
PC No. 2016-3090 and VRP00673

From James Thornhill <jthornhill@wiregill.com>

Date Mon 6/17/2024 10:46 AM

To Chapman, Randy (DEQ) <Randy.Chapman@deq.virginia.gov>; Anderson, Meade (DEQ) <j.meade.anderson@deq.virginia.gov>

Cc Mike Bruzzesi <mbruzzesi@envecoenvironmental.com>

 2 attachments (4 MB)

Letter to DEQ 6-14-24.pdf; RP_RTN500501UnionSt_FinalURARA_061424.pdf;

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Randy and Meade: Good morning. Attached is a risk assessment addendum prepared by ENVECO considering future residential use of the RTN site. This is being delivered in connection with a request being made of the VRP to remove the residential use prohibition.

Please advise of any questions. Thanks, Jim

James A. Thornhill

Wire Gill LLP

9200 Forest Hill Ave., Suite C-1

Richmond, VA 23235

Direct: 804-288-8400

Cell: 804-314-1741

jthornhill@wiregill.com

www.wiregill.com

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June 14, 2024

Commonwealth of Virginia Department of Environmental Quality
Northern Regional Office: Petroleum Remediation
13901 Crown Court
Woodbridge, Virginia 22193

Commonwealth of Virginia Department of Environmental Quality
Office of Remediation Programs
629 East Main Street
Richmond, Virginia 23219

Attention: Randy Chapman, Remediation Manager
Meade Anderson, Brownfields & VRP Program Manager

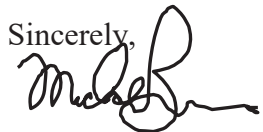
Subject: **Updated Risk Assessment Report Addendum (Addressing Residential Risk)** -
Former Robinson Terminal North Property, 500 and 501 North Union Street, Alexandria,
Virginia

Reference: VDEQ PC No. 2016-3090
VRP Site No. 00673
ENVECO Project No. 202416

Dear Randy Chapman and Meade Anderson:

Attached for your review is the *Updated Risk Assessment Report Addendum* (URARA) prepared by ENVECO Environmental Solutions, LLC for the Former Robinson Terminal North property (herein referred to as the SITE) located at 500 and 501 North Union Street in Alexandria, Virginia. The URARA supplements the *Update Risk Assessment Report* (URAR) prepared for the SITE by A-Zone Environmental Services, LLC dated March 26, 2021. The URAR was submitted to and accepted by the Virginia Department of Environmental Quality (VDEQ) Petroleum Storage Tank Program and Voluntary Remediation Program. The URARA was prepared in accordance with current Virginia Unified Risk Assessment Model – VURAM User Guide guidelines. The URARA includes an updated Conceptual Site Model and addresses potential risks to future residential site users from affected soil, groundwater, and surface water documented at the SITE.

If you have any questions concerning the URARA, please feel free to contact me at (703) 608-5969 or mbruzzo@envecoenvironmental.com.

Sincerely,


Michael A. Bruzzesi, CPG
Director of Remediation & Construction
VA CPG No. 2801 001428

UPDATED RISK ASSESSMENT REPORT ADDENDUM (ADDRESSING RESIDENTIAL RISK)

**FORMER ROBINSON TERMINAL NORTH PROPERTY
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VIRGINIA**

**VDEQ VRP# 00673
VDEQ PC# 2016-3090**

Prepared for:

Commonwealth of Virginia Department of Environmental Quality
Northern Regional Office: Petroleum Remediation
13901 Crown Court
Woodbridge, Virginia 22193
(703) 583-3800

and

Office of Remediation Programs
629 East Main Street
Richmond, Virginia 23219
(804) 698-4021

On Behalf of:

Alexandria North Terminal, LLC
c/o Rooney Properties
3330 Washington Boulevard, Suite 220
Arlington, Virginia 22201
(571) 297-4833

Prepared by:

ENVECO Environmental Solutions, LLC
103 Manor Lake Estates Drive
Spring, Texas 77379-3722
(713) 429-0779

ENVECO Project No. 202416

June 14, 2024

SIGNATURE SHEET

This *Updated Risk Assessment Report Addendum* (URARA) for the Former Robinson Terminal North property located at 500 and 501 North Union Street in Alexandria, Virginia, was prepared by:



June 14, 2024

Clifford A. Opdyke, PhD Date
Senior Risk Assessor

The URARA was reviewed and approved for release by:



June 14, 2024

Michael A. Bruzzesi, CPG Date
Project Manager/Senior Geologist
VA CPG No. 2801 001428

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LIST OF ACRONYMS AND ABBREVIATIONS

AlexRenew	Alexandria Renew Enterprises
A-Zone	A-Zone Environmental Services, LLC
CAP	Corrective Action Plan
COPC	constituents of potential concern
CSM	Conceptual Site Model
ENVECO	ENVECO Environmental Solutions, LLC
EPA	United States Environmental Protection Agency
ICOR	ICOR, Ltd.
IM	Implementation Monitoring
mg/kg	milligram per kilogram
PCB	polychlorinated biphenyls
PC#	Pollution Compliant Number
PID	photo-ionization detector
PSCM	Post Site Characterization Monitoring
PSCMR	Post Site Characterization Monitoring Report
PSTP	Petroleum Storage Tank Program
PVC	polyvinyl chloride
RA	Risk Assessment
RAR	Risk Assessment Report
SCR	Site Characterization Report
SCS	Site Characterization Study
SVOC	semi-VOC
TAL	Target Analyte List
TCLP	Toxic Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
TPH-DRO	diesel range TPH
TPH-GRO	gasoline range TPH
URAR	Updated Risk Assessment Report
URARA	Updated Risk Assessment Report Addendum
UST	underground storage tank
VDEQ	Commonwealth of Virginia Department of Environmental Quality
VI	vapor intrusion
VOC	volatile organic compound
VOV	volatile organic vapors
VURAM	Virginia Unified Risk Assessment Model
VRP	Voluntary Remediation Program

1.0 INTRODUCTION

This *Updated Risk Assessment Report Addendum* (URARA) was prepared by ENVECO Environmental Solutions, LLC (ENVECO) for the Former Robinson Terminal North property (herein referred to as the SITE) located at 500 and 501 North Union Street in Alexandria, Virginia. The URARA supplements the *Update Risk Assessment Report* (URAR) prepared for the SITE by A-Zone Environmental Services, LLC (A-Zone) dated March 26, 2021. The URAR was submitted to and accepted by the Virginia Department of Environmental Quality (VDEQ) Petroleum Storage Tank Program and Voluntary Remediation Program. This URARA addresses potential risks to future residential site users from affected soil, groundwater, and surface water documented at the SITE. The URAR only addressed risks associated with current commercial use.

The SITE is currently being considered for mixed use development to include residential, retail, and commercial. Of note, for the last several years a large stormwater infrastructure/utility project associated with Alexandria Renew Enterprises (AlexRenew) has been underway on the 501 North Union Street parcel (501 Parcel). The AlexRenew project is expected to be completed in early 2025, after which, mixed use development is planned. Anticipated development includes multi-story residential buildings on the 500 North Union Street parcel (500 Parcel) and 501 Parcel. The ground-level floors of both buildings will be used for restaurant and retail purposes. The 501 Parcel is anticipated to include at least one subsurface parking level.

The URARA was prepared in accordance with current Virginia Unified Risk Assessment Model – VURAM User Guide (VURAM, Version 3.2.2) guidelines. The URARA includes an updated Conceptual Site Model (CSM) and addresses potential risks to future residential site users from affected soil and groundwater, in a residential land use scenario.

2.0 BACKGROUND

The SITE is comprised of two parcels, the 500 and 501 Parcels, separated by North Union Street. The SITE is in a mixed commercial and residential land use area. The 500 Parcel is currently improved with a warehouse, paved parking lot, and landscaping. The warehouse is currently occupied by a restaurant supply company and is used for storage of equipment and supplies for a construction company. At the time the URAR was prepared, the 501 Parcel was improved with a warehouse, paved parking lot, dock (pier), and landscaping. Since that time, the warehouse was demolished and construction of the AlexRenew project started. The warehouse slab was left in place and the vast majority of AlexRenew construction focuses on the northern portion of the 501 Parcel. The remaining portions of the parcel are used for equipment and materials storage. As part of construction, a sheet pile wall was installed to extend the northern shoreline and mass excavation was conducted to install deep stormwater conveyance piping and infrastructure.

After the AlexRenew project is completed, the 500 and 501 Parcels will be developed. Anticipated development includes multi-story residential buildings on both parcels. The ground-level floors of both buildings will be used for restaurant and retail purposes. The 501 Parcel is anticipated to include at least one subsurface parking level.

Based on the findings of historical environmental assessments, soil and groundwater beneath the SITE have been impacted by the past use of the SITE for bulk oil storage, fertilizer storage, coal storage, chemical mixing and manufacturing, and warehouse operations. Contributions to impacts from adjacent and nearby properties used in the past for fertilizer storage, city gas works, chemical manufacturing and mixing, and bulk oil storage are also suspected. Constituents of potential concern (COPC) identified at elevated concentrations in soil, groundwater, and soil gas at the SITE include gasoline and diesel range total petroleum hydrocarbons (TPH-GRO and TPH-DRO, respectively), volatile organic compounds (VOCs), semi-VOCs (SVOCs), and metals.

In 2016, the SITE was assigned Pollution Compliant number (PC#) 2016-3090 by the VDEQ PSTP to address a suspect release of petroleum from past storage tanks. When the SITE was assigned the PC#, the VDEQ mandated that a Site Characterization Study (SCS) be conducted to address the suspect release. The SITE was also entered into the VDEQ's VRP in 2016 and was assigned VRP number 00673. The SITE was entered into the VRP to address non-petroleum impacts, which are not typically addressed through the VDEQ's PSTP. The SCS was completed in February 2017 and a *Site Characterization Report* (SCR) was submitted to the VDEQ in August 2017. The VDEQ accepted the findings of the SCS in September 2017. Based on their review of the SCS, the VDEQ mandated further groundwater monitoring as part of a Post-Site Characterization Monitoring (PSCM) program. At that time, several new groundwater monitoring wells were installed, and groundwater samples were collected for laboratory analysis on two occasions as part of the program. The findings of each sampling event were reported to the VDEQ. Based on the findings of PSCM events, the VDEQ mandated that a Corrective Action Plan (CAP) be prepared for the SITE to address identified petroleum impacts to soil and groundwater. A CAP was submitted to the VDEQ in January 2019 and granted approval in May 2019. The CAP detailed corrective actions and engineering and institutional controls proposed to address the petroleum impacts. The SCS was conducted, and the SCR and CAP were prepared to satisfy PSTP and VRP SCS and SCR and PSTP CAP requirements.

As part of the CAP approval, the VDEQ requested that semi-annual groundwater sampling of the groundwater monitoring well network be initiated in July 2019 and be continued every 6 months until the start of SITE development. The Implementation Monitoring (IM) activities were conducted in conformance with a VDEQ-approved SCS Work Plan (WP) prepared by ICOR, Ltd. (dated April 1, 2016) and two PSCM events conducted in January and June 2018. The PSCM activities were conducted to further evaluate the type, degree, and extent of soil and groundwater impacts and to further evaluate general risks posed by the impacts to current and future site users. The findings of the SCS and follow-up PSCM were used to develop a remedial approach (in the form of a CAP) that allows for successful development of the SITE and minimization of risks to human health and the environment.

The history of the SITE and detailed discussion of the SCS activities and findings were provided in the SCR. The corrective actions and engineering and institutional controls proposed to address the identified impacts were presented in the CAP.

In general, the historical groundwater sampling results indicate concentrations of target constituents have decreased or remained relatively stable over the years sampled (with little variations between time of year).

This URARA addresses potential risks to future residential site users from affected soil, groundwater, and surface water documented at the SITE. The URAR only addressed risks associated with current commercial use.

3.0 SITE DESCRIPTION

The SITE is located at 500 and 501 North Union Street in Alexandria, Virginia, at the intersection of Oronoco Street and North Union Street. The 500 and 501 Parcels which comprise the SITE are separated by North Union Street. The two parcels encompass approximately 3.2 acres of land. In past reports, the parcel addresses have also been listed as 1 and 101 Oronoco Street (corresponding to the 500 and 501 Parcels, respectively). A site location map is included as Figure 1. The SITE is situated in a mixed commercial and residential land use area. Adjacent property use is depicted on the aerial photograph included as Figure 2.

The 500 Parcel is currently improved with one 1-story, slab-on-grade brick, concrete, and steel warehouse, asphalt and concrete-paved parking area, and landscaping. The 501 Parcel is currently improved with gravel, asphalt, and concrete-paved areas and a large concrete dock (pier). The warehouse located at the 500 Parcel and is referred to as Warehouse #16. Warehouse #16 is currently occupied by a restaurant supply company and is used for storage of equipment and supplies for a construction company. A vacant warehouse was formerly located at the 501 Parcel along with a small shed and railroad spur. The warehouse (referred to as Warehouse #10, #11, and #12) and shed were demolished and removed as part of the AlexRenew project. The thick concrete building slab was left in place. The railroad spur was covered by gravel to create a driveway. Both warehouses were constructed in 1966. The vast majority of AlexRenew construction focuses on the northern portion of the 501 Parcel. The remaining portions of the parcel are used for equipment and materials storage. As part of construction, a sheet pile wall was installed to extend the northern shoreline and mass excavation was conducted to install deep stormwater conveyance piping and infrastructure. A site plan depicting existing conditions is included as Figure 3.

Three diesel underground storage tanks (USTs) were formerly buried on the northeastern portion of the 501 Parcel. The USTs were used to store and dispense diesel fuel via two dispensers located on the east-central portion of the 501 Parcel (next to the small woodshed). The tanks were removed in 2016. The former tank locations are depicted on Figure 3.

Topography at SITE is relatively flat. The SITE is bound to the north by Pendleton Street and railroad tracks across which is Oronoco Bay Park and Oronoco Bay, to the east and northeast by the Potomac River, to the south by Oronoco Street across which is Founders Park and a residential building, and to the west by Dalton Wharf Office Center and North Union Street.

4.0 SAMPLING METHODOLOGY AND ANALYSIS

Site sampling methodology and analytical methods can be found in the SCR, PSCM reports, and CAP IM reports. The sampling methods used were consistent with those recommended and

approved by the VDEQ. A broad overview is presented in this URARA along with historical sampling locations (i.e., soil, groundwater, and soil gas).

During historical assessment events, soil samples were collected using mobile drill rigs and direct-push sampling rigs. When a mobile drill rig was used, soil samples were collected at specified intervals using split-spoon samplers. When a direct-push rig was used, soil samples were collected continuously using acetate-lined barrel samplers. The soil samples were collected for lithologic characterization, visual inspection, field screening, and potential laboratory analysis. Field screening was conducted using a photo-ionization detector (PID). Field screening was performed to check for the presence of volatile organic vapors (VOVs). Observations and field screening readings were recorded on boring logs.

Soil samples were collected for laboratory analysis from the surface (upper 1.5 feet of soil underlying bare site surface, concrete floor slabs, or pavement) and subsurface. The samples were collected from soil intervals exhibiting the highest degree of impact. Samples were also collected from depths suspected of being impacted based on the findings of a real-time assessment. The real-time assessment was performed using a direct-push rig fitted with downhole sensors that measured contaminant concentrations, soil resistivity, and hydraulic conditions. The samples were also collected to provide good spatial coverage of the SITE and to delineate the vertical extent of impacts. Most of the soil samples were grab samples; however, some of the early soil samples obtained are considered composite samples based on a large sample interval.

Soil samples were analyzed for some or all of the following: TPH-GRO and TPH-DRO using EPA Method 8015C, Target Compound List (TCL) VOCs using EPA Method 8260B (more recently using TerraCore® samplers), TCL SVOCs using EPA Method 8270C, polychlorinated biphenyls (PCBs) using EPA Method 8082, pesticides using EPA Method 8081B, herbicides using EPA Method 8151A, 2,3,7,8-TCDD using EPA Method 8290A, and Resource Conservation and Recovery Act (RCRA) or Priority Pollutant List metals using EPA Method 6020A. Based on the type and concentration of metals detected, some of the samples were additionally analyzed for Toxic Characteristic Leaching Procedure (TCLP) RCRA metals using EPA Method 301A/6020A and chromium VI using EPA Method 7196A.

Over the years, numerous temporary groundwater monitoring wells and 17 permanent groundwater monitoring wells were installed at the SITE. The temporary and permanent wells were installed using mobile drill rigs and direct-push sampling rigs. Permanent wells range from 1 to 2-inch in diameter and are constructed on polyvinyl chloride (PVC) well casing and screens. Screened intervals are typically 10 feet in length and have been positioned to “straddle” the water table (to allow for detection and measurement of petroleum free product if present). All wells were properly developed before sampling. Sampling over the last few years has been performed using low-flow sampling methods. Deep groundwater samples have also been collected at the SITE using discrete water samplers advanced using a direct-push sampling rig.

Groundwater samples collected have been analyzed for some or all the following: TPH-DRO and TPH-GRO using EPA Method 8015, TCL VOCs using EPA Method 8260B, TCL SVOCs using EPA Method 8270C, and total and dissolved PPL metals using EPA Method 6020A. Samples collected for dissolved metals analysis were filtered in the field.

Sub-slab and deep soil gas samples were collected from the SITE on one occasion. The sub-slab samples were collected using VaporPins® installed through the warehouse slabs. Deep soil gas samples were collected from soil gas sampling points installed using a direct-push sampling rig. The sub-slab and deep soil gas samples were collected using Summa canisters and were analyzed for VOCs using EPA TO15.

5.0 CONCEPTUAL SITE MODEL

ENVECO updated the CSM to include potential receptors and potential exposure pathways under current land use (vacant commercial property with limited access) and future land use scenarios (commercial, retail, residential, or mixed use), and during construction. The updated CSM is included as Figure 5. The CSM details the following:

- **Primary Release Mechanism.** Identification of the primary mechanisms by which the SITE became or continues to be impacted. The impacts appear to be the result of past site operations, with significant contribution from past operations at adjacent and nearby properties. No release mechanisms currently exist.
- **Source Media.** Identification of the affected media that continues to be a source of impacts. Source media at the SITE appears to be limited to impacted surface and subsurface soil.
- **Migration Pathway.** Identification of potential pathways by which impacted media can lead to potential exposure. Potential pathways identified included surface water runoff, biological uptake, leaching, and volatilization and diffusion.
- **Exposure Media.** Identification of media that provides a potential pathway of exposure. Potential exposure media identified includes soil, surface water and sediment, plants and animals, groundwater, and vapor.
- **Exposure Routes.** Identification of the routes by which exposure to impacted media may occur. Exposure routes identified include ingestion, dermal contact, and inhalation.
- **Potential Receptors.** Identification of potential receptors that could be exposed under current land use, future land use, and during construction.

Current Site Use Scenario

In the SITE's current use scenario, no potential pathways of exposure are complete at the 500 Parcel and for most of the 501 Parcel. Potential receptors considered under this scenario include authorized workers and site visitors, and those exposure scenarios were completed and presented in the URAR. The Declaration of Restrictive Covenants recorded on each parcel as required by the Certifications of Satisfactory Remediation included the necessary institutional controls to close exposure pathways for the current commercial and industrial uses, including the AlexRenew RiverRenew project. The current URARA contains the possible future residential scenario only to supplement those use scenarios for the SITE that were previously presented (URAR, 2021). Exposure scenarios are based on the following knowledge:

- The 500 Parcel warehouse is currently occupied and access to the SITE is limited to authorized visitors and unauthorized access is restricted by locked building doors. The 501 Parcel is an active construction site with access limited to workers and authorized site visitors. Unauthorized access to the 501 Parcel is currently restricted by fencing.
- Soil and groundwater impacts are limited and localized in extent and most of the SITE surface, including the areas where the highest degree of soil and groundwater impacts was identified, is covered by thick concrete building slabs or pavement limiting the potential for contact with impacted media. The surfaced areas also limit the potential for erosion, surface water runoff, formation of dusts, and vapor intrusion (VI).
- The potential for impacted groundwater to discharge into the nearby Potomac River exists; however, the concentrations of constituents detected in the wells located nearest to the shoreline contained constituents of concern at relatively low concentrations except for benzene, naphthalene, arsenic, lead, and zinc. Arsenic, lead, and zinc have relatively low mobility and are not expected to migrate readily or extensively. The potential risks to surface water were further assessed through this updated RA.
- The SITE is not used for agricultural purposes and there is no knowledge of any sensitive animal species living on or using the SITE for any purpose.
- Groundwater is not used at the SITE or in the City of Alexandria as a potable or irrigation water source.
- The 500 Parcel warehouse is currently occupied with some portions used only for storage. The thick concrete building pad limits the potential for inhalation of vapors should VI occur. The warehouse at the 501 Parcel has been removed and the slab remains in place limiting the potential for accumulation and inhalation of vapors should VI occur. In addition, the soil gas analytical data from both parcels does not suggest VOCs are present at concentrations presenting a VI risk (this has been confirmed through VURAM Site Screening, see Section 6.0).
- The current institutional controls addressed the risk concerns for the current commercial and industrial uses of the SITE.

