do not hesitate to contact our office.

Sincerely,
GEO-TECHNOLOGY ASSOCIATES, INC.

Kevin P. Plocek
Senior Environmental Scientist

for
Paul H. Hayden, P.G., L.R.S.
Vice President

KPP/PHH
S:\Project Files\2014\140080 Pemco\Doc\RAP\Demolition Management Plan.doc

1.0 Introduction

1.1 Site Description

The subject property comprises approximately 19.97 acres of land located south of Eastern Avenue and east of South Umbra Street, in the eastern portion of the City of Baltimore, Maryland. The subject property contains several vacant industrial buildings, a vacant laboratory building, a vacant warehouse, asphalt parking lots, an inactive industrial landfill (herein identified as "Crystal Hill"), and grassed areas.

The activities described herein pertain to the reuse of "recycled materials" resulting from the demolition of 13 buildings and several support structures on the subject property. One structure (a vacant laboratory building) is located on the northeastern portion of the subject property, and the remaining structures are clustered on the northern and central portion of the site, in a manufacturing complex.

1.2 Background

GTA is currently preparing a Response Action Plan (RAP) for the subject property on behalf of TRP-MCB 5601 Eastern LLC (the "Participant"), and the RAP currently proposes reuse of "recycled materials" from the demolition of several existing buildings as on-site fill material. For the purpose of this DMMP, "recycled materials" are defined as crushed concrete and masonry debris.

On June 25, 2015, GTA personnel reviewed a proposed outline of the RAP with representatives of the Maryland Department of the Environment (MDE) Voluntary Cleanup Program (VCP). The MDE VCP recommended that if recycled materials from on-site demolition are intended to be used as on-site fill material, it would be beneficial to prepare a DMMP for submittal and review prior to the submission of the RAP. As such, GTA prepared the following DMMP for the reuse of recycled materials at the subject property.

2.0 Justification

Typically, under §9-101 of the Environment Article, Annotated Code of Maryland and COMAR 26.04.07.13B, concrete, asphalt, and bricks derived from the demolition of a building are considered to be solid waste that, if disposed of, must be managed at a refuse disposal facility permitted for those materials.

However, the Participant's proposed use of crushed concrete and masonry debris as on-site fill material may be exempted from refuse disposal system permitting requirements because it constitutes recycling. Environment Article§ 9-1701(m) defines recyclable material as "those materials that (1) would otherwise become solid waste for disposal in a refuse disposal system; and (2) may be collected, separated, composted or processed and returned to the marketplace in the form of raw materials or products." Recycling is defined in Environment Article§ 9-1701(n) as "any process in which recyclable materials are collected, separated, processed and returned to the marketplace in the form of raw materials or products." The following sections detail the

proposed decommissioning, segregation, testing, and MDE approval process for the use of crushed concrete and masonry debris as recycled materials on the subject property.

Previous documentation received from the MDE Solid Waste Program has indicated the following: "In order to determine whether the crushed concrete material is recyclable material, the crushed concrete must be evaluated for hazardous substances and other contaminants. Materials which indicate levels of hazardous substances and contaminants would be considered solid waste rather than recyclable materials. Such materials must be disposed of in a properly licensed solid waste acceptance facility."

3.0 Health and Safety

Fencing was previously installed around the perimeter to secure the subject property. Once the slabs and foundations are removed, the area disturbed by site demolition activities will be equipped with silt fencing to prevent the transport of the site soils off-site during a storm event. In addition, prior to the removal of the building slabs and footings, sediment erosion control measures will be installed at the perimeter of the demolition areas.

Wetting or misting will be performed during site demolition activities by a member of the site demolition team equipped with a hose that will be connected to a publicly available water connection. In addition, air monitoring procedures in accordance with those presented in *Section 9.3* of the RAP will be performed during site demolition activities. .

4.0 Building Decommissioning

The existing buildings currently contain abandoned manufacturing equipment, discarded bags and other containers of raw materials, dilapidated laboratory fixtures, furniture, debris from building collapses, and several marked and unmarked containers ranging in size from five to 55-gallons. The contents of the marked and unmarked containers will be characterized and transported for off-site disposal. With the exception of the marked and unmarked containers, GTA understands that the contents of the existing buildings will be removed and disposed off-site as common construction and demolition materials prior to building demolition activities. GTA will document the removal and proper disposal of materials in the buildings, including the marked and unmarked containers.

5.0 Soft Demolition Activities

GTA previously performed an *Asbestos-Containing Materials Survey* which identified asbestos within several of the buildings proposed for demolition. Prior to the start of demolition of the interior of the buildings, asbestos abatement activities will be performed in accordance to State and Federal regulations. Asbestos wastes generated during the abatement activities will be disposed at a licensed off-site disposal facility. Once abatement activities are complete, soft demolition activities will commence. The demolition debris (e.g. wood, drywall, and metal generated during soft demolition activities) will be removed off-site and disposed or recycled as common construction and demolition materials. Remaining painted concrete and masonry

surfaces will be assumed to contain lead unless testing is performed that indicates that lead-based paint (LBP) is not present.

Upon the completion of the soft demolition activities and prior to the commencement of major demolition activities, GTA will notify the MDE VCP. GTA will arrange a site visit with the MDE VCP to evaluate the interior and exterior of the buildings, and note areas of concern for future use on the subject property (e.g. painted and stained concrete).