The conditions listed above limit the risk to users of surrounding properties.

Future Site Use Scenario

The proposed future use is mixed use development to include residential, retail and commercial. Possible future residential dwellings built on the SITE and the risk associated with such structures and residential use of the SITE are covered under this URARA. The previous controls prohibiting the use of groundwater and requirement for a health and safety plan for subsurface work to protect construction and utility line workers as provided in the URAR will continue to restrict the SITE.

Pathways of exposure for future residential use not previously covered in the URAR are likely to include dermal contact with surface and subsurface soil and possible vapors from volatile constituents rising through future structures constructed on the SITE.

Surrounding and Nearby Properties

It should be noted that the 501 Parcel is surrounded by roads or the Potomac River. The 500 Parcel is surrounded by roads on its northern, eastern, and southern sides and commercial use property on its western side. The closest residential properties are located across the roads and commercial property to the northwest, west, and southwest. Adjacent property use is depicted on Figure 2.

The exposure risk to surrounding and nearby properties from SITE releases, including residents at residential use properties, workers, and visitors at surrounding commercial use properties, and visitors of Founders and Oronoco Bay Parks, is anticipated to be minimal based on the following:

- Soil and groundwater impacts appear to be limited and localized in extent and most of the impacted media is covered by building slabs or pavement limiting the potential for disturbance of and contact with the impacted media and potential for erosion, surface water runoff, and formation of dusts.
- The potential for impacted groundwater to discharge into the nearby Potomac River exists; however, the concentrations of constituents detected in the wells located nearest to the shoreline contained constituents of concern at relatively low concentrations except for benzene, naphthalene, arsenic, lead, and zinc. Arsenic, lead, and zinc have relatively low mobility and are not expected to migrate readily or extensively. The potential risks to surface water were further assessed through this RA.
- Based on groundwater measurement data obtained from SITE, groundwater flow is towards the east-northeast, away from surrounding properties of concern.
- Historical and recently collected data suggest that the properties bounding the SITE to the west and south are hydraulically upgradient of the SITE and the data does not indicate that they have been impacted by the SITE.
- Groundwater is not used in the City of Alexandria as a potable or irrigation water source.

6.0 RISK ASSESSMENT

According to the VDEQ VRP “The regulatory basis for performing risk assessments under the Virginia Voluntary Remediation Program is found in the Voluntary Remediation Regulations section 9 VAC 20-160-70(A)(1)(a). The risk assessment....should include an evaluation of the risks to human health and the environment posed by the release.”

The RA described below was conducted according to the methodology presented in the VRP Risk Assessment Guidance and attempts to quantify potential human health risks posed by constituents released into the environment. The basic steps in completing the RA include identification of the constituents present in the environmental media, assessment of population exposure and exposure pathways, assessment of the constituent’s toxicity to the exposed populations, and a summary of human health risks.

The VRP Risk Assessment Guidance allows for the comparison of laboratory data collected from the SITE to any or all three screening levels, Tier I, Tier II, and/or Tier III.

- In Tier I screening, constituent concentrations from the SITE for all media of concern are compared to those from background samples collected from nearby areas that have not been affected by the substances of concern. If concentrations from the affected area exceed background levels, the participant may choose to employ Tier II or Tier III screening methods. Note that Tier I screening is not required and participants in the VRP may choose to begin with Tier II screening.
- In Tier II screening, constituent concentrations from the SITE for all media of concern are compared to medium specific values obtained from published sources, such as the EPA Region III Regional Screening Level Tables, the EPA Soil Screening Guidance, maximum constituent levels or other action levels established by the Safe Drinking Water Act and the National Primary Drinking Water Regulations. Tier II screening is intended for unrestricted use sites (e.g., residential). Tier II levels for soil and groundwater are based on the assumption of residential exposure.
- Tier III screening is based upon site-specific analysis that weighs current and potential exposure scenarios for the population(s) of concern and characteristics for the affected media. Tier III screening is used for sites that are or will be formally restricted to a specified use and is not intended for unrestricted use properties.

Screening of the data has been accomplished previously and was presented using the VURAM screening module and was included in Attachment 1 of the URAR. Soil, groundwater, sub-slab soil gas, and deep soil gas samples were collected to characterize and define the extent of impacts at the SITE. Historical sampling locations are depicted on Figure 4 and historical analytical results for soil, groundwater, sub-slab soil gas, and deep soil gas are present on Tables 1 through 12. Only detected compounds and their respective concentrations are summarized on the tables. Constituents that exceeded VDEQ screening values and determined to be COPCs are listed below by media.

COPCs for Soil

- Acenaphthene, Acenaphthylene, Anthracene, Antimony, Arsenic, Benzo(a)anthracene, Benzene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, 1,1-Biphenyl, Cadmium, Chromium, Copper, Cumene, Cyclohexane, Dibenz(a,h)anthracene, Dibenzofuran, Fluoranthene, Fluorene, Indeno(1,2,3-c,d)pyrene, Lead, Mercury, 2-Methylnaphthalene, Naphthalene, Phenanthrene, Pyrene, Selenium, Silver, 2,3,7,8-TCDD, Tetrachloroethylene, Thallium, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, m-Xylene, o-Xylene and Zinc.

COPCs from Groundwater for use in the EPA Vapor Intrusion Model

- Benzo(a)anthracene, Benzene, 1,1-Biphenyl, Chloroform, 2-Chlorophenol, Cyclohexane, Dibenzofuran, Fluorene, 2-Methylnaphthalene, Naphthalene, Phenanthrene, Tetrachloroethylene, Trichloroethylene, m-Xylene, o-Xylene.

There were no VDEQ screening levels that were exceeded for the tested constituents in soil gas; therefore, there was no risk assessment run for VI, using VURAM; however, to be conservative, the EPA Vapor Intrusion Screening Level (VISL) Model was run based on those COPCs found in groundwater to be volatile.

Possible future residents would not be drinking the groundwater at the SITE or vicinity as the City of Alexandria provides drinking water to residents and workers.

VURAM was used to run the risks to SITE media as directed by VDEQ. All exposure defaults, toxicity values, and physical parameters of the constituents of concern chosen for SITE media are contained within databases found in the VURAM model maintained by VDEQ so that VRP RAs will be consistent from site to site. None of the defaults provided by the VDEQ within their VURAM model were changed or altered in any way for the risk outputs provided in this URARA.

The VURAM model was run only for the possible future resident in this RA; however, the risk to future industrial/commercial workers and construction workers was previously addressed in the URAR.

The EPA developed a model for assessing risk to people living and working in buildings that might be impacted from volatile and toxic chemicals called the VISL. The primary objective of risk-based screening is to identify sites or buildings that may pose a health concern through the soil gas intrusion pathway. Generally, at properties where subsurface concentrations of vapor-forming chemicals, such as those in groundwater or “near source” soil gas, fall below the recommended screening levels (i.e., VISLs), no further action or study is warranted. This condition is generally true so long as the exposure assumptions match those accounted for in the calculations, and the site fulfills the conditions and assumptions of the generic conceptual model underlying the screening levels. Similarly, the results of risk-based screening can help the project team identify areas, buildings and/or chemicals that can be eliminated from further assessment. This calculator provides generally recommended, media-specific, risk-based screening level concentrations for groundwater and other media. These screening-level concentrations are based on default residential exposure scenarios and both: a target cancer risk level of one per million; and a target hazard quotient of 0.1 for potential non-cancer effects. The VISL calculator also provides risk estimates for residential exposures to VOCs in groundwater and it was in that capacity that the VISL was used for this SITE. The COPCs that were previously determined for groundwater in the URAR that were also VOCs were used as inputs into the VISL model.

COPCs Exposure Point Concentrations

VDEQ recommends using maximum concentrations for soil and soil gas results. Groundwater results were input into the EPA upper confidence limit model called “ProUCL” and the results and output from using that model to determine the exposure point concentrations are found in

Attachment 4 of the 2021 URAR. Certain constituents contained too few detected concentrations to enable running the ProUCL model and in those instances (e.g., arsenic) the highest concentration was used as input for VURAM. Where quantitative limits of detection were input in the tables for nondetects in certain samples, then the ProUCL model was run using both detected and nondetected concentrations. Groundwater results sampled during the years 2016 through 2020 were used for derivation of mean concentrations using the ProUCL model.

Surface Water

Results and discussion were presented in the URAR.

Risk Results

The resident receptor module within VURAM was used to assess risk to a possible future resident and results of the model output can be found in Attachment 1. The non-cancer hazard index exceeded 1 at 24.4 for the resident adult and 139 for the resident child. The carcinogenic risk also exceeded the 1E-04 action level for the combined age resident at 1.12E-02. The non-cancer hazard is due mainly to arsenic at over 50% of the total excess hazard to the resident child. The carcinogenic risk is shared between arsenic at 33%, and PAHs such as benzo(a)pyrene at nearly 45%.

Risk is not run within VURAM for lead in soil; however, the exposure point concentration for lead was calculated to be 2,200 milligram per kilogram (mg/kg) in soil (the maximum concentration found historically), which does exceed the resident EPA screening level of 200 mg/kg and may pose a chronic risk if SITE soils were exposed in that location.

VISL Results

The VISL risk output is included in Attachment 2. The fourth page of Attachment 2 shows the cumulative risk output to residents breathing air containing the volatile COPCs found in SITE groundwater. Several COPCs did not have inhalation toxicity values; therefore, the model was unable to provide quantitative output for those COPCs. The non-cancer hazard index exceeded 1 at 30 for resident receptors. Also, the carcinogenic action level of 1E-04 was exceeded at a risk of nearly 1E-03. The non-cancer hazard was driven mainly by benzene, chloroform and trichloroethylene. The carcinogenic risk was dominated by both benzene and naphthalene.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the RA, without the implementation of engineering controls and institutional controls there is risk from impacted SITE soil to the possible future residential receptor. The risk to these receptors is largely dictated by the presence of arsenic and PAHs in soil. If arsenic and PAH impacted soils were removed, then the risks would be expected to be within acceptable ranges for the potential receptors.

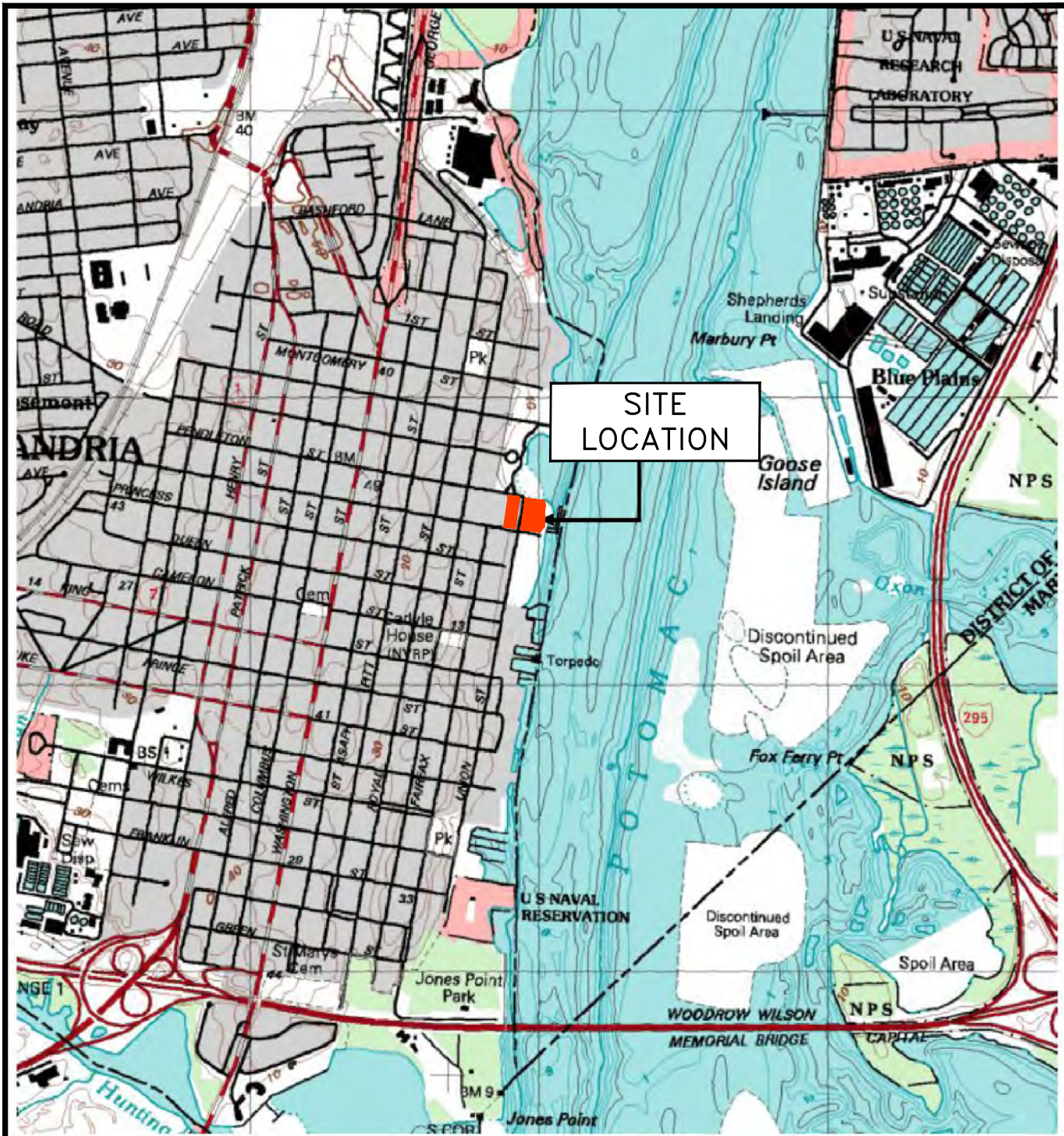
Institutional and/or engineering controls maintained on the SITE would prevent receptor interaction with impacted SITE soil and groundwater which would minimize risk to future receptors. It should be noted that removal and capping of impacted soil, incorporation and use of engineering controls, and incorporation of institutional controls are expected and anticipated as part of future development.

The VISL Model showed that there was the possibility of VOCs within groundwater that are volatile to pose a risk to future residents living above the contaminated groundwater if there were no engineering controls in place to either passively or actively mitigate such risks. These vapor model results support the conclusion of looking closely into building into any future structures the capacity to vent such vapors around the living spaces much as is commonly done for radon in many homes and structures throughout the United States. VI concerns associated with or resulting from future redevelopment will be addressed in the amended CAP and Remedial Action Work Plan.

The following engineering controls and institutional controls are under consideration for the SITE through restrictive covenants recorded with the Certification of Satisfactory Completion of Remediation issued under the VRP to close the potential exposure pathways:

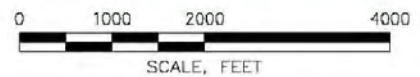
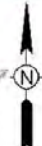
1. No groundwater wells will be installed on the SITE other than for purposes of environmental monitoring and groundwater beneath the SITE shall not be used for any purposes other than for environmental testing and collection for de-watering in compliance with law;
2. After development, the SITE will be maintained with a minimum of two feet of clean fill or hardscape cover (e.g., asphalt, concrete or pavers), and any subsurface work on the SITE will be completed in accordance with Condition 3 set forth below and any disturbed area restored with two feet of clean fill or hardscape cover;
3. Any subsurface work or excavation on the SITE shall be completed in accordance with a site-specific health and safety plan, which shall be developed by a qualified health and safety professional and in accordance with applicable federal, state, and local regulation;
4. The ground floor or subterranean areas of buildings constructed on the SITE and occupied for residential use will be situated over ventilated underground parking or will have a vapor barrier or sub-slab depressurization system operated and maintained pursuant to an operation and maintenance plan; and
5. After completion of development of the SITE, the owner will provide the VDEQ with a report documenting compliance with Conditions 2. and 4 above for such developed area.

FIGURES



SITE
LOCATION

REFERENCE:
7.5 MINUTE SERIES TOPOGRAPHIC QUADRANGLE
ALEXANDRIA, VIRGINIA
PHOTOREVISED 1994 SCALE 1:24,000



SITE LOCATION

DESIGNED BRUZZESI	DATE 04/04/17
DRAWN CONNELLY	DATE 04/04/17

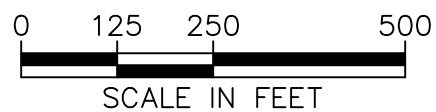


FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

PROJECT NO. 202416	SCALE: AS SHOWN
DRAWING NO.	FIGURE 1



MICROSOFT CORPORATION 2016



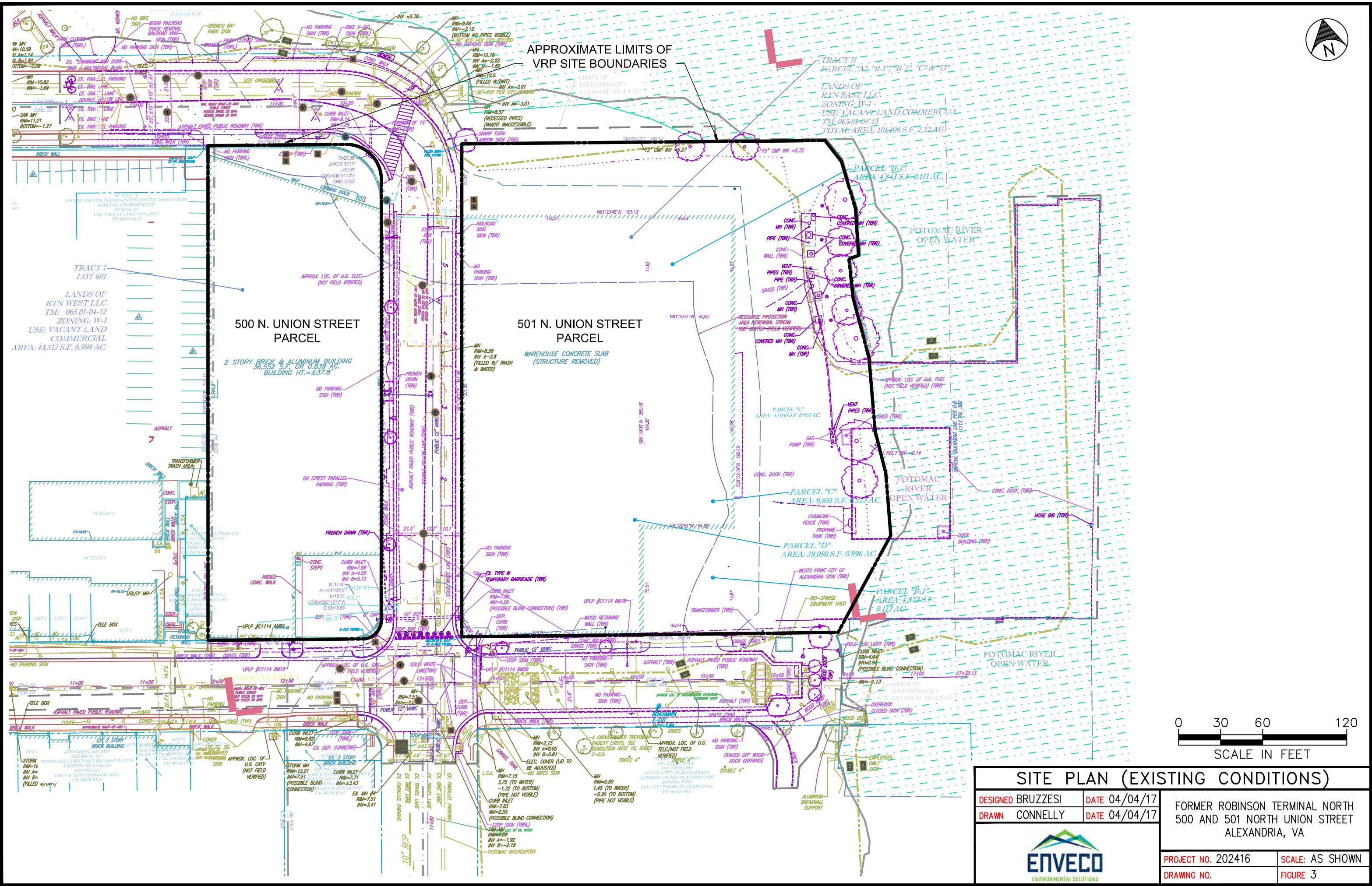
AERIAL PHOTOGRAPH

DESIGNED BRUZZESI	DATE 04/04/17
DRAWN CONNELLY	DATE 04/04/17

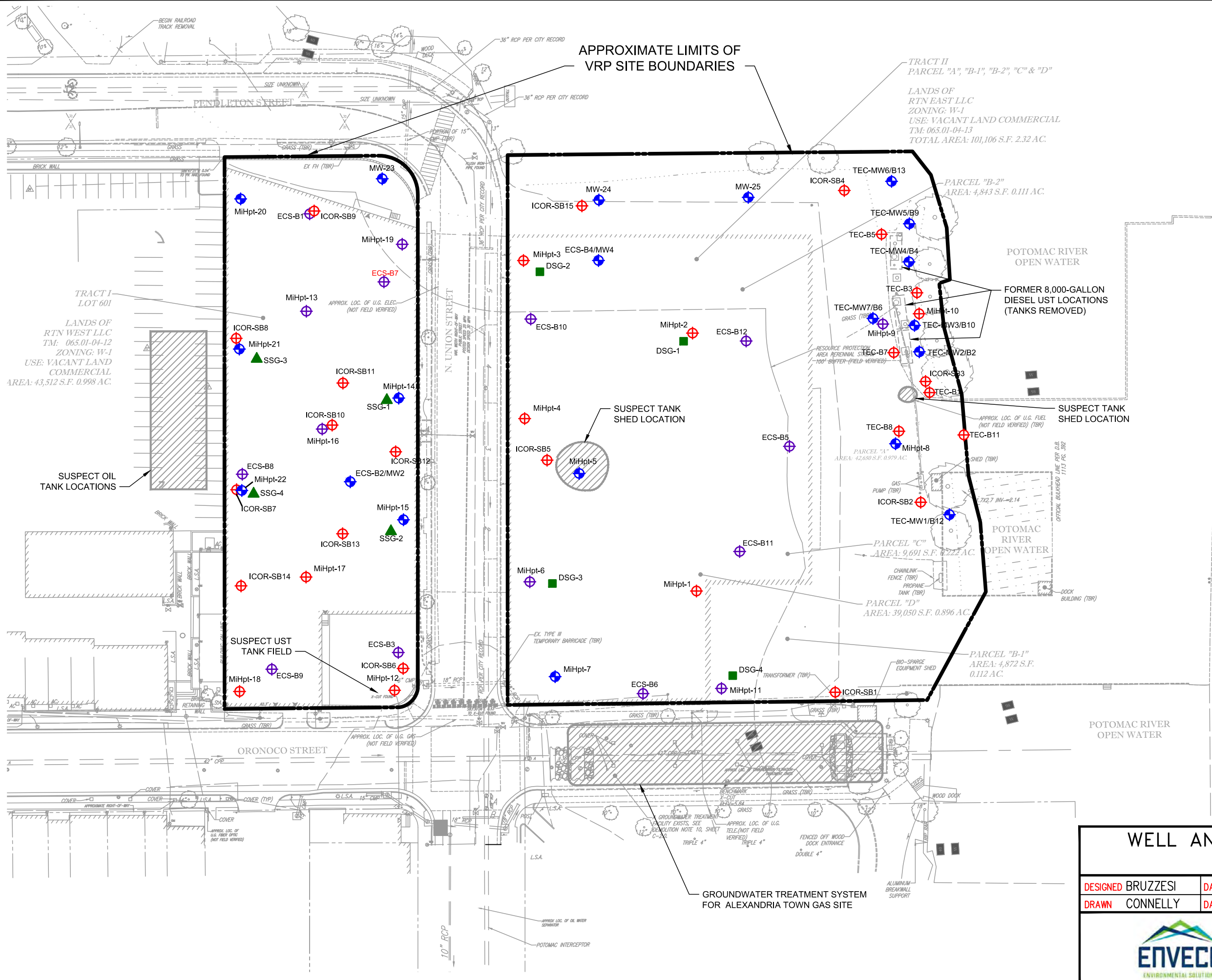
FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA



PROJECT NO. 202416	SCALE: AS SHOWN
DRAWING NO.	FIGURE 2



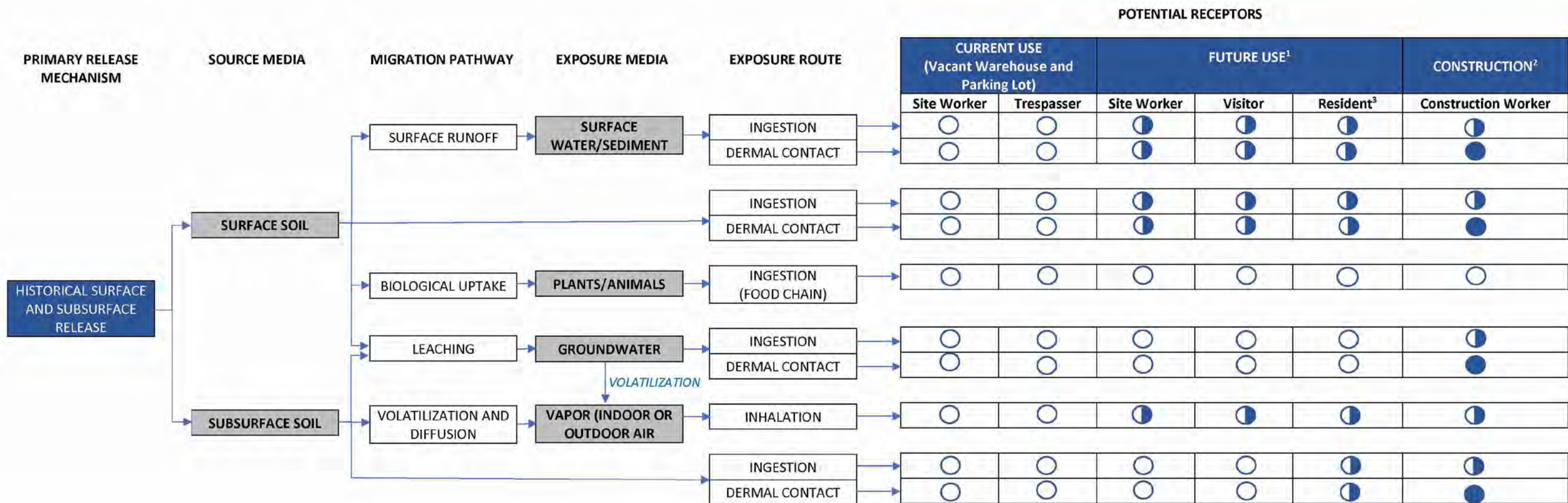
6078-04-RTN SCR04-WELL BOR LOC MAP.DWG - July 6, 2016



- LEGEND**
- GROUNDWATER MONITORING WELL
 - HISTORICAL SHALLOW TEST BORING (<30 FT)
 - HISTORICAL DEEP TEST BORING (>30 FT)
 - SUB-SLAB SOIL GAS SAMPLING POINT
 - DEEP SOIL GAS SAMPLING POINT
 - DESIGNATES A REAL-TIME ASSESSMENT BORING LOCATION

WELL AND BORING LOCATION MAP

DESIGNED BRUZZESI	DATE 01/19/17	FORMER ROBINSON TERMINAL NORTH 500 AND 501 NORTH UNION STREET ALEXANDRIA, VA
DRAWN CONNELLY	DATE 01/19/17	
		PROJECT NO. 202416
		SCALE: AS SHOWN
		DRAWING NO.
		FIGURE 4



- Note:
1. Identified pathways will be addressed via remedial actions, engineering controls, and/or institutional controls.
 2. Identified pathways will be addressed via remedial actions, engineering controls, and/or establishment of health and safety controls.
 3. Only the Resident risk is addressed in the current risk assessment, all other receptors were addressed in the 2021 URAR.

●

COMPLETE PATHWAY

◐

POTENTIALLY COMPLETE PATHWAY

○

INCOMPLETE PATHWAY

CONCEPTUAL SITE MODEL

DESIGNED BRUZZESI

DATE 04/04/17

DRAWN CONNELLY

DATE 04/04/17

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

PROJECT NO. 202416

SCALE: AS SHOWN

DRAWING NO.

FIGURE 5

ENVECO

ENVIRONMENTAL SOLUTIONS

6078-04-RTN_SCR05-CSM.DWG — July 6, 2016

TABLES

TABLE 1. 2006 TEC GROUNDWATER ANALYTICAL RESULTS

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	TEC-MW1	TEC-MW2	TEC-MW3	TEC-MW4	TEC-MW5	TEC-MW6	TEC-MW7
Date:								5/1/06	5/1/06	5/1/06	5/1/06	5/1/06	5/1/06	5/1/06
TPH														
TPH-GRO	mg/L	NE	NE	NE	15	NE	NE	ND	ND	ND	ND	ND	ND	ND
TPH-DRO	mg/L	NE	NE	NE	15	NE	NE	ND	ND	ND	ND	ND	ND	ND
VOCs														
Benzene	ug/L	13.7	57.3	14.2	12	22	510	ND	ND	ND	ND	ND	ND	ND
Toluene	ug/L	1920	8100	949	43	510	6000	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/L	34.1	152	591	4.3	530	2100	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	ug/L	36.9	162	83.1	2070	NE	NE	ND	ND	ND	ND	ND	ND	ND
Methyl-t-butyl ether	ug/L	4580	19600	524	15	NE	NE	2	2	1	67	ND	ND	ND
Naphthalene	ug/L	17.2	72.3	0.722	8.9	NE	NE	ND	ND	ND	ND	ND	ND	ND

NOTES:

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

VOCs = volatile organic compounds

ug/L = micrograms per liter

mg/L = milligrams per liter

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level

VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level

VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level

VDEQ-PDS = general permit discharge standard for petroleum contaminated water

VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level

VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level

NE = not established

Bold and right justification designates target compound was detected at a concentration above RL

Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample

Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample

Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 2. 2008 ECS SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ- PSSS	VDEQ- T2RSL	VDEQ- T3ISL	ECS-B1				ECS-B2				ECS-B3				
					(1-2.5)	(2.5-4)	(8.5-10)	(18.5-20)	(2.5-4)	(5-6.5)	(8.5-10)	(13.5-15)	(1-2.5)	(2.5-4)	(8.5-10)	(13.5-15)	(28.5-30)
Date:					1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08
TPH																	
TPH-DRO	mg/kg	11000	NE	NE	NA	10200	7060	ND	56	NA	17	70	115	NA	40	ND	27
VOCs																	
Benzene	ug/kg	NE	51.1	42000	NA	ND	2.8	ND	ND	NA	ND	11	9.8	NA	5120	ND	ND
2-Butanone (MEK)	ug/kg	NE	2340	19000000	NA	ND	ND	ND	ND	NA	7.3	ND	ND	NA	ND	ND	ND
n-Butylbenzene	ug/kg	NE	6440	5800000	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
sec-Butylbenzene	ug/kg	NE	11700	12000000	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
tert-Butylbenzene	ug/kg	NE	3100	12000000	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Carbon Disulfide	ug/kg	NE	477	350000	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Ethylbenzene	ug/kg	NE	15700	250000	NA	ND	ND	ND	ND	NA	ND	17	8.6	NA	ND	ND	ND
Isopropylbenzene (Cumene)	ug/kg	NE	1470	990000	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
p-Isopropyltoluene	ug/kg	NE	1470	990000	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Methyl-t-butyl ether	ug/kg	NE	631	2100000	NA	ND	ND	ND	ND	NA	ND	ND	4.2	NA	ND	2.7	3.2
Naphthalene	ug/kg	NE	40.1	59000	NA	136	70	ND	ND	NA	ND	204	7.4	NA	ND	84	ND
n-Propylbenzene	ug/kg	NE	2460	2400000	NA	ND	ND	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Styrene	ug/kg	NE	2200	3500000	NA	ND	ND	ND	ND	NA	ND	ND	4.2	NA	ND	ND	ND
Toluene	ug/kg	NE	13800	4700000	NA	7.7	13	3.4	4.2	NA	4.2	4.7	70	NA	196	5.6	2.7
1,2,4-Trimethylbenzene	ug/kg	NE	162	180000	NA	ND	13	ND	ND	NA	ND	14	16	NA	ND	10	ND
1,3,5-Trimethylbenzene	ug/kg	NE	172	150000	NA	ND	13	ND	ND	NA	ND	14	7.5	NA	ND	11	ND
Total Xylenes	ug/kg	NE	58000	250000	NA	3.4	14.1	ND	ND	NA	ND	16.3	58	NA	ND	11.1	ND
RCRA Metals																	
Arsenic	mg/kg	NE	3.5	30	4.3	NA	NA	NA	NA	1090	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	NE	1500	22000	82.3	NA	NA	NA	NA	90.9	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	NE	7.1	98	ND	NA	NA	NA	NA	23.6	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	NE	0.134	63*	16.3	NA	NA	NA	NA	17.5	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	NE	270	800	14.9	NA	NA	NA	NA	297	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	NE	1.1	4.6	ND	NA	NA	NA	NA	75.1	NA	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	NE	5.2	580	ND	NA	NA	NA	NA	10.3	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	NE	1.6	580	ND	NA	NA	NA	NA	1.41	NA	NA	NA	NA	NA	NA	NA
Pesticides, PCBs, and Herbicides																	
Pesticides					NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA
PCBs					NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA
Herbicides					NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA

NOTES:

(10-13.5) = designates depth sample was collected below ground surface

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

VOCs = volatile organic compounds

RCRA = Resource Conservation and Recovery Act

PCBs = polychlorinated biphenyls

ug/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

NA = not analyzed

ND = not detected above the analytical method reporting limit

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-PSS = VDEQ petroleum saturated soil standard

VDEQ-T2RSL = VDEQ Tier II residential screening level

VDEQ-T3ISL = VDEQ Tier III industrial screening level

Bold and right justification designates target compound was detected at a concentration above RL

* = total chromium (chromium III and VI)

Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 2. 2008 ECS SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ- PSSS	VDEQ- T2RSL	VDEQ- T3ISL	ECS-B4					ECS-B5				
					(5-6.5)	(13.5-15)	(18.5-20)	(23.5-25)	(28.5-30)	(2.5-4)	(5-6.5)	(8.5-10)	(28.5-30)	(33.5-35)
Date:					1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08
TPH														
TPH-DRO	mg/kg	11000	NE	NE	123	22	NA	22	ND	95	NA	20	58	ND
VOCs														
Benzene	ug/kg	NE	51.1	42000	ND	6.3	NA	4.6	ND	ND	NA	ND	ND	3.7
2-Butanone (MEK)	ug/kg	NE	2340	19000000	ND	ND	NA	ND	ND	ND	NA	ND	7.3	ND
n-Butylbenzene	ug/kg	NE	6440	5800000	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
sec-Butylbenzene	ug/kg	NE	11700	12000000	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
tert-Butylbenzene	ug/kg	NE	3100	12000000	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Carbon Disulfide	ug/kg	NE	477	350000	ND	ND	NA	ND	ND	ND	NA	3.3	ND	11
Ethylbenzene	ug/kg	NE	15700	250000	2.2	5.1	NA	4.9	ND	ND	NA	ND	ND	7
Isopropylbenzene (Cumene)	ug/kg	NE	1470	990000	ND	ND	NA	2.5	ND	ND	NA	ND	ND	ND
p-Isopropyltoluene	ug/kg	NE	1470	990000	ND	ND	NA	ND	ND	ND	NA	166	226	419
Methyl-t-butyl ether	ug/kg	NE	631	2100000	ND	ND	NA	2.6	ND	ND	NA	ND	ND	ND
Naphthalene	ug/kg	NE	40.1	59000	ND	66	NA	155	4.9	ND	NA	14	5.9	27
n-Propylbenzene	ug/kg	NE	2460	2400000	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Styrene	ug/kg	NE	2200	3500000	ND	ND	NA	ND	ND	ND	NA	ND	ND	ND
Toluene	ug/kg	NE	13800	4700000	16	11	NA	29	ND	ND	NA	4.5	5.7	8.4
1,2,4-Trimethylbenzene	ug/kg	NE	162	180000	4.9	6.5	NA	12	ND	4	NA	11	9.8	9.3
1,3,5-Trimethylbenzene	ug/kg	NE	172	150000	4.7	2.8	NA	5	ND	ND	NA	4.6	3.8	2.8
Total Xylenes	ug/kg	NE	58000	250000	12.2	9	NA	24.7	ND	ND	NA	ND	3.3	3.7
RCRA Metals														
Arsenic	mg/kg	NE	3.5	30	NA	NA	NA	NA	NA	NA	7	NA	NA	NA
Barium	mg/kg	NE	1500	22000	NA	NA	NA	NA	NA	NA	99.7	NA	NA	NA
Cadmium	mg/kg	NE	7.1	98	NA	NA	NA	NA	NA	NA	3.79	NA	NA	NA
Chromium	mg/kg	NE	0.134	63*	NA	NA	NA	NA	NA	NA	25.8	NA	NA	NA
Lead	mg/kg	NE	270	800	NA	NA	NA	NA	NA	NA	11.5	NA	NA	NA
Mercury	mg/kg	NE	1.1	4.6	NA	NA	NA	NA	NA	NA	0.25	NA	NA	NA
Selenium	mg/kg	NE	5.2	580	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA
Silver	mg/kg	NE	1.6	580	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA
Pesticides, PCBs, and Herbicides														
Pesticides					NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
PCBs					NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Herbicides					NA	NA	ND	NA	NA	NA	NA	NA	NA	NA

NOTES:

(10-13.5) = designates depth sample was collected below ground surface

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

VOCs = volatile organic compounds

RCRA = Resource Conservation and Recovery Act

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NA = not analyzed

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* = total chromium (chromium III and VI)

Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 2. 2008 ECS SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ- PSSS	VDEQ- T2RSL	VDEQ- T3ISL	ECS-B6						
					(1-2.5)	(5-6.5)	(8.5-10)	(13.5-15)	(18.5-20)	(23.5-25)	(28.5-30)
Date:					1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08	1/3/08
TPH											
TPH-DRO	mg/kg	11000	NE	NE	NA	142	111	31	68	NA	33
VOCs											
Benzene	ug/kg	NE	51.1	42000	NA	977	ND	16	ND	NA	ND
2-Butanone (MEK)	ug/kg	NE	2340	19000000	NA	ND	ND	ND	ND	NA	ND
n-Butylbenzene	ug/kg	NE	6440	5800000	NA	366	ND	3.2	ND	NA	3.6
sec-Butylbenzene	ug/kg	NE	11700	12000000	NA	ND	ND	26	ND	NA	ND
tert-Butylbenzene	ug/kg	NE	3100	12000000	NA	ND	ND	11	ND	NA	ND
Carbon Disulfide	ug/kg	NE	477	350000	NA	ND	ND	ND	ND	NA	ND
Ethylbenzene	ug/kg	NE	15700	250000	NA	1360	ND	6.4	ND	NA	ND
Isopropylbenzene (Cumene)	ug/kg	NE	1470	990000	NA	ND	ND	8.4	ND	NA	ND
p-Isopropyltoluene	ug/kg	NE	1470	990000	NA	473	ND	3.8	ND	NA	ND
Methyl-t-butyl ether	ug/kg	NE	631	2100000	NA	ND	ND	ND	ND	NA	ND
Naphthalene	ug/kg	NE	40.1	59000	NA	ND	ND	5.2	5500	NA	ND
n-Propylbenzene	ug/kg	NE	2460	2400000	NA	ND	ND	5.8	ND	NA	2.7
Styrene	ug/kg	NE	2200	3500000	NA	ND	ND	ND	ND	NA	ND
Toluene	ug/kg	NE	13800	4700000	NA	3800	238	36	ND	NA	2.9
1,2,4-Trimethylbenzene	ug/kg	NE	162	180000	NA	1050	ND	18	ND	NA	19
1,3,5-Trimethylbenzene	ug/kg	NE	172	150000	NA	1870	ND	11	ND	NA	9.8
Total Xylenes	ug/kg	NE	58000	250000	NA	4209	361	38	ND	NA	3.5
RCRA Metals											
Arsenic	mg/kg	NE	3.5	30	NA	NA	NA	NA	NA	6.6	NA
Barium	mg/kg	NE	1500	22000	NA	NA	NA	NA	NA	46	NA
Cadmium	mg/kg	NE	7.1	98	NA	NA	NA	NA	NA	ND	NA
Chromium	mg/kg	NE	0.134	63*	NA	NA	NA	NA	NA	19.9	NA
Lead	mg/kg	NE	270	800	NA	NA	NA	NA	NA	39.5	NA
Mercury	mg/kg	NE	1.1	4.6	NA	NA	NA	NA	NA	0.06	NA
Selenium	mg/kg	NE	5.2	580	NA	NA	NA	NA	NA	ND	NA
Silver	mg/kg	NE	1.6	580	NA	NA	NA	NA	NA	ND	NA
Pesticides, PCBs, and Herbicides											
Pesticides					ND	NA	NA	NA	ND	NA	NA
PCBs					ND	NA	NA	NA	ND	NA	NA
Herbicides					ND	NA	NA	NA	ND	NA	NA

NOTES:

(10-13.5) = designates depth sample was collected below ground surface

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

VOCs = volatile organic compounds

RCRA = Resource Conservation and Recovery Act

PCBs = polychlorinated biphenyls

ug/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

NA = not analyzed

ND = not detected above the analytical method reporting limit

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-PSS = VDEQ petroleum saturated soil standard

VDEQ-T2RSL = VDEQ Tier II residential screening level

VDEQ-T3ISL = VDEQ Tier III industrial screening level

Bold and right justification designates target compound was detected at a concentration above RL

* = total chromium (chromium III and VI)

Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 3. 2008 ECS GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	ECS-MW2	ECS-MW4
Date:								1/4/08	1/4/08
TPH									
TPH-DRO	mg/L	NE	NE	NE	NE	NE	NE	2.87	0.99
VOCs									
Benzene	ug/L	13.7	57.3	14.2	12	22	510	60	ND
Naphthalene	ug/L	17.2	72.3	0.722	8.9	NE	NE	ND	8.6
Total Xylenes	ug/L	36.9	162	83.1	2070	NE	NE	3.1	4.2
SVOCs									
Acenaphthene	ug/L	NE	NE	2950	NE	670	990	ND	17
Acenaphthylene	ug/L	NE	NE	1430	NE	NE	NE	ND	10
Dimethyl phthalate	ug/L	NE	NE	NE	NE	NE	NE	3.9	ND
Fluorene	ug/L	NE	NE	4370	NE	1100	5300	ND	5.6
2-Methylnaphthalene	ug/L	NE	NE	59	NE	NE	NE	ND	2.3
Naphthalene	ug/L	17.2	72.3	0.722	8.9	NE	NE	ND	8.3
Phenanthrene	ug/L	NE	NE	1430	NE	NE	NE	ND	2.2
Total RCRA Metals									
Arsenic	mg/L	NE	NE	0.197	NE	0.001	0.15	0.020	0.009
Barium	mg/L	NE	NE	20.2	NE	2	NE	0.129	0.581
Cadmium	mg/L	NE	NE	0.0192	NE	0.0011	0.0011	0.160	ND
Chromium	mg/L	NE	NE	NE	NE	NE	NE	0.015	0.048
Lead	mg/L	NE	NE	NE	NE	0.011	0.011	0.044	0.112
Mercury	mg/L	0.0000881	0.000369	0.0000086	NE	0.00077	0.00077	ND	ND
Selenium	mg/L	NE	NE	3.28	NE	0.005	0.005	0.005	0.002
Silver	mg/L	NE	NE	0.0484	NE	NE	NE	ND	ND

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
VOCs = volatile organic compounds
SVOCs = semi-VOCs
RCRA = Resource Conservation and Recovery Act
ug/L = micrograms per liter
mg/L = milligrams per liter
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 4. 2013 ICOR SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ- PSSS	VDEQ- T2RSL	VDEQ- T3ISL	ICOR-SB2(3-4)	ICOR-SB2(5-6)	ICOR-SB5(6-7)	ICOR-SB6(2-3)	ICOR-SB7(7.5-8.5)	ICOR-SB8(2-3)	ICOR-SB8(7.5-8.5)	ICOR-SB9(4.5-5.5)
Date:					10/8/13	10/8/13	10/8/13	10/8/13	10/8/13	10/8/13	10/8/13	10/8/13
TPH EPA 8015												
TPH-GRO	mg/kg	8300	NE	NE	NA	1.2	<0.11	NA	240	NA	370	NA
TPH-DRO	mg/kg	11000	NE	NE	NA	77	420	NA	3800	NA	42	NA
TCL VOCs EPA 8260B												
Acetone	ug/kg	NE	574000	67000000	NA	<23	<23	NA	<2200	NA	<2400	NA
Isopropylbenzene	ug/kg	NE	1470	990000	NA	15	<5.6	NA	<560	NA	<600	NA
Methylcyclohexane	ug/kg	NE	NE	NE	NA	41	<23	NA	<2200	NA	16000	NA
Naphthalene	ug/kg	NE	40.1	59000	NA	14	7.4	NA	<560	NA	<600	NA
TCL SVOCs EPA 8270C												
Fluoranthene	ug/kg	NE	178000	3000000	NA	260	<190	NA	<740	NA	<200	NA
Pyrene	ug/kg	NE	26100	2300000	NA	210	<190	NA	<740	NA	<200	NA
PPL Metals EPA 6020A												
Antimony	mg/kg	NE	3.1	47	<2.4	NA	<2.1	<2.6	<2.8	<2.8	<2.2	<2.8
Arsenic	mg/kg	NE	3.5	30	2.8	NA	3.8	11	130	600	12	3.6
Chromium	mg/kg	NE	3600000*	NE*	20	NA	<2.1	26	11	22	12	10
Copper	mg/kg	NE	310	4700	18	NA	4.6	200	7.6	18	5.0	12
Lead	mg/kg	NE	270	800	15	NA	16	32	4.7	9.1	7.2	60
Mercury	mg/kg	NE	1.1	4.6	<0.095	NA	<0.084	<0.10	<0.11	<0.11	<0.089	0.56
Nickel	mg/kg	NE	50.9	2200	22	NA	<2.1	26	5.9	21	22	9.4
Selenium	mg/kg	NE	5.2	580	<2.4	NA	<2.1	<2.6	<2.8	<2.8	<2.2	<2.8
Silver	mg/kg	NE	1.6	580	<2.4	NA	<2.1	<2.6	<2.8	<2.8	<2.2	<2.8
Thallium	mg/kg	NE	0.078	1.2	<1.9	NA	<1.7	<2.1	<2.2	<2.2	<1.8	<2.2
Zinc	mg/kg	NE	746	35000	68	NA	<8.4	1100	33	63	37	5000
Chromium VI EPA 7196A												
Chromium VI	mg/kg	NE	0.134	63	NA	NA	NA	NA	NA	NA	NA	NA
TCLP RCRA Metals EPA 3010A/6020A												
Arsenic	ug/L	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA
Lead	ug/L	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA

NOTES:

(0.5-1.5) = designates depth sample was collected below ground surface

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

TCL = Target Compound List

VOCs = volatile organic compounds

SVOCs = semi-VOCs

PCBs = polychlorinated biphenyls

PPL = Priority Pollutant List

TCLP = Toxic Characteristic Leaching Procedure

RCRA = Resource Conservation and Recovery Act

EPA 8260B = United States Environmental Protection Agency SW-846 analytical method

ug/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

ug/L = micrograms per liter

NA = not analyzed

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-PSSS = VDEQ petroleum saturated soil standard

VDEQ-T2RSL = VDEQ Tier II residential screening level

VDEQ-T3ISL = VDEQ Tier III industrial screening level

Bold and right justification designates target compound was detected at a concentration above RL

* = total chromium (chromium III and VI)

Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 4. 2013 ICOR SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ- PSSS	VDEQ- T2RSL	VDEQ- T3ISL	ICOR-SB10(2-3)	ICOR-SB10(5.5-6.5)	ICOR-SB11(5.5-6.5)	ICOR-SB12(6-7)	ICOR-SB13(5.5-6.5)
Date:					10/8/13	10/8/13	10/8/13	10/8/13	10/8/13
TPH EPA 8015									
TPH-GRO	mg/kg	8300	NE	NE	NA	NA	<0.12	NA	<0.12
TPH-DRO	mg/kg	11000	NE	NE	NA	NA	<4.8	NA	<5.1
TCL VOCs EPA 8260B									
Acetone	ug/kg	NE	574000	67000000	NA	NA	77	NA	NA
Isopropylbenzene	ug/kg	NE	1470	990000	NA	NA	<5.9	NA	NA
Methylcyclohexane	ug/kg	NE	NE	NE	NA	NA	<24	NA	NA
Naphthalene	ug/kg	NE	40.1	59000	NA	NA	<5.9	NA	NA
TCL SVOCs EPA 8270C									
Fluoranthene	ug/kg	NE	178000	3000000	NA	NA	<210	NA	NA
Pyrene	ug/kg	NE	26100	2300000	NA	NA	<210	NA	NA
PPL Metals EPA 6020A									
Antimony	mg/kg	NE	3.1	47	12	<2.3	<3.0	<2.0	<2.8
Arsenic	mg/kg	NE	3.5	30	1300	190	3.9	3.1	9.9
Chromium	mg/kg	NE	3600000*	NE*	18	19	24	22	30
Copper	mg/kg	NE	310	4700	1800	270	21	16	59
Lead	mg/kg	NE	270	800	2200	10	12	14	17
Mercury	mg/kg	NE	1.1	4.6	7.8	0.17	0.19	0.15	0.24
Nickel	mg/kg	NE	50.9	2200	13	18	23	24	21
Selenium	mg/kg	NE	5.2	580	8.2	<2.3	<3.0	<2.0	<2.8
Silver	mg/kg	NE	1.6	580	15	<2.3	<3.0	<2.0	<2.8
Thallium	mg/kg	NE	0.078	1.2	3.0	<1.8	<2.4	<1.6	<2.2
Zinc	mg/kg	NE	746	35000	2100	620	61	1700	1700
Chromium VI EPA 7196A									
Chromium VI	mg/kg	NE	0.134	63	NA	NA	NA	NA	<0.97
TCLP RCRA Metals EPA 3010A/6020A									
Arsenic	ug/L	NE	NE	NE	1.4	NA	NA	NA	NA
Lead	ug/L	NE	NE	NE	7.8	NA	NA	NA	NA

NOTES:

(0.5-1.5) = designates depth sample was collected below ground surface

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

TCL = Target Compound List

VOCs = volatile organic compounds

SVOCs = semi-VOCs

PCBs = polychlorinated biphenyls

PPL = Priority Pollutant List

TCLP = Toxic Characteristic Leaching Procedure

RCRA = Resource Conservation and Recovery Act

EPA 8260B = United States Environmental Protection Agency SW-846 analytical method

ug/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

ug/L = micrograms per liter

NA = not analyzed

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-PSS = VDEQ petroleum saturated soil standard

VDEQ-T2RSL = VDEQ Tier II residential screening level

VDEQ-T3ISL = VDEQ Tier III industrial screening level

Bold and right justification designates target compound was detected at a concentration above RL

* = total chromium (chromium III and VI)

Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 5. 2014 GEOTECHNICAL INVESTIGATION SOIL ANALYTICAL RESULTS

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T2RSL	VDEQ-T3ISL	ECS-B7(2.5-10)	ECS-B8(2.5-4)	ECS-B9(2.5-10)	ECS-B10(4-10)	ECS-B11(5-10)	ECS-B12(5-10)
Date:				10/6/14	10/7/14	10/7/14	10/8/14	10/10/14	10/8/14
RCRA Metals EPA 6020A									
Arsenic	mg/kg	3.5	30	1600	1900	11	6.8	18	7.7
Barium	mg/kg	1500	22000	320	190	81	170	140	81
Cadmium	mg/kg	7.1	98	17	12	<2.7	<2.6	<2.7	<2.9
Chromium	mg/kg	3600000*	NE*	27	20	21	5.4	15	3.4
Lead	mg/kg	270	800	1500	370	15	59	600	160
Mercury	mg/kg	1.1	4.6	27	20	<0.11	0.18	0.23	0.27
Selenium	mg/kg	5.2	580	10	6.0	<2.7	<2.6	3.2	<2.9
Silver	mg/kg	1.6	580	12	2.8	<2.7	<2.6	5.9	<2.9
TCLP RCRA Metals EPA 3010A/6020A									
Arsenic	ug/L	NE	NE	2.0	6.3	NA	NA	NA	NA
Barium	ug/L	NE	NE	<1.0	1.0	NA	NA	NA	NA
Cadmium	ug/L	NE	NE	0.063	0.070	NA	NA	NA	NA
Chromium	ug/L	NE	NE	<0.050	<0.050	NA	NA	NA	NA
Lead	ug/L	NE	NE	0.75	<0.050	NA	NA	NA	NA
Mercury	ug/L	NE	NE	<0.0020	<0.0020	NA	NA	NA	NA
Selenium	ug/L	NE	NE	<0.050	<0.050	NA	NA	NA	NA
Silver	ug/L	NE	NE	<0.050	<0.050	NA	NA	NA	NA

NOTES:

(2.5-4) = designates depth sample was collected below ground surface

TCLP = Toxic Characteristic Leaching Procedure

RCRA = Resource Conservation and Recovery Act

EPA 6020A = United States Environmental Protection Agency SW-846 analytical method

mg/kg = milligrams per kilogram

ug/L = micrograms per liter

NA = not analyzed

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-PSS = VDEQ petroleum saturated soil standard

VDEQ-T2RSL = VDEQ Tier II residential screening level

VDEQ-T3ISL = VDEQ Tier III industrial screening level

Bold and right justification designates target compound was detected at a concentration above RL

* = total chromium (chromium III and VI)

Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 6. 2016 ICOR SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-PSSS	VDEQ-T2RSL	VDEQ-T3ISL	ECS-B7(1-2)	ECS-B7(5-6)	ICOR-SB3(10.5-11.5)	ICOR-SB9(4-5)	ICOR-SB14(1-2)	ICOR-SB14(4-5)	ICOR-SB15(1-2)	MiHpt-03(1-2)	MiHpt-03(4-5)	MiHpt-04(1-2)	MiHpt-04(4-5)	MiHpt-05(1-2)	MiHpt-06(1-2)	MiHpt-06(4-5)	MiHpt-07(1-2)	MiHpt-07(7-8)	MiHpt-08(4-5)
Sample Date:					9/7/16	9/7/16	9/7/16	9/7/16	9/7/16	9/7/16	9/7/16	9/6/16	9/6/16	9/6/16	9/6/16	9/7/16	9/6/16	9/6/16	9/6/16	9/6/16	9/6/16
TPH 8015																					
TPH-GRO (C6-C10)	mg/kg	8300	NE	NE	NA	<0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1300	0.260
TPH-DRO (C10-C28)	mg/kg	11000	NE	NE	NA	100	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	59	<12
TCL VOCs 8260B																					
Acetone	ug/kg	NE	574000	67000000	NA	<23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1900	<17
Cyclohexane	ug/kg	NE	26600	2700000	NA	<23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1900	<17
Ethylbenzene	ug/kg	NE	15700	250000	NA	<5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<460	<4.3
Isopropylbenzene	ug/kg	NE	1470	990000	NA	<5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<460	<4.3
Methylcyclohexane	ug/kg	NE	NE	NE	NA	<23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1900	<17
Naphthalene	ug/kg	NE	40.1	59000	NA	260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<460	<4.3
Tetrachloroethene	ug/kg	NE	45.3	39000	NA	<5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<460	<4.3
Toluene	ug/kg	NE	13800	4700000	NA	<5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<460	<4.3
m,p-Xylenes	ug/kg	NE	371	240000	NA	<11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<930	<8.6
o-Xylene	ug/kg	NE	374	280000	NA	<5.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<460	<4.3
TCL SVOCs 8270C																					
2-Methylnaphthalene	ug/kg	NE	371	300000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	NE	10900	4500000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	NE	119000	23000000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/kg	NE	2120	210000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/kg	NE	1100	21000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/kg	NE	11000	210000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/kg	NE	26100	2300000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/kg	NE	110000	2100000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	NE	1100000	21000000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)Anthracene	ug/kg	NE	1100	21000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	NE	293	100000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg	NE	178000	3000000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/kg	NE	10700	3000000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)Pyrene	ug/kg	NE	11000	210000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/kg	NE	40.1	59000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/kg	NE	26100	2300000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/kg	NE	26100	2300000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs 8082																					
PCBs	mg/kg				<0.055	NA	<0.060	<0.058	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides 8081B																					
4,4-DDD	ug/kg	NE	29.6	2500	6.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDE	ug/kg	NE	2160	35000	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDT	ug/kg	NE	3700	52000	7.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Herbicides 8151A																					
2,4,5-T	ug/kg	NE	NE	NE	<22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dioxins 8290A																					
2,3,7,8-TCDD	ng/kg	NE	NE	NE	NA	NA	NA	NA	NA	NA	0.0670 JQ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PPL Metals 6020A																					
Antimony	mg/kg	NE	3.1	47	<2.5	NA	NA	NA	NA	NA	NA	<2.6	NA	<2.0	NA	NA	<2.5	17	NA	NA	NA
Arsenic	mg/kg	NE	3.5	30	49	NA	NA	NA	9.1	9.2	NA	1.1	190	3.9	320	2.2	1.2	150	1.0	NA	NA
Cadmium	mg/kg	NE	7.1	98	<2.5	NA	NA	NA	NA	NA	NA	<2.6	NA	<2.0	NA	NA	<2.5	<2.5	NA	NA	NA
Chromium	mg/kg	NE	3600000*	NE*	17	NA	NA	NA	NA	NA	NA	5.5	NA	4.0	NA	NA	8.1	11	NA	NA	NA
Copper	mg/kg	NE	310	4700	39	NA	NA	NA	NA	NA	NA	4.2	NA	6.7	NA	NA	6.0	410	NA	NA	NA
Lead	mg/kg	NE	270	800	160	NA	NA	NA	NA	NA	NA	22	NA	94	NA	NA	6.7	1800	NA	NA	NA
Mercury	mg/kg	NE	1.1	4.6	1.3	NA	NA	NA	NA	NA	NA	<0.10	NA	0.094	NA	NA	0.12	0.47	NA	NA	NA
Nickel	mg/kg	NE	50.9	2200	14	NA	NA	NA	NA	NA	NA	<2.6	NA	<2.0	NA	NA	3.2	6.5	NA	NA	NA
Selenium	mg/kg	NE	5.2	580	<2.5	NA	NA	NA	NA	NA	NA	<2.6	NA	<2.0	NA	NA	<2.5	6.3	NA	NA	NA
Silver	mg/kg	NE	1.6	580	<2.5	NA	NA	NA	NA	NA	NA	<2.6	NA	<2.0	NA	NA	<2.5	3.3	NA	NA	NA
Thallium	mg/kg	NE	0.078	1.2	<2.0	NA	NA	NA	NA	NA	NA	<2.1	NA	<1.6	NA	NA	<2.0	2.4	NA	NA	NA
Zinc	mg/kg	NE	746	35000	130	NA	NA	NA	NA	NA	NA	<10	NA	16	NA	NA	15	370	NA	NA	NA