6.0 Above Grade Demolition Activities

After the MDE VCP site visit has been completed, above grade demolition activities will commence. Non-concrete/masonry demolition materials (e.g. steel, rebar, plastic, and wood) will be removed and transported off-site as common construction spoils. Above grade concrete/masonry demolition materials will be crushed and segregated into "painted" and "unpainted" recycled material stockpiles. "Painted" stockpiles will not be utilized on-site unless LBP testing has indicated paint coatings do not contain lead. Demolition materials with obvious signs of staining or LBP application will be segregated for disposal off-site at a permitted facility. Once stockpiled, the concrete/masonry demolition materials will be analyzed in accordance to the parameters specified in *Section 8.0*.

7.0 Below Grade Demolition Activities

Slab-on-grade and below grade demolition activities will be completed similar to above grade demolition activities summarized above. However, once exposed, GTA personnel will field screen the underlying and adjacent soils with a portable photoionization detector (PID), which is capable of detecting some solvents and petroleum compounds. If stained soil, unusual odors, or elevated PID readings are observed, the concrete/masonry demolition materials will be segregated into a separate "potentially impacted" stockpile. Demolition materials with obvious signs of staining or LBP application will be segregated for disposal off-site at a permitted facility. If no stained soil, unusual odors, or elevated PID readings are observed, the concrete/masonry demolition materials will be segregated into a separate "potentially unimpacted" stockpile and will be analyzed in accordance to the parameters specified in *Section 8.0*.

8.0 Confirmatory Sampling

Recycled material samples will be collected and analyzed in general accordance with the *MDE VCP – Clean Imported Fill Material Fact Sheet.* Composite samples of the recycled materials will be collected based on the approximate cubic yardage of the stockpiled materials. One sample of composite recycled material will be collected per every 500 cubic yards of material generated. These composite samples will consist of four discrete sampling locations. In addition, materials comprising the sample must be able to pass through a ½ inch sieve. If materials cannot pass through the ½ inch sieve, they will be further pulverized until they can do so. Samples will be collected to represent the entirety of the stockpiled materials (northern, southern, western, and eastern portions; surficial and within the stockpile).

Recycled material samples will be analyzed for:

- Toxicity Characteristic Leaching Procedure RCRA Metals by United States Environmental Protection Agency (USEPA) Method 1311/1312;

In addition, recycled material resulting from the slabs, basement, and footings of the buildings will be analyzed for:

- Polycyclic Aromatic Hydrocarbons using USEPA Method 8270.
- Total Petroleum Hydrocarbons Diesel Range Organics and Gasoline Range Organics by USEPA Method 8015B.

Analysis results will be provided to the MDE VCP for approval prior to use of recycled materials as fill material on the subject property. Recycled materials that are approved by the MDE VCP for use on the subject property will be used as fill materials below buildings, roadways, or beneath areas proposed to be capped with clean fill. Recycled materials that are not approved by the MDE VCP for use on the subject property will be disposed off-site at a permitted facility.

APPENDIX D

CAP INSPECTION FORM

CAP INSPECTION FORM

Location:		**Date/Time:**	
Inspector:		**Weather:**	

PAVEMENT

Overall Condition	

Specific Areas of Note (use PCI, below, and attach sketches/ photographs, as needed)

Area	PCI	Comments

Pavement Condition Index (PCI)

Response?	PCI	Characterization	Description
Optional	**1**	New, crack-free surface	Black in color, smooth texture
	2	Oxidation has started	Short hairline cracks start to develop. Dark gray color.
	3	Oxidation in advanced state	Hairline cracks are longer and wider. Gray in color.
Required	**4**	Oxidation complete	Crack area ¼" wide and crack lines have found base faults.
	5	Moisture penetrating through ¼" cracks. Loose material (stone and sand) evident.	Texture of surface becoming rough. Preventive maintenance.
	6	Cracks widen and join.	Cracks and shrinkage evident at curb and gutter lines.
	7	Potholes develop in low spots.	Gatoring areas begin to break up. Overall texture very rough.
	8	Potholes developing.	Pavement breaking up.
	9	Heaving due to excessive moisture in base.	Distorts entire surface.
	10	General breakup of surface.	

SIDEWALKS/CURBS

	Sidewalks	Curbs and Gutters
Overall Condition		
Check all that apply	☐ Sound ☐ Cracked ☐ Deteriorated ☐ Root Intrusion	☐ Sound ☐ Cracked ☐ Deteriorated ☐ Root Intrusion
Other Comments		

LANDSCAPED AREAS

Overall Condition	
Check all that apply	☐ Sound ☐ Erosion ☐ Healthy Plant Condition ☐ Mortality ☐ Animal Burrows
Trees	☐ Healthy ☐ Poor Health ☐ Dead ☐ Fallen ☐ Other_____
Shrubs	☐ Healthy ☐ Poor Health ☐ Dead ☐ Fallen ☐ Other_____
Vent Risers and Piping at Light Poles	☐ Good Condition ☐ Cracked ☐ Broken/ Damaged ☐ Other_____

RESPONSE ACTIONS

Responses Required	
Work Completed (Description, Date, Contractor, etc.)	
List Attached Photographs/Sketches	

APPENDIX E

ZONING CERTIFICATION

CERTIFIED STATEMENT RE: COUNTY AND MUNICIPAL ZONING REQUIREMENTS

"The participant hereby certifies that the property meets all applicable county and municipal zoning requirements.

The participant acknowledges that there are significant penalties for falsifying any information required by MDE under Title 7, Subtitle 5 of the Environmental Article, Annotated Code of Maryland, and that this certification is required to be included in a response action plan for the Voluntary Cleanup Program pursuant to Title 7, Subtitle 5 of the Environmental Article, Annotated Code of Maryland."

TRP-MCB 5601 Eastern LLC
David Frederick
Member

11/3/15
Date