NOTES:
(0.5-1.5) = designates depth sample was collected below ground surface
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
PCBs = polychlorinated biphenyls
PPL = Priority Pollutant List
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ng/kg = nanograms per kilogram
ug/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
NA = not analyzed
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-PSS = VDEQ petroleum saturated soil standard
VDEQ-T2RSL = VDEQ Tier II residential screening level
VDEQ-T3ISL = VDEQ Tier III industrial screening level
Bold and right justification designates target compound was detected at a concentration above RL
* = total chromium (chromium III and VI)
Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 6. 2016 ICOR SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-PSSS	VDEQ-T2RSL	VDEQ-T3ISL	MiHpt-08(37.8-38.8)	MiHpt-10(24.5-25.5)	MiHpt-12(1-2)	MiHpt-13(1-2)	MiHpt-13(4-5)	MiHpt-14(1-2)	MiHpt-14(4-5)	MiHpt-14(5-6)	MiHpt-14(25-26)	MiHpt-15(1-2)	MiHpt-15(4-5)	MiHpt-16(1-2)	MiHpt-16(4-5)	MiHpt-16(8-9)	MiHpt-17(1-2)	MiHpt-17(4-5)	MiHpt-18(1-2)
Sample Date:					9/6/16	9/6/16	9/7/16	9/7/16	9/7/16	9/8/16	9/8/16	9/8/16	9/8/16	9/8/16	9/8/16	9/8/16	9/8/16	9/8/16	9/7/16	9/7/16	9/7/16
TPH 8015																					
TPH-GRO (C6-C10)	mg/kg	8300	NE	NE	0.160	0.180	NA	NA	NA	NA	NA	NA	<0.11	NA	NA	NA	NA	NA	NA	NA	NA
TPH-DRO (C10-C28)	mg/kg	11000	NE	NE	<15	150	NA	NA	NA	NA	NA	NA	<12	NA	NA	NA	NA	NA	NA	NA	NA
TCL VOCs 8260B																					
Acetone	ug/kg	NE	574000	67000000	66	84	NA	NA	NA	NA	NA	45	<20	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	ug/kg	NE	26600	2700000	<27	<27	NA	NA	NA	NA	NA	<19	<20	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	ug/kg	NE	15700	250000	<6.8	<6.9	NA	NA	NA	NA	NA	<4.7	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ug/kg	NE	1470	990000	<6.8	<6.9	NA	NA	NA	NA	NA	<4.7	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	ug/kg	NE	NE	NE	<27	<27	NA	NA	NA	NA	NA	<19	<20	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/kg	NE	40.1	59000	<6.8	10	NA	NA	NA	NA	NA	<4.7	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	ug/kg	NE	45.3	39000	<6.8	<6.9	NA	NA	NA	NA	NA	<4.7	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	ug/kg	NE	13800	4700000	<6.8	<6.9	NA	NA	NA	NA	NA	<4.7	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
m,p-Xylenes	ug/kg	NE	371	240000	<14	<14	NA	NA	NA	NA	NA	<9.5	<10	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	ug/kg	NE	374	280000	<6.8	<6.9	NA	NA	NA	NA	NA	<4.7	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
TCL SVOCs 8270C																					
2-Methylnaphthalene	ug/kg	NE	371	300000	<250	560	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	ug/kg	NE	10900	4500000	<250	2300	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	ug/kg	NE	119000	23000000	<250	3400	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	ug/kg	NE	2120	210000	<250	5500	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	ug/kg	NE	1100	21000	<250	5200	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ug/kg	NE	11000	210000	<250	3800	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	ug/kg	NE	26100	2300000	<250	2700	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ug/kg	NE	110000	2100000	<250	3500	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ug/kg	NE	1100000	21000000	<250	4800	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)Anthracene	ug/kg	NE	1100	21000	<250	1200	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	ug/kg	NE	293	100000	<250	1200	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ug/kg	NE	178000	3000000	<250	8700	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	ug/kg	NE	10700	3000000	<250	2200	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-c,d)Pyrene	ug/kg	NE	11000	210000	<250	3100	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ug/kg	NE	40.1	59000	<250	570	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	ug/kg	NE	26100	2300000	<250	8200	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	ug/kg	NE	26100	2300000	<250	7400	NA	NA	NA	NA	NA	NA	<190	NA	NA	NA	NA	NA	NA	NA	NA
PCBs 8082																					
PCBs	mg/kg				NA	NA	NA	NA	NA	<0.056	NA	NA	NA	NA	NA	<0.059	<0.061	NA	NA	NA	NA
Pesticides 8081B																					
4,4-DDD	ug/kg	NE	29.6	2500	NA	NA	NA	NA	NA	<4.5	NA	NA	NA	NA	NA	<4.7	<4.9	NA	NA	NA	NA
4,4-DDE	ug/kg	NE	2160	35000	NA	NA	NA	NA	NA	<4.5	NA	NA	NA	NA	NA	<4.7	<4.9	NA	NA	NA	NA
4,4-DDT	ug/kg	NE	3700	52000	NA	NA	NA	NA	NA	<4.5	NA	NA	NA	NA	NA	<4.7	<4.9	NA	NA	NA	NA
Herbicides 8151A																					
2,4,5-T	ug/kg	NE	NE	NE	NA	NA	NA	NA	NA	<22	NA	NA	NA	NA	NA	<25	<25	NA	NA	NA	NA
Dioxins 8290A																					
2,3,7,8-TCDD	ng/kg	NE	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.115 J	NA	NA	NA	NA	NA
PPL Metals 6020A																					
Antimony	mg/kg	NE	3.1	47	NA	NA	NA	12	NA	18	NA	NA	NA	<2.7	NA	NA	NA	NA	14	NA	NA
Arsenic	mg/kg	NE	3.5	30	NA	NA	400	810	32	730	93	NA	NA	9.6	1800	NA	NA	6.6	670	6.9	12
Cadmium	mg/kg	NE	7.1	98	NA	NA	NA	17	NA	7.7	NA	NA	NA	<2.7	NA	NA	NA	NA	12	NA	NA
Chromium	mg/kg	NE	3600000*	NE*	NA	NA	NA	29	NA	16	NA	NA	NA	15	NA	NA	NA	NA	27	NA	NA
Copper	mg/kg	NE	310	4700	NA	NA	NA	11000	NA	780	NA	NA	NA	35	NA	NA	NA	NA	6900	NA	NA
Lead	mg/kg	NE	270	800	NA	NA	NA	1800	NA	380	NA	NA	NA	100	NA	NA	NA	NA	1500	NA	NA
Mercury	mg/kg	NE	1.1	4.6	NA	NA	NA	26	NA	18	NA	NA	NA	0.61	NA	NA	NA	NA	20	NA	NA
Nickel	mg/kg	NE	50.9	2200	NA	NA	NA	18	NA	12	NA	NA	NA	12	NA	NA	NA	NA	16	NA	NA
Selenium	mg/kg	NE	5.2	580	NA	NA	NA	11	NA	5.0	NA	NA	NA	<2.7	NA	NA	NA	NA	12	NA	NA
Silver	mg/kg	NE	1.6	580	NA	NA	NA	16	NA	2.3	NA	NA	NA	<2.7	NA	NA	NA	NA	16	NA	NA
Thallium	mg/kg	NE	0.078	1.2	NA	NA	NA	6.5	NA	5.6	NA	NA	NA	<2.2	NA	NA	NA	NA	<21	NA	NA
Zinc	mg/kg	NE	746	35000	NA	NA	NA	7200	NA	1300	NA	NA	NA	83	NA	NA	NA	NA	4300	NA	NA

NOTES:
(0.5-1.5) = designates depth sample was collected below ground surface
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
PCBs = polychlorinated biphenyls
PPL = Priority Pollutant List
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ng/kg = nanograms per kilogram
ug/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
NA = not analyzed
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-PSS = VDEQ petroleum saturated soil standard
VDEQ-T2RSL = VDEQ Tier II residential screening level
VDEQ-T3ISL = VDEQ Tier III industrial screening level
Bold and right justification designates target compound was detected at a concentration above RL
* = total chromium (chromium III and VI)
Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 6. 2016 ICOR SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-PSSS	VDEQ-T2RSL	VDEQ-T3ISL	MiHpt-19(1-2)	MiHpt-19(4-5)	MiHpt-20(1.5-2.5)	MiHpt-20(4-5)	MiHpt-21(1-2)	MiHpt-21(4.5-5.5)	MiHpt-21(9-10)	MiHpt-21(24-25)	MiHpt-22(1-2)	MiHpt-22(4.5-5.5)	MiHpt-22(19-20)	MiHpt-22(24-25)
Sample Date:					9/7/16	9/7/16	9/8/16	9/8/16	9/9/16	9/9/16	9/9/16	9/9/16	9/9/16	9/9/16	9/9/16	9/9/16
TPH 8015																
TPH-GRO (C6-C10)	mg/kg	8300	NE	NE	NA	NA	NA	NA	NA	NA	760	<0.12	NA	NA	2.5	<0.12
TPH-DRO (C10-C28)	mg/kg	11000	NE	NE	NA	NA	NA	NA	NA	NA	49	<12	NA	NA	71	<12
TCL VOCs 8260B																
Acetone	ug/kg	NE	574000	67000000	NA	NA	NA	NA	NA	NA	<1900	<21	NA	NA	<24000	<22
Cyclohexane	ug/kg	NE	26600	2700000	NA	NA	NA	NA	NA	NA	190000	<21	NA	NA	35000	<22
Ethylbenzene	ug/kg	NE	15700	250000	NA	NA	NA	NA	NA	NA	8500	<5.2	NA	NA	15000	<5.5
Isopropylbenzene	ug/kg	NE	1470	990000	NA	NA	NA	NA	NA	NA	1900	<5.2	NA	NA	<6000	<5.5
Methylcyclohexane	ug/kg	NE	NE	NE	NA	NA	NA	NA	NA	NA	400000	<21	NA	NA	200000	<22
Naphthalene	ug/kg	NE	40.1	59000	NA	NA	NA	NA	NA	NA	<490	<5.2	NA	NA	46000	<5.5
Tetrachloroethene	ug/kg	NE	45.3	39000	NA	NA	NA	NA	NA	NA	3800	<5.2	NA	NA	<6000	<5.5
Toluene	ug/kg	NE	13800	4700000	NA	NA	NA	NA	NA	NA	990	<5.2	NA	NA	<6000	<5.5
m,p-Xylenes	ug/kg	NE	371	240000	NA	NA	NA	NA	NA	NA	14000	<10	NA	NA	18000	<11
o-Xylene	ug/kg	NE	374	280000	NA	NA	NA	NA	NA	NA	700	<5.2	NA	NA	7300	<5.5
TCL SVOCs 8270C																
2-Methylnaphthalene	ug/kg	NE	371	300000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Acenaphthene	ug/kg	NE	10900	4500000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Anthracene	ug/kg	NE	119000	23000000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Benzo(a)anthracene	ug/kg	NE	2120	210000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Benzo(a)pyrene	ug/kg	NE	1100	21000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Benzo(b)fluoranthene	ug/kg	NE	11000	210000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Benzo(g,h,i)perylene	ug/kg	NE	26100	2300000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Benzo(k)fluoranthene	ug/kg	NE	110000	2100000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Chrysene	ug/kg	NE	1100000	21000000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Dibenz(a,h)Anthracene	ug/kg	NE	1100	21000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Dibenzofuran	ug/kg	NE	293	100000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Fluoranthene	ug/kg	NE	178000	3000000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Fluorene	ug/kg	NE	10700	3000000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Indeno(1,2,3-c,d)Pyrene	ug/kg	NE	11000	210000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Naphthalene	ug/kg	NE	40.1	59000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Phenanthrene	ug/kg	NE	26100	2300000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
Pyrene	ug/kg	NE	26100	2300000	NA	NA	NA	NA	NA	NA	NA	<200	NA	NA	NA	<210
PCBs 8082																
PCBs	mg/kg				NA	NA	<0.062	NA	<0.061	<0.060	NA	NA	<0.061	<0.059	NA	NA
Pesticides 8081B																
4,4-DDD	ug/kg	NE	29.6	2500	NA	NA	<5.0	NA	<4.9	<4.8	NA	NA	<4.9	<4.7	NA	NA
4,4-DDE	ug/kg	NE	2160	35000	NA	NA	<5.0	NA	<4.9	<4.8	NA	NA	<4.9	<4.7	NA	NA
4,4-DDT	ug/kg	NE	3700	52000	NA	NA	<5.0	NA	<4.9	<4.8	NA	NA	<4.9	<4.7	NA	NA
Herbicides 8151A																
2,4,5-T	ug/kg	NE	NE	NE	NA	NA	<26	NA	52	42	NA	NA	<24	<23	NA	NA
Dioxins 8290A																
2,3,7,8-TCDD	ng/kg	NE	NE	NE	12.4	NA	0.691 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
PPL Metals 6020A																
Antimony	mg/kg	NE	3.1	47	NA	NA	13	NA	NA	NA	NA	NA	<2.6	NA	NA	NA
Arsenic	mg/kg	NE	3.5	30	130	480	480	5.8	NA	7.7	NA	NA	2500	810	NA	NA
Cadmium	mg/kg	NE	7.1	98	NA	NA	5.9	NA	NA	NA	NA	NA	<2.6	NA	NA	NA
Chromium	mg/kg	NE	3600000*	NE*	NA	NA	21	NA	NA	NA	NA	NA	22	NA	NA	NA
Copper	mg/kg	NE	310	4700	NA	NA	1400	NA	NA	NA	NA	NA	25	NA	NA	NA
Lead	mg/kg	NE	270	800	NA	NA	690	NA	NA	NA	NA	NA	69	NA	NA	NA
Mercury	mg/kg	NE	1.1	4.6	NA	NA	3.5	NA	NA	NA	NA	NA	0.26	NA	NA	NA
Nickel	mg/kg	NE	50.9	2200	NA	NA	14	NA	NA	NA	NA	NA	22	NA	NA	NA
Selenium	mg/kg	NE	5.2	580	NA	NA	4.4	NA	NA	NA	NA	<2.6	NA	NA	NA	NA
Silver	mg/kg	NE	1.6	580	NA	NA	4.5	NA	NA	NA	NA	<2.6	NA	NA	NA	NA
Thallium	mg/kg	NE	0.078	1.2	NA	NA	<2.1	NA	NA	NA	NA	NA	<2.1	NA	NA	NA
Zinc	mg/kg	NE	746	35000	NA	NA	2700	NA	NA	NA	NA	NA	79	NA	NA	NA

NOTES:
(0.5-1.5) = designates depth sample was collected below ground surface
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
PCBs = polychlorinated biphenyls
PPL = Priority Pollutant List
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ng/kg = nanograms per kilogram
ug/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
NA = not analyzed
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-PSS = VDEQ petroleum saturated soil standard
VDEQ-T2RSL = VDEQ Tier II residential screening level
VDEQ-T3ISL = VDEQ Tier III industrial screening level
Bold and right justification designates target compound was detected at a concentration above RL
* = total chromium (chromium III and VI)
Yellow highlighting designates target compound was detected at a concentration above a VDEQ screening concentration in at least 1 sample

TABLE 7. 2018 ICOR SOIL ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-PSSS	VDEQ-T2RSL	VDEQ-T3ISL	MW-23(11.5-12.5)	MW-24(8-9)	MW-25(9-10)
Sample Date:					1/22/18	1/22/18	1/22/18
TPH 8015							
TPH-GRO (C6-C10)	mg/kg	8300	NE	NE	3.2	<0.11	<0.12
TPH-DRO (C10-C28)	mg/kg	11000	NE	NE	9000	58	220
TCL VOCs 8260B							
Acetone	ug/kg	NE	574000	67000000	<3000	34	<25
Naphthalene	ug/kg	NE	40.1	59000	9700	<4.7	<6.2
TCL SVOCs 8270C							
2-Methylnaphthalene	ug/kg	NE	371	300000	16000	<20	<110
Acenaphthene	ug/kg	NE	10900	4500000	850000	35	<110
Acenaphthylene	ug/kg	NE	26100	2300000	52000	57	<110
Anthracene	ug/kg	NE	119000	23000000	780000	100	<110
Benzo(a)anthracene	ug/kg	NE	2120	210000	680000	430	<110
Benzo(a)pyrene	ug/kg	NE	1100	21000	570000	450	<110
Benzo(b)fluoranthene	ug/kg	NE	11000	210000	390000	400	<110
Benzo(g,h,i)perylene	ug/kg	NE	26100	2300000	190000	220	<110
Benzo(k)fluoranthene	ug/kg	NE	110000	2100000	420000	320	<110
Biphenyl (Diphenyl)	ug/kg	NE	17.4	20000	160000	<200	<1100
Carbazole	ug/kg	NE	NE	NE	180000	<200	<1100
Chrysene	ug/kg	NE	1100000	21000000	530000	440	<110
Dibenz(a,h)Anthracene	ug/kg	NE	1100	21000	130000	80	<110
Dibenzofuran	ug/kg	NE	293	100000	600000	<200	<1100
Fluoranthene	ug/kg	NE	178000	3000000	1600000	720	190
Fluorene	ug/kg	NE	10700	3000000	800000	43	<110
Indeno(1,2,3-c,d)Pyrene	ug/kg	NE	11000	210000	280000	280	<110
Naphthalene	ug/kg	NE	40.1	59000	62000	<20	<110
Phenanthrene	ug/kg	NE	26100	2300000	2100000	400	130
Pyrene	ug/kg	NE	26100	2300000	1300000	660	190

NOTES:

(11.5-12.5) = designates depth sample was collected below ground surface

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

TCL = Target Compound List

VOCs = volatile organic compounds

SVOCs = semi-VOCs

EPA 8260B = United States Environmental Protection Agency SW-846 analytical method

ug/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

<1.0 = not detected above analytical method reporting limit (RL)

VDEQ-PSS = Commonwealth of Virginia Department of Environmental Quality (VDEQ) petroleum saturated soil standard

VDEQ-T2RSL = VDEQ Tier II residential screening level

VDEQ-T3ISL = VDEQ Tier III industrial screening level

NE = not established

Bold and right justification designates target compound was detected at a concentration above RL

Yellow highlighting designates target compound was detected at a concentration above a VDEQ

screening concentration in at least 1 sample

TABLE 8. 2013 ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	ECS-MW2	ECS-MW4	ICOR-SB1(GW)	ICOR-SB5(GW)	ICOR-SB6(GW)	ICOR-SB7(GW)	ICOR-SB8(GW)	ICOR-SB9(GW)
Date:								10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013
TPH EPA 8015															
TPH-GRO	mg/L	NE	NE	NE	15	NE	NE	2.8	<0.1	<0.1	0.25	0.21	0.18	11	0.25
TPH-DRO	mg/L	NE	NE	NE	15	NE	NE	0.91	0.15	0.17	0.30	0.11	0.16	0.93	0.77
TCL VOCs EPA 8260B															
Benzene	ug/L	13.7	57.3	14.2	12	22	510	160	<1.0	<1.0	49	50	1.7	57	7.4
Cyclohexane	ug/L	103	424	3330	NE	NE	NE	150	<10	<10	<10	<10	<10	710	<10
Ethylbenzene	ug/L	34.1	152	591	4.3	530	2100	47	<1.0	<1.0	15	7.7	<1.0	80	<1.0
Isopropylbenzene	ug/L	89.3	383	19.9	NE	NE	NE	6.7	<1.0	<1.0	3.5	<1.0	1.2	<10	<1.0
Methylcyclohexane	ug/L	NE	NE	NE	NE	NE	NE	230	<10	<10	<10	<10	<10	520	<10
Naphthalene	ug/L	17.2	72.3	0.722	8.9	NE	NE	73	<1.0	<1.0	29	27	<1.0	50	19
Toluene	ug/L	1920	8100	949	43	510	6000	5.8	<1.0	<1.0	<1.0	<1.0	<1.0	16	1.7
m,p-Xylenes	ug/L	150	1290	20.8	33	NE	NE	17	<2.0	<2.0	4.8	2.9	<2.0	76	<2.0
o-Xylene	ug/L	47.2	208	20.9	33	NE	NE	28	<1.0	<1.0	21	3.2	<1.0	<10	<1.0
TCL SVOCs EPA 8270C															
Acenaphthene	ug/L	NE	NE	2950	NE	670	990	<11	17	7.2	<5.0	<5.0	<5.0	<11	27
Acenaphthylene	ug/L	NE	NE	1430	NE	NE	NE	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	8.5
Anthracene	ug/L	NE	NE	7850	NE	8300	40000	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	7.3
Biphenyl (Diphenyl)	ug/L	3.34	14.3	1.18	NE	NE	NE	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	9.3
Carbazole	ug/L	NE	NE	NE	NE	NE	NE	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	8.7
Dibenzofuran	ug/L	NE	NE	48.4	NE	NE	NE	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	22
Fluoranthene	ug/L	NE	NE	311	NE	130	140	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	12
Fluorene	ug/L	NE	NE	4370	NE	1100	5300	<11	5.9	<5.0	<5.0	<5.0	<5.0	<11	30
Naphthalene	ug/L	17.2	72.3	0.722	8.9	NE	NE	36	<5.0	<5.0	<5.0	8.4	<5.0	<11	13
Phenanthrene	ug/L	NE	NE	1430	NE	NE	NE	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	25
Pyrene	ug/L	NE	NE	1430	NE	830	4000	<11	<5.0	<5.0	<5.0	<5.0	<5.0	<11	8.7
Total PPL Metals EPA 6020A															
Antimony	ug/L	NE	NE	78.6	NE	5.6	640	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	9.9
Arsenic	ug/L	NE	NE	197	NE	1	150	95	38	120	480	400	15	NA	370
Beryllium	ug/L	NE	NE	55	NE	NE	NE	26	<1.0	<1.0	60	1.8	<1.0	NA	<1.0
Cadmium	ug/L	NE	NE	19.2	NE	1.1	1.1	31	<1.0	13	32	6.7	<1.0	NA	2.5
Chromium	ug/L	NE	NE	NE	NE	NE	NE	180	<1.0	24	270	39	3.7	NA	3.5
Copper	ug/L	NE	NE	6570	NE	9	9	3300	<1.0	700	2000	790	1.4	NA	150
Lead	ug/L	NE	NE	NE	NE	11	11	1100	14	530	610	290	3.2	NA	76
Mercury	ug/L	0.0881	0.369	0.0086	NE	0.77	0.77	0.72	<0.20	0.38	0.26	<0.20	<0.20	NA	0.40
Nickel	ug/L	NE	NE	4950	NE	20	20	160	<1.0	38	1500	33	2.9	NA	6.6
Selenium	ug/L	NE	NE	3280	NE	5	5	<5.0	<1.0	3.7	5.8	7.6	<1.0	NA	<1.0
Silver	ug/L	NE	NE	48.4	NE	NE	NE	<1.0	<1.0	3.7	<1.0	<1.0	<1.0	NA	<1.0
Thallium	ug/L	NE	NE	26.3	NE	0.24	0.47	1.1	<1.0	1.0	1.0	<1.0	<1.0	NA	<1.0
Zinc	ug/L	NE	NE	236000	NE	120	120	19000	<20	6900	21000	1800	28	NA	8200
Dissolved PPL Metals EPA 6020A															
Arsenic	ug/L	NE	NE	197	NE	1	150	1.4	<1.0	14	420	38	5.0	NA	25
Beryllium	ug/L	NE	NE	55	NE	NE	NE	<1.0	<1.0	<1.0	32	<1.0	<1.0	NA	<1.0
Cadmium	ug/L	NE	NE	19.2	NE	1.1	1.1	<1.0	<1.0	6.4	39	<1.0	<1.0	NA	<1.0
Chromium	ug/L	NE	NE	NE	NE	NE	NE	<1.0	<1.0	<1.0	250	<1.0	<1.0	NA	<1.0
Copper	ug/L	NE	NE	6570	NE	9	9	<1.0	<1.0	52	1000	3.0	<1.0	NA	<1.0
Lead	ug/L	NE	NE	NE	NE	11	11	<1.0	<1.0	2.9	820	<1.0	<1.0	NA	<1.0
Mercury	ug/L	0.0881	0.369	0.0086	NE	0.77	0.77	<0.20	<0.20	<0.20	0.25	<0.20	<0.20	NA	<0.20
Nickel	ug/L	NE	NE	4950	NE	20	20	1.5	<1.0	24	1500	3.8	<1.0	NA	3.0

TABLE 8. 2013 ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	ECS-MW2	ECS-MW4	ICOR-SB1(GW)	ICOR-SB5(GW)	ICOR-SB6(GW)	ICOR-SB7(GW)	ICOR-SB8(GW)	ICOR-SB9(GW)
Date:								10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013	10/08/2013
Selenium	ug/L	NE	NE	3280	NE	5	5	<1.0	<1.0	1.7	4.3	7.2	<1.0	NA	<1.0
Zinc	ug/L	NE	NE	236000	NE	120	120	130	<20	4200	23000	530	<20	NA	6400

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
PCBs = polychlorinated biphenyls
PPL = Priority Pollutant List
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 9. GROUNDWATER ANALYTICAL RESULTS (OBTAINED DURING UST REMOVAL AND INCLUDES COMPARISON TO HISTORICAL DATA)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	TEC-MW2		TEC-MW3		TEC-MW4		TEC-MW5	
Date:								5/1/06	3/30/16	5/1/06	3/30/16	5/1/06	3/30/16	5/1/06	3/30/16
TPH 8015															
TPH-DRO	mg/L	NE	NE	NE	15	NE	NE	ND	0.29	ND	0.13	ND	0.75	ND	<0.12
VOCs 8021B															
Benzene	ug/L	13.7	57.3	14.2	12	22	510	ND	<1.0	ND	<1.0	ND	<1.0	ND	<1.0
Toluene	ug/L	1920	8100	949	43	510	6000	ND	<1.0	ND	<1.0	ND	<1.0	ND	<1.0
Ethylbenzene	ug/L	34.1	152	591	4.3	530	2100	ND	<1.0	ND	<1.0	ND	<1.0	ND	<1.0
m,p-Xylenes	ug/L	150	1290	20.8	33	NE	NE	ND	<2.0	ND	<2.0	ND	<2.0	ND	<2.0
o-Xylenes	ug/L	47.2	208	20.9	33	NE	NE	ND	<1.0	ND	<1.0	ND	<1.0	ND	<1.0
Naphthalene	ug/L	17.2	72.3	0.722	8.9	NE	NE	ND	4.9	ND	<1.0	ND	4.3	ND	<1.0

NOTES:

TPH = total petroleum hydrocarbons

TPH-DRO = diesel range TPH

TPH-GRO = gasoline range TPH

VOCs = volatile organic compounds

ug/L = micrograms per liter

mg/L = milligrams per liter

ND = not detected above analytical method reporting limit (RL)

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level

VDEQ-T3IGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level

VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level

VDEQ-PDS = general permit discharge standard for petroleum contaminated water

VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level

VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level

NE = not established

Bold and right justification designates target compound was detected at a concentration above RL

Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample

Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample

Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 10. 2016-2020 A-ZONE/ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	CAS No.	VDEQ-T3RGS�	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	TEC-MW2							TEC-MW4						
Sample Date:									9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20	9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20
TPH 8015																						
TPH-GRO (C6-C10)	mg/L	C6C10GRO	NE	NE	NE	15	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH-DRO (C10-C28)	mg/L	C10C28DRO	NE	NE	NE	15	NE	NE	0.21	0.18	0.28	0.22	<0.13	0.12	0.15	0.21	0.26	0.30	0.17	0.11	0.19	0.60
TCL VOCs 8260B																						
Acetone	ug/L	67-64-1	2240000	9780000	13400	NE	NE	NE	<10	<10	<10	<10	<10	<5.0	<5.0	<10	<10	<10	<10	<10	<5.0	<5.0
Benzene	ug/L	71-43-2	13.7	57.3	14.2	12	22	510	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Disulfide	ug/L	75-15-0	124	527	122	NE	NE	NE	<10	<10	<10	<10	<10	<1.0	<1.0	<10	<10	<10	<10	<10	<1.0	<1.0
Chloroform	ug/L	67-66-3	8	35.3	54.3	80	340	11000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	74-87-3	26.07	108.16	432.29	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	110-82-7	103	424	3330	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethylbenzene	ug/L	100-41-4	34.1	152	591	4.3	530	2100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	ug/L	98-82-8	89.3	383	19.9	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl-t-butyl ether	ug/L	1634-04-4	4580	19600	524	15	NE	NE	2.5	2.8	2.3	1.5	<1.0	1.1	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	108-87-2	NE	NE	NE	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene (PCE)	ug/L	127-18-4	5.8	24.9	10.4	5	6.9	33	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	108-88-3	1920	8100	949	43	510	6000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	ug/L	79-01-6	0.521	2.19	0.46	5	25	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	NE	NE	2260	70	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	156-60-5	NE	NE	157	100	140	10000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
m,p-Xylenes	ug/L	108-38-3	150	1290	20.8	33	NE	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	ug/L	95-47-6	47.2	208	20.9	33	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCL SVOCs 8270C																						
2,4,5-Trichlorophenol	ug/L	95-95-4	NE	NE	7860	NE	300	600	NA	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4,6-Trichlorophenol	ug/L	88-06-2	NE	NE	27.37	NE	14	24	NA	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dichlorophenol	ug/L	120-83-2	NE	NE	1060	NE	77	290	NA	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dimethylphenol	ug/L	105-67-9	NE	NE	5388.61	NE	380	850	NA	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2-Chlorophenol	ug/L	95-57-8	NE	NE	1110	NE	81	150	NA	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
2-Methylnaphthalene	ug/L	91-57-6	NE	NE	59	NE	NE	NE	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
2-Methyl phenol	ug/L	95-48-7	NE	NE	30174.44	NE	NE	NE	NA	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
3&4-Methylphenol	ug/L		NE	NE	NE	NE	NE	NE	NA	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Acenaphthene	ug/L	83-32-9	NE	NE	2950	NE	670	990	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	0.30	<0.25
Acenaphthylene	ug/L	208-96-8	NE	NE	1430	NE	NE	NE	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Anthracene	ug/L	120-12-7	NE	NE	7850	NE	8300	40000	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Benzo(a)anthracene	ug/L	56-55-3	346.52	4076.67	69.33	NE	0.038	0.18	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Biphenyl (Diphenyl)	ug/L	92-52-4	3.34	14.3	1.18	NE	NE	NE	NA	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Carbazole	ug/L	86-74-8	NE	NE	NE	NE	NE	NE	NA	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Dibenzofuran	ug/L	132-64-9	NE	NE	48.4	NE	NE	NE	NA	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Fluoranthene	ug/L	206-44-0	NE	NE	311	NE	130	140	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Fluorene	ug/L	86-73-7	NE	NE	4370	NE	1100	5300	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Pentachlorophenol	ug/L	87-86-5	NE	NE	5.54	NE	0.03	0.04	NA	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0
Phenanthrene	ug/L	85-01-8	NE	NE	1430	NE	NE	NE	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Pyrene	ug/L	129-00-0	NE	NE	1430	NE	830	4000	NA	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
bis(2-ethylhexyl) phthalate	ug/L	117-81-7	0.00252	0.01122	0.02572	NE	12	22	NA	<0.50	<0.50	<0.50	<0.50	0.83	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGS� = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 10. 2016-2020 A-ZONE/ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	CAS No.	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	ECS-MW4							MiHpt-05						
Sample Date:									9/21/16	2/7/17	1/29/18	6/71/18	7/11/19	2/5/20	8/20/20	9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20
TPH 8015																						
TPH-GRO (C6-C10)	mg/L	C6C10GRO	NE	NE	NE	15	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.81	0.79	0.6	0.95	0.45	0.49	0.19
TPH-DRO (C10-C28)	mg/L	C10C28DRO	NE	NE	NE	15	NE	NE	<0.10	<0.10	0.11	<0.10	<0.10	<0.11	<0.11	0.52	0.41	0.41	0.48	0.70	0.44	0.18
TCL VOCs 8260B																						
Acetone	ug/L	67-64-1	2240000	9780000	13400	NE	NE	NE	<10	<10	<10	<10	<10	<5.0	<5.0	<10	<10	<10	<10	<10	<5.0	<5.0
Benzene	ug/L	71-43-2	13.7	57.3	14.2	12	22	510	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	110	150	130	130	100	91	67
Carbon Disulfide	ug/L	75-15-0	124	527	122	NE	NE	NE	<10	<10	<10	<10	<10	<1.0	<1.0	<10	<10	<10	<10	<10	<1.0	<1.0
Chloroform	ug/L	67-66-3	8	35.3	54.3	80	340	11000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	74-87-3	26.07	108.16	432.29	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	110-82-7	103	424	3330	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethylbenzene	ug/L	100-41-4	34.1	152	591	4.3	530	2100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	26	14	13	24	30	48	<1.0
Isopropylbenzene	ug/L	98-82-8	89.3	383	19.9	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.5	4.4	5.5	7.9	10	12	2.4
Methyl-t-butyl ether	ug/L	1634-04-4	4580	19600	524	15	NE	NE	3.7	4.7	4.9	4.8	5.9	5.1	3.9	<1.0	<1.0	<1.0	<1.0	<1.0	1.7	<1.0
Methylcyclohexane	ug/L	108-87-2	NE	NE	NE	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	170	250	220	340	390	430	96
Tetrachloroethene (PCE)	ug/L	127-18-4	5.8	24.9	10.4	5	6.9	33	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	108-88-3	1920	8100	949	43	510	6000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.4	1.0	1.5	2.6	2.9	2.8	<1.0
Trichloroethene (TCE)	ug/L	79-01-6	0.521	2.19	0.46	5	25	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	NE	NE	2260	70	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	156-60-5	NE	NE	157	100	140	10000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
m,p-Xylenes	ug/L	108-38-3	150	1290	20.8	33	NE	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	12	18	19	22	27	26	6.4
o-Xylene	ug/L	95-47-6	47.2	208	20.9	33	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	23	38	39	37	45	47	17
TCL SVOCs 8270C																						
2,4,5-Trichlorophenol	ug/L	95-95-4	NE	NE	7860	NE	300	600	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4,6-Trichlorophenol	ug/L	88-06-2	NE	NE	27.37	NE	14	24	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dichlorophenol	ug/L	120-83-2	NE	NE	1060	NE	77	290	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dimethylphenol	ug/L	105-67-9	NE	NE	5388.61	NE	380	850	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2-Chlorophenol	ug/L	95-57-8	NE	NE	1110	NE	81	150	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
2-Methylnaphthalene	ug/L	91-57-6	NE	NE	59	NE	NE	NE	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	16	1.9	1.4	8.0	36	53	0.65
2-Methyl phenol	ug/L	95-48-7	NE	NE	30174.44	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
3&4-Methylphenol	ug/L		NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Acenaphthene	ug/L	83-32-9	NE	NE	2950	NE	670	990	<5.0	2.5	2.1	1.1	5.0	7.4	7.1	<5.3	1.0	<0.50	1.7	8.7	15	<0.25
Acenaphthylene	ug/L	208-96-8	NE	NE	1430	NE	NE	NE	<5.0	<0.50	<0.50	<0.50	0.70	0.93	0.82	<5.3	<0.50	<0.50	<0.50	<0.50	0.50	<0.25
Anthracene	ug/L	120-12-7	NE	NE	7850	NE	8300	40000	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.3	<0.50	<0.50	<0.50	<0.50	0.29	<0.25
Benzo(a)anthracene	ug/L	56-55-3	346.52	4076.67	69.33	NE	0.038	0.18	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.3	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Biphenyl (Diphenyl)	ug/L	92-52-4	3.34	14.3	1.18	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	3.1	<0.50
Carbazole	ug/L	86-74-8	NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	0.78	<0.50
Dibenzofuran	ug/L	132-64-9	NE	NE	48.4	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	5.6	<0.50
Fluoranthene	ug/L	206-44-0	NE	NE	311	NE	130	140	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.3	<0.50	<0.50	<0.50	<0.50	0.68	<0.25
Fluorene	ug/L	86-73-7	NE	NE	4370	NE	1100	5300	<5.0	0.75	0.66	<0.50	1.3	1.9	1.8	<5.3	1.1	<0.50	1.3	4.9	7.0	<0.25
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	83	47	16	48	190	230	29
Pentachlorophenol	ug/L	87-86-5	NE	NE	5.54	NE	0.03	0.04	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<5.3	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0
Phenanthrene	ug/L	85-01-8	NE	NE	1430	NE	NE	NE	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.3	<0.50	<0.50	0.55	1.8	3.1	<0.25
Pyrene	ug/L	129-00-0	NE	NE	1430	NE	830	4000	<5.0	<0.50	<0.50	<0.50	<0.50	0.28	<0.25	<5.3	<0.50	<0.50	<0.50	<0.50	0.48	<0.25
bis(2-ethylhexyl) phthalate	ug/L	117-81-7	0.00252	0.01122	0.02572	NE	12	22	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 10. 2016-2020 A-ZONE/ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	CAS No.	VDEQ-T3RGS	VDEQ-T3IGS	VDEQ-T3CDS	VDEQ-PDS	VDEQ-T2PWSS	VDEQ-T2SWFSL	MiHpt-07								MiHpt-08							
Sample Date:									9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20	9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20		
TPH 8015																								
TPH-GRO (C6-C10)	mg/L	C6C10GRO	NE	NE	NE	15	NE	NE	0.88	0.89	1.4	2.1	1	0.97	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		
TPH-DRO (C10-C28)	mg/L	C10C28DRO	NE	NE	NE	15	NE	NE	2.0	1.8	2.6	3.6	2.7	1.5	0.92	0.15	0.20	0.22	0.17	<0.12	<0.10	<0.11		
TCL VOCs 8260B																								
Acetone	ug/L	67-64-1	2240000	9780000	13400	NE	NE	NE	<10	<10	<10	<10	<10	<5.0	<5.0	<10	<10	<10	<10	<10	<5.0	<5.0		
Benzene	ug/L	71-43-2	13.7	57.3	14.2	12	22	510	25	31	59	75	88	93	5.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Carbon Disulfide	ug/L	75-15-0	124	527	122	NE	NE	NE	<10	<10	<10	<10	<10	<1.0	<1.0	<10	<10	<10	<10	<10	<1.0	<1.0		
Chloroform	ug/L	67-66-3	8	35.3	54.3	80	340	11000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Chloromethane	ug/L	74-87-3	26.07	108.16	432.29	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Cyclohexane	ug/L	110-82-7	103	424	3330	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Ethylbenzene	ug/L	100-41-4	34.1	152	591	4.3	530	2100	61	57	94	110	140	120	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Isopropylbenzene	ug/L	98-82-8	89.3	383	19.9	NE	NE	NE	12	13	15	23	25	21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Methyl-t-butyl ether	ug/L	1634-04-4	4580	19600	524	15	NE	NE	1.0	1.6	1.4	1.7	1.7	1.6	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Methylcyclohexane	ug/L	108-87-2	NE	NE	NE	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10		
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	830	720	970	1400	1900	1500	1.0	14	14	<1.0	21	20	16	1.1		
Tetrachloroethene (PCE)	ug/L	127-18-4	5.8	24.9	10.4	5	6.9	33	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0		
Toluene	ug/L	108-88-3	1920	8100	949	43	510	6000	3.7	2.7	2.9	2.9	4.2	3.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
Trichloroethene (TCE)	ug/L	79-01-6	0.521	2.19	0.46	5	25	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
cis-1,2-Dichloroethene	ug/L	156-59-2	NE	NE	2260	70	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
trans-1,2-Dichloroethene	ug/L	156-60-5	NE	NE	157	100	140	10000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
m,p-Xylenes	ug/L	108-38-3	150	1290	20.8	33	NE	NE	32	30	39	52	110	78	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0		
o-Xylene	ug/L	95-47-6	47.2	208	20.9	33	NE	NE	32	38	56	61	77	70	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
TCL SVOCs 8270C																								
2,4,5-Trichlorophenol	ug/L	95-95-4	NE	NE	7860	NE	300	600	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50		
2,4,6-Trichlorophenol	ug/L	88-06-2	NE	NE	27.37	NE	14	24	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50		
2,4-Dichlorophenol	ug/L	120-83-2	NE	NE	1060	NE	77	290	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50		
2,4-Dimethylphenol	ug/L	105-67-9	NE	NE	5388.61	NE	380	850	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50		
2-Chlorophenol	ug/L	95-57-8	NE	NE	1110	NE	81	150	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50		
2-Methylnaphthalene	ug/L	91-57-6	NE	NE	59	NE	NE	NE	40	28	4.7	37	190	270	<0.25	<5.3	<0.50	<0.50	0.74	1.0	1.9	<0.25		
2-Methyl phenol	ug/L	95-48-7	NE	NE	30174.44	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50		
3&4-Methylphenol	ug/L		NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.3	<5.0	<5.0	<5.0	<0.50	<0.50	<0.50		
Acenaphthene	ug/L	83-32-9	NE	NE	2950	NE	670	990	36	38	14	25	74	130	61	<5.3	1.6	0.66	1.4	1.8	4.2	7.7		
Acenaphthylene	ug/L	208-96-8	NE	NE	1430	NE	NE	NE	<5.0	1.2	<0.50	0.57	0.92	0.91	1.3	<5.3	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25		
Anthracene	ug/L	120-12-7	NE	NE	7850	NE	8300	40000	<5.0	1.6	0.61	1.7	3.3	5.1	3.1	<5.3	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25		
Benzo(a)anthracene	ug/L	56-55-3	346.52	4076.67	69.33	NE	0.038	0.18	<5.3	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.3	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25		
Biphenyl (Diphenyl)	ug/L	92-52-4	3.34	14.3	1.18	NE	NE	NE	7.0	7.1	<5.0	5.4	17	29	2.7	<5.3	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50		
Carbazole	ug/L	86-74-8	NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	6.0	2.5	<5.3	<5.0	<5.0	<5.0	<5.0	2.0	<0.50		
Dibenzofuran	ug/L	132-64-9	NE	NE	48.4	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	5.3	7.4	3.3	<5.3	<5.0	<5.0	<5.0	<5.0	1.4	<0.50		
Fluoranthene	ug/L	206-44-0	NE	NE	311	NE	130	140	<5.0	<0.50	<0.50	<0.50	0.67	1.1	0.64	<5.3	<0.50	<0.50	<0.50	<0.50	0.38	0.29		
Fluorene	ug/L	86-73-7	NE	NE	4370	NE	1100	5300	8.2	9.5	3.5	7.2	18	28	16	<5.3	0.51	<0.50	0.68	0.70	1.6	0.54		
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	200	170	73	170	740	1100	<0.25	<5.3	2.2	<0.50	4.1	4.8	7.6	0.91		
Pentachlorophenol	ug/L	87-86-5	NE	NE	5.54	NE	0.03	0.04	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<5.3	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0		
Phenanthrene	ug/L	85-01-8	NE	NE	1430	NE	NE	NE	8.7	8.8	3.2	8.3	17	27	12	<5.3	<0.50	<0.50	<0.50	<0.50	1.2	0.30		
Pyrene	ug/L	129-00-0	NE	NE	1430	NE	830	4000	<5.0	<0.50	<0.50	<0.50	0.77	1.3	0.74	<5.3	<0.50	<0.50	<0.50	<0.50	<0.25	0.26		
bis(2-ethylhexyl) phthalate	ug/L	117-81-7	0.00252	0.01122	0.02572	NE	12	22	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGS� = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 10. 2016-2020 A-ZONE/ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	CAS No.	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	MiHpt-14							MiHpt-15						
Sample Date:									9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20	9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20
TPH 8015																						
TPH-GRO (C6-C10)	mg/L	C6C10GRO	NE	NE	NE	15	NE	NE	0.33	0.41	0.28	0.41	0.22	0.21	0.18	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH-DRO (C10-C28)	mg/L	C10C28DRO	NE	NE	NE	15	NE	NE	0.75	1.2	1.5	1.3	0.59	0.84	1.0	<0.10	<0.10	<0.10	<0.10	<0.11	<0.10	<0.13
TCL VOCs 8260B																						
Acetone	ug/L	67-64-1	2240000	9780000	13400	NE	NE	NE	<10	<10	<10	<10	<10	<5.0	<5.0	<10	<10	<10	<10	<10	<5.0	<5.0
Benzene	ug/L	71-43-2	13.7	57.3	14.2	12	22	510	66	70	66	92	73	49	36	9.9	6.2	<1.0	1.6	11	4.7	<1.0
Carbon Disulfide	ug/L	75-15-0	124	527	122	NE	NE	NE	<10	<10	<10	<10	<10	<1.0	<1.0	<10	<10	<10	<10	<10	<1.0	<1.0
Chloroform	ug/L	67-66-3	8	35.3	54.3	80	340	11000	1.4	1.3	2.2	1.1	6.8	9.1	10	7.7	63	12	43	1.7	5.8	49
Chloromethane	ug/L	74-87-3	26.07	108.16	432.29	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	110-82-7	103	424	3330	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethylbenzene	ug/L	100-41-4	34.1	152	591	4.3	530	2100	5.4	7.4	6.0	9.8	10	6.4	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	ug/L	98-82-8	89.3	383	19.9	NE	NE	NE	<1.0	<1.0	<1.0	1.3	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl-t-butyl ether	ug/L	1634-04-4	4580	19600	524	15	NE	NE	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	108-87-2	NE	NE	NE	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	37	48	48	62	56	39	39	<1.0	1.1	<1.0	<1.0	1.1	1.5	<1.0
Tetrachloroethene (PCE)	ug/L	127-18-4	5.8	24.9	10.4	5	6.9	33	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	108-88-3	1920	8100	949	43	510	6000	5.6	5.6	4.7	6.1	6.2	5.0	4.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	ug/L	79-01-6	0.521	2.19	0.46	5	25	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	NE	NE	2260	70	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	156-60-5	NE	NE	157	100	140	10000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
m,p-Xylenes	ug/L	108-38-3	150	1290	20.8	33	NE	NE	2.8	4.5	3.8	4.9	5.8	4.0	2.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	ug/L	95-47-6	47.2	208	20.9	33	NE	NE	4.8	7.4	5.7	8.5	9.2	6.1	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCL SVOCs 8270C																						
2,4,5-Trichlorophenol	ug/L	95-95-4	NE	NE	7860	NE	300	600	<5.0	<5.0	<5.3	<5.0	<2.0	0.70	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4,6-Trichlorophenol	ug/L	88-06-2	NE	NE	27.37	NE	14	24	<5.0	<5.0	<5.3	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dichlorophenol	ug/L	120-83-2	NE	NE	1060	NE	77	290	13	<5.0	<5.3	<5.0	<2.0	7.8	8.5	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dimethylphenol	ug/L	105-67-9	NE	NE	5388.61	NE	380	850	<5.3	<5.0	<5.3	<5.0	<2.0	0.63	0.56	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50
2-Chlorophenol	ug/L	95-57-8	NE	NE	1110	NE	81	150	<5.0	<5.0	<5.3	<5.0	<5.0	1.2	0.92	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
2-Methylnaphthalene	ug/L	91-57-6	NE	NE	59	NE	NE	NE	<5.0	0.68	<0.53	0.54	1.1	2.1	2.4	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
2-Methyl phenol	ug/L	95-48-7	NE	NE	30174.44	NE	NE	NE	<5.0	<5.0	<5.3	<5.0	<5.0	0.78	0.92	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
3&4-Methylphenol	ug/L		NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.3	<5.0	<5.0	1.7	1.2	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Acenaphthene	ug/L	83-32-9	NE	NE	2950	NE	670	990	12	8.5	2.5	5.9	18	34	28	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Acenaphthylene	ug/L	208-96-8	NE	NE	1430	NE	NE	NE	<5.0	<0.50	<0.53	<0.50	1.2	2.0	2.1	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Anthracene	ug/L	120-12-7	NE	NE	7850	NE	8300	40000	6.3	2.4	0.83	1.6	3.8	9.1	8.9	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Benzo(a)anthracene	ug/L	56-55-3	346.52	4076.67	69.33	NE	0.038	0.18	<5.3	<0.50	<0.50	<0.50	<0.50	0.41	0.36	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Biphenyl (Diphenyl)	ug/L	92-52-4	3.34	14.3	1.18	NE	NE	NE	<5.0	<5.0	<5.3	<5.0	<5.0	6.5	5.4	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Carbazole	ug/L	86-74-8	NE	NE	NE	NE	NE	NE	7.4	<5.0	<5.3	<5.0	13	20	14	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Dibenzofuran	ug/L	132-64-9	NE	NE	48.4	NE	NE	NE	13	7.2	<5.3	<5.0	14	28	24	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Fluoranthene	ug/L	206-44-0	NE	NE	311	NE	130	140	<5.0	1.9	0.60	1.1	2.5	6.0	5.2	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Fluorene	ug/L	86-73-7	NE	NE	4370	NE	1100	5300	18	9.6	2.9	6.0	17	35	31	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	10	8.8	2.9	7.1	17	29	20	<5.0	1.7	1.8	<0.50	0.62	0.66	<0.25
Pentachlorophenol	ug/L	87-86-5	NE	NE	5.54	NE	0.03	0.04	<5.0	<5.0	<5.3	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0
Phenanthrene	ug/L	85-01-8	NE	NE	1430	NE	NE	NE	21	6.9	2.3	4.1	10	24	25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Pyrene	ug/L	129-00-0	NE	NE	1430	NE	830	4000	<5.0	1.3	<0.53	0.71	1.8	4.0	3.6	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
bis(2-ethylhexyl) phthalate	ug/L	117-81-7	0.00252	0.01122	0.02572	NE	12	22	<5.0	<0.50	<0.53	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 10. 2016-2020 A-ZONE/ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	CAS No.	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	MiHpt-20							MiHpt-21						
Sample Date:									9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20	9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20
TPH 8015																						
TPH-GRO (C6-C10)	mg/L	C6C10GRO	NE	NE	NE	15	NE	NE	0.18	0.14	0.16	<0.1	<0.1	<0.1	<0.1	7.5	15	4.5	12	12	12	8.9
TPH-DRO (C10-C28)	mg/L	C10C28DRO	NE	NE	NE	15	NE	NE	0.72	0.62	0.77	<0.10	<0.10	<0.10	<0.11	1.7	1.2	2.3	2.4	2.2	1.5	2.5
TCL VOCs 8260B																						
Acetone	ug/L	67-64-1	2240000	9780000	13400	NE	NE	NE	<10	<10	<10	<10	<10	<5.0	<5.0	<50	<100	19	<10	<10	<5.0	<5.0
Benzene	ug/L	71-43-2	13.7	57.3	14.2	12	22	510	14	13	14	<1.0	<1.0	<1.0	<1.0	58	59	75	74	77	71	58
Carbon Disulfide	ug/L	75-15-0	124	527	122	NE	NE	NE	<10	<10	<10	<10	<10	<1.0	<1.0	<10	<10	<10	<10	<10	<1.0	<1.0
Chloroform	ug/L	67-66-3	8	35.3	54.3	80	340	11000	<1.0	<1.0	<1.0	1.2	1.4	1.3	1.4	<5.0	<10	<1.0	8.4	<1.0	<1.0	<1.0
Chloromethane	ug/L	74-87-3	26.07	108.16	432.29	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	10	<1.0
Cyclohexane	ug/L	110-82-7	103	424	3330	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	560	710	460	1200	1500	1600	490
Ethylbenzene	ug/L	100-41-4	34.1	152	591	4.3	530	2100	1.4	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	150	160	73	140	170	150	130
Isopropylbenzene	ug/L	98-82-8	89.3	383	19.9	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	17	15	8.4	15	14	12	11
Methyl-t-butyl ether	ug/L	1634-04-4	4580	19600	524	15	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	108-87-2	NE	NE	NE	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	460	690	340	670	740	690	280
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	67	42	64	<1.0	<1.0	<1.0	<1.0	6.4	<10	3.2	3.2	3.1	3.3	2.2
Tetrachloroethene (PCE)	ug/L	127-18-4	5.8	24.9	10.4	5	6.9	33	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	47	64	26	60	76	70	46
Toluene	ug/L	108-88-3	1920	8100	949	43	510	6000	2.6	2.0	2.2	<1.0	<1.0	<1.0	<1.0	45	44	31	46	67	62	52
Trichloroethene (TCE)	ug/L	79-01-6	0.521	2.19	0.46	5	25	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	10	11	10	14	27	26	24
cis-1,2-Dichloroethene	ug/L	156-59-2	NE	NE	2260	70	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.1	2.1	5.4	4.4	6.4
trans-1,2-Dichloroethene	ug/L	156-60-5	NE	NE	157	100	140	10000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	6.1	5.5	4.4
m,p-Xylenes	ug/L	108-38-3	150	1290	20.8	33	NE	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	190	240	110	200	250	240	190
o-Xylene	ug/L	95-47-6	47.2	208	20.9	33	NE	NE	1.4	1.1	1.6	<1.0	<1.0	<1.0	<1.0	9.1	11	4.6	7.6	11	9.6	8.2
TCL SVOCs 8270C																						
2,4,5-Trichlorophenol	ug/L	95-95-4	NE	NE	7860	NE	300	600	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	53	19	11	32	32	75	50
2,4,6-Trichlorophenol	ug/L	88-06-2	NE	NE	27.37	NE	14	24	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	3.3	1.6
2,4-Dichlorophenol	ug/L	120-83-2	NE	NE	1060	NE	77	290	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	710	220	120	370	290	920	700
2,4-Dimethylphenol	ug/L	105-67-9	NE	NE	5388.61	NE	380	850	<5.0	<5.0	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<2.0	0.61	0.78
2-Chlorophenol	ug/L	95-57-8	NE	NE	1110	NE	81	150	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	8.3	<5.0	<5.0	5.1	13	47	42
2-Methylnaphthalene	ug/L	91-57-6	NE	NE	59	NE	NE	NE	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	0.35	0.32
2-Methyl phenol	ug/L	95-48-7	NE	NE	30174.44	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
3&4-Methylphenol	ug/L		NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	1.1	<0.50
Acenaphthene	ug/L	83-32-9	NE	NE	2950	NE	670	990	6.3	1.7	2.0	<0.50	<0.50	0.30	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Acenaphthylene	ug/L	208-96-8	NE	NE	1430	NE	NE	NE	<5.0	0.94	1.2	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Anthracene	ug/L	120-12-7	NE	NE	7850	NE	8300	40000	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Benzo(a)anthracene	ug/L	56-55-3	346.52	4076.67	69.33	NE	0.038	0.18	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Biphenyl (Diphenyl)	ug/L	92-52-4	3.34	14.3	1.18	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Carbazole	ug/L	86-74-8	NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Dibenzofuran	ug/L	132-64-9	NE	NE	48.4	NE	NE	NE	11	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50
Fluoranthene	ug/L	206-44-0	NE	NE	311	NE	130	140	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Fluorene	ug/L	86-73-7	NE	NE	4370	NE	1100	5300	12	2.5	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	13	4.3	5.7	0.52	<0.50	0.62	<0.25	35	0.66	<0.50	26	48	1.1	<0.25
Pentachlorophenol	ug/L	87-86-5	NE	NE	5.54	NE	0.03	0.04	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	13	<5.0	<5.0	6.8	7.8	22	15
Phenanthrene	ug/L	85-01-8	NE	NE	1430	NE	NE	NE	10	1.5	1.7	<0.50	<0.50	0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
Pyrene	ug/L	129-00-0	NE	NE	1430	NE	830	4000	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25	<5.0	<0.50	<0.50	<0.50	<0.50	<0.25	<0.25
bis(2-ethylhexyl) phthalate	ug/L	117-81-7	0.00252	0.01122	0.02572	NE	12	22	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 10. 2016-2020 A-ZONE/ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	CAS No.	VDEQ-T3RGSL	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	MiHpt-22							MW-23				
Sample Date:									9/21/16	2/7/17	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20
TPH 8015																				
TPH-GRO (C6-C10)	mg/L	C6C10GRO	NE	NE	NE	15	NE	NE	0.38	2.3	0.27	0.56	0.23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TPH-DRO (C10-C28)	mg/L	C10C28DRO	NE	NE	NE	15	NE	NE	0.27	0.19	33	0.38	0.12	<0.11	0.16	0.28	0.15	<0.10	<0.10	0.46
TCL VOCs 8260B																				
Acetone	ug/L	67-64-1	2240000	9780000	13400	NE	NE	NE	<10	<10	<10	<10	<10	<5.0	<5.0	<10	<10	<10	<5.0	5.2
Benzene	ug/L	71-43-2	13.7	57.3	14.2	12	22	510	130	630	34	200	93	33	<1.0	<1.0	<1.0	<1.0	<1.0	2.8
Carbon Disulfide	ug/L	75-15-0	124	527	122	NE	NE	NE	<10	<10	<10	<10	<10	<1.0	<1.0	<10	<10	<10	<1.0	<1.0
Chloroform	ug/L	67-66-3	8	35.3	54.3	80	340	11000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	74-87-3	26.07	108.16	432.29	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	110-82-7	103	424	3330	NE	NE	NE	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethylbenzene	ug/L	100-41-4	34.1	152	591	4.3	530	2100	1.6	16	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene	ug/L	98-82-8	89.3	383	19.9	NE	NE	NE	<1.0	1.6	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl-t-butyl ether	ug/L	1634-04-4	4580	19600	524	15	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.3	5.5	5.7	6.4	<1.0
Methylcyclohexane	ug/L	108-87-2	NE	NE	NE	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	<1.0	3.1	1.3	<1.0	1.1	<1.0	<1.0	1.4	1.3	<1.0	<1.0	<1.0
Tetrachloroethene (PCE)	ug/L	127-18-4	5.8	24.9	10.4	5	6.9	33	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	108-88-3	1920	8100	949	43	510	6000	<1.0	3.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	ug/L	79-01-6	0.521	2.19	0.46	5	25	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	NE	NE	2260	70	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	156-60-5	NE	NE	157	100	140	10000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
m,p-Xylenes	ug/L	108-38-3	150	1290	20.8	33	NE	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	ug/L	95-47-6	47.2	208	20.9	33	NE	NE	<1.0	8.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCL SVOCs 8270C																				
2,4,5-Trichlorophenol	ug/L	95-95-4	NE	NE	7860	NE	300	600	<5.0	<5.0	<5.6	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	<0.50	<0.50
2,4,6-Trichlorophenol	ug/L	88-06-2	NE	NE	27.37	NE	14	24	<5.0	<5.0	<5.6	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dichlorophenol	ug/L	120-83-2	NE	NE	1060	NE	77	290	<5.0	<5.0	<5.6	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dimethylphenol	ug/L	105-67-9	NE	NE	5388.61	NE	380	850	<5.0	<5.0	<5.6	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	<0.50	<0.50
2-Chlorophenol	ug/L	95-57-8	NE	NE	1110	NE	81	150	<5.0	<5.0	<5.6	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50	<0.50
2-Methylnaphthalene	ug/L	91-57-6	NE	NE	59	NE	NE	NE	<5.0	<0.50	<0.56	<0.50	0.69	<0.25	<0.25	<0.50	<0.50	<0.50	<0.25	<0.25
2-Methyl phenol	ug/L	95-48-7	NE	NE	30174.44	NE	NE	NE	<5.0	<5.0	<5.6	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50	<0.50
3&4-Methylphenol	ug/L		NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.6	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50	<0.50
Acenaphthene	ug/L	83-32-9	NE	NE	2950	NE	670	990	<5.0	<0.50	<0.56	<0.50	0.75	<0.25	<0.25	0.90	1.5	7.2	6.8	19
Acenaphthylene	ug/L	208-96-8	NE	NE	1430	NE	NE	NE	<5.0	<0.50	<0.56	<0.50	<0.50	<0.25	<0.25	<0.50	<0.50	<0.50	<0.25	1.2
Anthracene	ug/L	120-12-7	NE	NE	7850	NE	8300	40000	<5.0	<0.50	<0.56	<0.50	<0.50	<0.25	<0.25	<0.50	<0.50	0.50	0.47	4.7
Benzo(a)anthracene	ug/L	56-55-3	346.52	4076.67	69.33	NE	0.038	0.18	<5.0	<0.50	<0.56	<0.50	<0.50	<0.25	<0.25	<0.50	<0.50	<0.50	<0.25	<0.25
Biphenyl (Diphenyl)	ug/L	92-52-4	3.34	14.3	1.18	NE	NE	NE	<5.0	<5.0	<5.6	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50	<0.50
Carbazole	ug/L	86-74-8	NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.6	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	3.7	23
Dibenzofuran	ug/L	132-64-9	NE	NE	48.4	NE	NE	NE	<5.0	<5.0	<5.6	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	3.7	15
Fluoranthene	ug/L	206-44-0	NE	NE	311	NE	130	140	<5.0	<0.50	<0.56	<0.50	<0.50	<0.25	<0.25	<0.50	<0.50	0.67	0.77	6.5
Fluorene	ug/L	86-73-7	NE	NE	4370	NE	1100	5300	<5.0	<0.50	<0.56	<0.50	<0.50	<0.25	<0.25	0.52	0.77	3.8	3.4	7.4
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	<5.0	<0.50	<0.56	<0.50	0.99	<0.25	<0.25	<0.50	<0.50	<0.50	<0.25	<0.25
Pentachlorophenol	ug/L	87-86-5	NE	NE	5.54	NE	0.03	0.04	<5.0	<5.0	<5.6	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0
Phenanthrene	ug/L	85-01-8	NE	NE	1430	NE	NE	NE	<5.0	<0.50	<0.56	<0.50	<0.50	<0.25	<0.25	0.60	<0.50	1.5	1.5	0.48
Pyrene	ug/L	129-00-0	NE	NE	1430	NE	830	4000	<5.0	<0.50	<0.56	<0.50	<0.50	<0.25	<0.25	<0.50	<0.50	<0.50	0.56	4.5
bis(2-ethylhexyl) phthalate	ug/L	117-81-7	0.00252	0.01122	0.02572	NE	12	22	<5.0	<0.50	<0.56	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGSL = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 10. 2016-2020 A-ZONE/ICOR GROUNDWATER ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	CAS No.	VDEQ-T3RGS�	VDEQ-T3IGSL	VDEQ-T3CDSL	VDEQ-PDS	VDEQ-T2PWSSL	VDEQ-T2SWFSL	MW-24					MW-25				
Sample Date:									1/29/18	6/7/18	7/11/19	2/5/20	8/20/20	1/29/18	6/7/18	7/11/19	2/5/20	8/20/20
TPH 8015																		
TPH-GRO (C6-C10)	mg/L	C6C10GRO	NE	NE	NE	15	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	0.16	<0.1	<0.1	<0.1
TPH-DRO (C10-C28)	mg/L	C10C28DRO	NE	NE	NE	15	NE	NE	1.1	0.61	0.13	0.47	0.16	0.45	0.33	0.16	0.26	0.18
TCL VOCs 8260B																		
Acetone	ug/L	67-64-1	2240000	9780000	13400	NE	NE	NE	<10	<10	<10	<5.0	<5.0	<10	<10	<10	<5.0	<5.0
Benzene	ug/L	71-43-2	13.7	57.3	14.2	12	22	510	<1.0	<1.0	<1.0	<1.0	<1.0	14	17	26	23	11
Carbon Disulfide	ug/L	75-15-0	124	527	122	NE	NE	NE	<10	<10	<10	<1.0	<1.0	<10	<10	15	11	5.6
Chloroform	ug/L	67-66-3	8	35.3	54.3	80	340	11000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	ug/L	74-87-3	26.07	108.16	432.29	NE	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	ug/L	110-82-7	103	424	3330	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethylbenzene	ug/L	100-41-4	34.1	152	591	4.3	530	2100	<1.0	<1.0	<1.0	<1.0	<1.0	2.3	2.1	2.8	2.3	1.1
Isopropylbenzene	ug/L	98-82-8	89.3	383	19.9	NE	NE	NE	1.7	2.7	<1.0	2.8	<1.0	1.6	1.7	1.5	1.3	<1.0
Methyl-t-butyl ether	ug/L	1634-04-4	4580	19600	524	15	NE	NE	3.9	1.9	1.5	3.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylcyclohexane	ug/L	108-87-2	NE	NE	NE	NE	NE	NE	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	2.6	3.4	<1.0	2.1	<1.0	83	77	78	65	24
Tetrachloroethene (PCE)	ug/L	127-18-4	5.8	24.9	10.4	5	6.9	33	<5.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
Toluene	ug/L	108-88-3	1920	8100	949	43	510	6000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	ug/L	79-01-6	0.521	2.19	0.46	5	25	300	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	ug/L	156-59-2	NE	NE	2260	70	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	ug/L	156-60-5	NE	NE	157	100	140	10000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
m,p-Xylenes	ug/L	108-38-3	150	1290	20.8	33	NE	NE	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	ug/L	95-47-6	47.2	208	20.9	33	NE	NE	<1.0	<1.0	<1.0	<1.0	<1.0	2.4	1.9	2.5	2.1	<1.0
TCL SVOCs 8270C																		
2,4,5-Trichlorophenol	ug/L	95-95-4	NE	NE	7860	NE	300	600	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	<0.50	<0.50
2,4,6-Trichlorophenol	ug/L	88-06-2	NE	NE	27.37	NE	14	24	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dichlorophenol	ug/L	120-83-2	NE	NE	1060	NE	77	290	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	<0.50	<0.50
2,4-Dimethylphenol	ug/L	105-67-9	NE	NE	5388.61	NE	380	850	<5.0	<5.0	<2.0	<0.50	<0.50	<5.0	<5.0	<2.0	0.54	<0.50
2-Chlorophenol	ug/L	95-57-8	NE	NE	1110	NE	81	150	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50	<0.50
2-Methylnaphthalene	ug/L	91-57-6	NE	NE	59	NE	NE	NE	<0.50	<0.50	<0.50	<0.25	<0.25	<0.50	0.58	1.9	3.5	0.85
2-Methyl phenol	ug/L	95-48-7	NE	NE	30174.44	NE	NE	NE	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50	<0.50
3&4-Methylphenol	ug/L		NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	<0.50	<0.50
Acenaphthene	ug/L	83-32-9	NE	NE	2950	NE	670	990	2.5	8.3	8.0	56	15	0.81	1.5	5.0	11	5.3
Acenaphthylene	ug/L	208-96-8	NE	NE	1430	NE	NE	NE	<0.50	<0.50	<0.50	0.38	<0.25	<0.50	<0.50	<0.50	<0.25	<0.25
Anthracene	ug/L	120-12-7	NE	NE	7850	NE	8300	40000	0.55	1.1	0.73	7.2	1.2	<0.50	<0.50	<0.50	0.71	0.54
Benzo(a)anthracene	ug/L	56-55-3	346.52	4076.67	69.33	NE	0.038	0.18	<0.50	<0.50	<0.50	0.25	<0.25	<0.50	<0.50	<0.50	<0.25	<0.25
Biphenyl (Diphenyl)	ug/L	92-52-4	3.34	14.3	1.18	NE	NE	NE	<5.0	<5.0	<5.0	<0.50	<0.50	<5.0	<5.0	<5.0	1.3	<0.50
Carbazole	ug/L	86-74-8	NE	NE	NE	NE	NE	NE	<5.0	<5.0	<5.0	0.79	<0.50	<5.0	<5.0	<5.0	5.8	2.9
Dibenzofuran	ug/L	132-64-9	NE	NE	48.4	NE	NE	NE	<5.0	<5.0	<5.0	23	2.1	<5.0	<5.0	<5.0	3.7	1.6
Fluoranthene	ug/L	206-44-0	NE	NE	311	NE	130	140	1.1	0.91	0.87	6.7	2.9	<0.50	<0.50	<0.50	1.1	0.79
Fluorene	ug/L	86-73-7	NE	NE	4370	NE	1100	5300	1.3	3.9	3.8	28	5.8	<0.50	0.75	2.5	5.3	2.6
Naphthalene	ug/L	91-20-3	17.2	72.3	0.722	8.9	NE	NE	<0.50	<0.50	<0.50	0.98	<0.25	3.5	6.1	20	35	8.3
Pentachlorophenol	ug/L	87-86-5	NE	NE	5.54	NE	0.03	0.04	<5.0	<5.0	<5.0	<2.0	<2.0	<5.0	<5.0	<5.0	<2.0	<2.0
Phenanthrene	ug/L	85-01-8	NE	NE	1430	NE	NE	NE	2.2	5.8	3.5	34	0.50	<0.50	1.1	2.6	5.7	3.1
Pyrene	ug/L	129-00-0	NE	NE	1430	NE	830	4000	0.88	0.59	0.56	4.3	2.2	<0.50	<0.50	<0.50	0.70	0.62
bis(2-ethylhexyl) phthalate	ug/L	117-81-7	0.00252	0.01122	0.02572	NE	12	22	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

NOTES:
TPH = total petroleum hydrocarbons
TPH-DRO = diesel range TPH
TPH-GRO = gasoline range TPH
TCL = Target Compound List
VOCs = volatile organic compounds
SVOCs = semi-VOCs
EPA 8260B = United States Environmental Protection Agency SW-846 analytical method
ug/L = micrograms per liter
mg/L = milligrams per liter
<1.0 = not detected above analytical method reporting limit (RL)
VDEQ = Commonwealth of Virginia Department of Environmental Quality
VDEQ-T3RGS� = VDEQ Tier III residential groundwater vapor intrusion screening level
VDEQ-T3CGSL = VDEQ Tier III industrial groundwater vapor intrusion screening level
VDEQ-T3CDSL = VDEQ Tier III construction direct (<15 feet) screening level
VDEQ-PDS = general permit discharge standard for petroleum contaminated water
VDEQ-T2PWSSL = VDEQ Tier II public water supply screening level
VDEQ-T2SWFSL = VDEQ Tier II surface water fresh screening level
NE = not established
Bold and right justification designates target compound was detected at a concentration above RL
Yellow highlighting designates target compound was detected at a concentration above the VDEQ groundwater screening level in at least 1 sample
Blue highlighting designates target compound was detected at a concentration above the VDEQ surface water screening level in at least 1 sample
Green highlighting designates target compound was detected at a concentration above the VDEQ groundwater and surface water screening level in at least 1 sample

TABLE 11. SUB-SLAB SOIL GAS ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T3RSSG	VDEQ-T3ISSG	ICOR-SSG1	ICOR-SSG2	ICOR-SSG3	ICOR-SSG4
Sample Date:				12/5/16	12/5/16	12/5/16	12/5/16
VOCs TO15							
1,2,4-Trimethylbenzene	ug/m3	210	867	6.5	6.3	<25	6.1
2,2,4-Trimethylpentane	ug/m3	NE	NE	8.6	9.9	63	11
2-Butanone (MEK)	ug/m3	17300	73300	11	18	<37	16
Acetone	ug/m3	10700	467000	46	260	<240	540
Benzene	ug/m3	103	433	2.4	3.0	<16	4.0
Chloroform	ug/m3	40	177	7.0	<2.4	<24	23
Cyclohexane	ug/m3	21000	86700	1.8	4.9	150	18
Dichlorodifluoromethane	ug/m3	333	1470	3.6	4.9	<25	8.8
Ethylbenzene	ug/m3	367	1630	7.5	7.9	<22	8.0
Propylene	ug/m3	10300	43300	9.9	8.5	<43	37
Tetrahydrofuran	ug/m3	7000	29300	22	28	26	29
Toluene	ug/m3	17300	73300	32	43	35	38
m,p-Xylenes	ug/m3	333	1470	27	28	47	29
n-Heptane	ug/m3	1400	6000	2.7	3.4	<20	5.3
o-Xylene	ug/m3	333	1470	14	14	26	15

NOTES:

VOCs = volatile organic compounds

TO15 = United States Environmental Protection Agency analytical method

ug/m3 = micrograms per meter cubed

<0.86 = not detected above the analytical method reporting limit (RL)

Bold and right justification designates constituent was detected above the RL

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-T3RSSG = VDEQ Tier III residential Shallow/Subslab Soil Gas screening Level

VDEQ-T3ISSG = VDEQ Tier III industrial Shallow/Subslab Soil Gas Screening Level

NE = not established

Bold and center justification designates target compound was detected at a concentration above RL

Yellow highlighting designates target compound was detected at a concentration above the VDEQ screening level in at least 1 sample

TABLE 12. DEEP SOIL GAS ANALYTICAL RESULTS (DETECTIONS ONLY)

FORMER ROBINSON TERMINAL NORTH
500 AND 501 NORTH UNION STREET
ALEXANDRIA, VA

Sample ID:	Units	VDEQ-T3RDSG	VDEQ-T3IDSG	VDEQ-T3CSG	ICOR-DSG1	ICOR-DSG2	ICOR-DSG3	ICOR-DSG4
Sample Date:					12/5/16	12/5/16	12/5/16	12/5/16
Depth Collected (feet bgs):					6 - 6.5	5 - 5.5	3.5 - 4	2 - 2.5
VOCs TO15								
1,2,4-Trimethylbenzene	ug/m3	630	2600	9689	7.7	8.2	4.8	<25
1,3,5-Trimethylbenzene	ug/m3	630	2600	1390	<2.5	2.9	<2.5	<25
2,2,4-Trimethylpentane	ug/m3	NE	NE	NE	490	4.0	11	400
2-Butanone (MEK)	ug/m3	52000	220000	91700	<3.7	5.6	4.1	180
4-Methyl-2-Pentanone	ug/m3	31000	130000	365000	<5.1	<5.1	<5.1	300
Acetone	ug/m3	320000	1400000	2450000	65	43	30	19000
Benzene	ug/m3	310	1300	7500	18	130	5.4	<16
Carbon Disulfide	ug/m3	7300	31000	55200	76	53	<31	<310
Chloroethane	ug/m3	NE	NE	NE	<1.3	<1.3	1.5	<13
Chloroform	ug/m3	120	530	2660	5.9	17	5.5	<24
Cyclohexane	ug/m3	63000	260000	1890000	190	68	73	320
Ethylbenzene	ug/m3	1100	4900	358000	7.2	2.7	5.8	<22
Naphthalene	ug/m3	31	130	416	6.7	<2.6	<2.6	<26
Propylene	ug/m3	31000	130000	229000	450	640	870	600
Toluene	ug/m3	52000	220000	539000	20	8.1	18	22
m,p-Xylenes	ug/m3	1000	4400	12300	22	11	21	<43
n-Heptane	ug/m3	4200	18000	51700	20	9.8	8.6	130
n-Hexane	ug/m3	7300	31000	230000	100	<35	<35	640
n-Propylbenzene	ug/m3	10000	44000	139000	2.5	<2.5	<2.5	<25
o-Xylene	ug/m3	1000	4400	12200	13	7.5	12	<22

NOTES:

bgs = below ground surface

VOCs = volatile organic compounds

TO15 = United States Environmental Protection Agency analytical method

ug/m3 = micrograms per meter cubed

<1.3 = not detected above the analytical method reporting limit (RL)

Bold and right justification designates constituent was detected above the RL

VDEQ = Commonwealth of Virginia Department of Environmental Quality

VDEQ-T3RDSG = VDEQ Tier III residential Deep Soil Gas Screening Level

VDEQ-T3IDSG = VDEQ Tier III commercial Deep Soil Gas Screening Level

VDEQ-T3CSG = VDEQ Tier III Construction Soil Gas Screening Level

NE = not established

Bold and center justification designates target compound was detected at a concentration above RL

Yellow highlighting designates target compound was detected at a concentration above the VDEQ screening level in at least 1 sample

ATTACHMENT 1

VURAM RESIDENTIAL OUTPUT

VURAM

Virginia Unified Risk Assessment Model

VERSION: 3.2.2

Residential Quantitative Risk Assessment Report

Program: Voluntary Remediation Program (VRP)

Site Name: RTN500501UNIONST

By submitting this report to the Virginia DEQ, the user confirms that VURAM's default exposure parameters have not been altered, unless a complete unaltered VURAM analysis is provided and all modifications are detailed explicitly in an accompanying narrative or documentation that shows DEQ's prior concurrence with specific changes.

Chemical Specific Notes Displayed as Applicable

Lead

VURAM does not perform an evaluation for lead exposure. Use other approved models for lead modeling.

All Report Pages are Required for Risk Assessment Submission

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Analyte: Acenaphthene
CAS: 83-32-9

Concentration mg/kg : 8.50E+02 RfDo (mg/kg-day): 6.00E-02 RfCi (mg/m3): SFO (mg/kg-day)-1: IUR (µg/m3)-1: Mutagen: VOC: Y	Calculated Hazard/Risk		
	Non-Cancer Adult	Non-Cancer Child	Cancer
	Ingestion: 1.70E-02	Ingestion: 1.81E-01	Ingestion:
	Dermal: 9.32E-03	Dermal: 5.59E-02	Dermal:
	Inhalation:	Inhalation:	Inhalation:
	Total: 2.63E-02	Total: 2.37E-01	Total: 0.00E+00
	% Contribution to Media Hazard/Risk		
			0.11%0.17%0.00%
mg/kg Non-Cancer AdultNon-Cancer ChildCancer			
Recommended Acceptable ConcentrationN/AN/AN/A			

Analyte: Acenaphthylene
CAS: 208-96-8

Concentration mg/kg : 5.20E+01 RfDo (mg/kg-day): 3.00E-02 RfCi (mg/m3): SFO (mg/kg-day)-1: IUR (µg/m3)-1: Mutagen: VOC: Y	Calculated Hazard/Risk		
	Non-Cancer Adult	Non-Cancer Child	Cancer
	Ingestion: 2.08E-03	Ingestion: 2.22E-02	Ingestion:
	Dermal: 1.14E-03	Dermal: 6.84E-03	Dermal:
	Inhalation:	Inhalation:	Inhalation:
	Total: 3.22E-03	Total: 2.90E-02	Total: 0.00E+00
	% Contribution to Media Hazard/Risk		
			0.01%0.02%0.00%
mg/kg Non-Cancer AdultNon-Cancer ChildCancer			
Recommended Acceptable ConcentrationN/AN/AN/A			

Analyte: Anthracene
CAS: 120-12-7

Concentration mg/kg : 7.80E+02 RfDo (mg/kg-day): 3.00E-01 RfCi (mg/m3): SFO (mg/kg-day)-1: IUR (µg/m3)-1: Mutagen: VOC: Y	Calculated Hazard/Risk		
	Non-Cancer Adult	Non-Cancer Child	Cancer
	Ingestion: 3.12E-03	Ingestion: 3.32E-02	Ingestion:
	Dermal: 1.71E-03	Dermal: 1.03E-02	Dermal:
	Inhalation:	Inhalation:	Inhalation:
	Total: 4.83E-03	Total: 4.35E-02	Total: 0.00E+00
	% Contribution to Media Hazard/Risk		
			0.02%0.03%0.00%

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Analyte: Antimony (metallic)
CAS: 7440-36-0

Concentration mg/kg :	1.80E+01	Calculated Hazard/Risk		
RfDo (mg/kg-day):	4.00E-04	Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):	3.00E-04	Ingestion: 5.39E-02	Ingestion: 5.75E-01	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation: 4.23E-05	Inhalation: 4.23E-05	Inhalation:
Mutagen:		Total: 5.40E-02	Total: 5.75E-01	Total: 0.00E+00
VOC:				
% Contribution to Media Hazard/Risk		0.22%	0.41%	0.00%

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Analyte: Arsenic, Inorganic
CAS: 7440-38-2

Concentration mg/kg :	2.50E+03	Calculated Hazard/Risk		
RfDo (mg/kg-day):	3.00E-04	Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):	1.50E-05	Ingestion: 5.99E+00	Ingestion: 6.39E+01	Ingestion: 3.24E-03
SFO (mg/kg-day)-1:	1.50E+00	Dermal: 1.27E+00	Dermal: 7.58E+00	Dermal: 4.55E-04
IUR (µg/m3)-1:	4.30E-03	Inhalation: 1.18E-01	Inhalation: 1.18E-01	Inhalation: 2.82E-06
Mutagen:		Total: 7.38E+00	Total: 7.16E+01	Total: 3.69E-03
VOC:				
% Contribution to Media Hazard/Risk		30.26%	51.48%	33.13%

Exceeds Hazard! Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	3.39E+02	3.49E+01	6.77E-01

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Analyte: Benz[a]anthracene
CAS: 56-55-3

Concentration mg/kg : 6.80E+02		Calculated Hazard/Risk		
RfDo (mg/kg-day):		Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion:	Ingestion:	Ingestion: 4.44E-04
SFO (mg/kg-day)-1: 1.00E-01		Dermal:	Dermal:	Dermal: 1.48E-04
IUR (µg/m3)-1: 6.00E-05		Inhalation:	Inhalation:	Inhalation: 9.15E-06
Mutagen: Y		Total: 0.00E+00	Total: 0.00E+00	Total: 6.01E-04
VOC: Y				
% Contribution to Media Hazard/Risk		0.00%	0.00%	5.39%

Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	1.13E+00

Analyte: Benzene
CAS: 71-43-2

Concentration mg/kg : 5.12E+00		Calculated Hazard/Risk		
RfDo (mg/kg-day): 4.00E-03		Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3): 3.00E-02		Ingestion: 1.53E-03	Ingestion: 1.64E-02	Ingestion: 4.05E-07
SFO (mg/kg-day)-1: 5.50E-02		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1: 7.80E-06		Inhalation: 4.62E-02	Inhalation: 4.62E-02	Inhalation: 4.02E-06
Mutagen:		Total: 4.78E-02	Total: 6.26E-02	Total: 4.42E-06
VOC: Y				
% Contribution to Media Hazard/Risk		0.20%	0.04%	0.04%

Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	1.16E+00

Analyte: Benzo(g,h,i)perylene
CAS: 191-24-2

Concentration mg/kg : 1.90E+02		Calculated Hazard/Risk		
RfDo (mg/kg-day): 3.00E-02		Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion: 7.59E-03	Ingestion: 8.10E-02	Ingestion:
SFO (mg/kg-day)-1:		Dermal: 4.17E-03	Dermal: 2.50E-02	Dermal:
IUR (µg/m3)-1:		Inhalation:	Inhalation:	Inhalation:
Mutagen:		Total: 1.18E-02	Total: 1.06E-01	Total: 0.00E+00
VOC: Y				
% Contribution to Media Hazard/Risk		0.05%	0.08%	0.00%

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Analyte: Benzo[a]pyrene

CAS: 50-32-8

Concentration mg/kg :	5.70E+02	Calculated Hazard/Risk					
RfDo (mg/kg-day):	3.00E-04	Non-Cancer Adult		Non-Cancer Child		Cancer	
RfCi (mg/m3):	2.00E-06	Ingestion:	2.28E+00	Ingestion:	2.43E+01	Ingestion:	3.72E-03
SFO (mg/kg-day)-1:	1.00E+00	Dermal:	1.25E+00	Dermal:	7.49E+00	Dermal:	1.24E-03
IUR (µg/m3)-1:	6.00E-04	Inhalation:	2.01E-01	Inhalation:	2.01E-01	Inhalation:	2.48E-07
Mutagen:	Y	Total:	3.73E+00	Total:	3.20E+01	Total:	4.96E-03
VOC:							
% Contribution to Media Hazard/Risk			15.30%		22.99%		44.51%

Exceeds Hazard! Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	1.53E+02	1.78E+01	1.15E-01

Analyte: Benzo[b]fluoranthene

CAS: 205-99-2

Concentration mg/kg :	3.90E+02	Calculated Hazard/Risk				
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child		Cancer
RfCi (mg/m3):		Ingestion:		Ingestion:		Ingestion: 2.55E-04
SFO (mg/kg-day)-1:	1.00E-01	Dermal:		Dermal:		Dermal: 8.50E-05
IUR (µg/m3)-1:	6.00E-05	Inhalation:		Inhalation:		Inhalation: 1.70E-08
Mutagen:	Y	Total:	0.00E+00	Total:	0.00E+00	Total: 3.40E-04
VOC:						
% Contribution to Media Hazard/Risk		0.00%		0.00%		3.05%

Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	1.15E+00

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Analyte: Benzo[k]fluoranthene
CAS: 207-08-9

Concentration mg/kg :	4.20E+02	Calculated Hazard/Risk			
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion:		Ingestion:	Ingestion: 2.74E-05
SFO (mg/kg-day)-1:	1.00E-02	Dermal:		Dermal:	Dermal: 9.15E-06
IUR (µg/m3)-1:	6.00E-06	Inhalation:		Inhalation:	Inhalation: 1.83E-09
Mutagen:	Y	Total:	0.00E+00	Total:	0.00E+00
VOC:		Total:		Total:	3.66E-05
% Contribution to Media Hazard/Risk		0.00%		0.00%	0.33%
Exceeds Risk!		mg/kg Non-Cancer Adult	Non-Cancer Child		Cancer
Recommended Acceptable Concentration		N/A		N/A	1.15E+01

Analyte: Biphenyl, 1,1'-
CAS: 92-52-4

Concentration mg/kg :	1.60E+02	Calculated Hazard/Risk					
RfDo (mg/kg-day):	5.00E-01	Non-Cancer Adult		Non-Cancer Child		Cancer	
RfCi (mg/m3):	4.00E-04	Ingestion:	3.84E-04	Ingestion:	4.09E-03	Ingestion:	1.84E-06
SFO (mg/kg-day)-1:	8.00E-03	Dermal:		Dermal:		Dermal:	
IUR (µg/m3)-1:		Inhalation:	3.36E+00	Inhalation:	3.36E+00	Inhalation:	
Mutagen:		Total:	3.37E+00	Total:	3.37E+00	Total:	1.84E-06
VOC:	Y						
% Contribution to Media Hazard/Risk			13.81%	2.42%		0.02%	
Exceeds Hazard! Exceeds Risk!		mg/kg	Non-Cancer Adult	Non-Cancer Child		Cancer	
Recommended Acceptable Concentration			4.75E+01	4.75E+01		8.69E+01	

Analyte: Cadmium (Diet)
CAS: 7440-43-9-Diet

Concentration mg/kg :	2.36E+01	Calculated Hazard/Risk					
RfDo (mg/kg-day):	1.00E-04	Non-Cancer Adult		Non-Cancer Child		Cancer	
RfCi (mg/m3):	1.00E-05	Ingestion:	2.83E-01	Ingestion:	3.02E+00	Ingestion:	
SFO (mg/kg-day)-1:		Dermal:	4.78E-02	Dermal:	2.86E-01	Dermal:	
IUR (µg/m3)-1:	1.80E-03	Inhalation:	1.66E-03	Inhalation:	1.66E-03	Inhalation:	1.11E-08
Mutagen:		Total:	3.32E-01	Total:	3.31E+00	Total:	1.11E-08
VOC:							
% Contribution to Media Hazard/Risk			1.36%	2.38%		0.00%	

Risk Based Performance Criteria			
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)	
1	1.00E-06	1.00E-04	

Soil

Exceeds Hazard!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	7.14E+00	N/A

Analyte: Chromium(VI)
CAS: 18540-29-9

Concentration mg/kg :	3.00E+01	Calculated Hazard/Risk			
RfDo (mg/kg-day):	3.00E-03	Non-Cancer Adult		Non-Cancer Child	
RfCi (mg/m3):	1.00E-04	Ingestion:	1.20E-02	Ingestion:	1.28E-01
SFO (mg/kg-day)-1:	5.00E-01	Dermal:		Dermal:	
IUR (µg/m3)-1:	8.40E-02	Inhalation:	2.12E-04	Inhalation:	2.12E-04
Mutagen:	Y	Total:	1.22E-02	Total:	1.28E-01
VOC:					
% Contribution to Media Hazard/Risk		0.05%		0.09%	

Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	3.01E-01

Analyte: Copper
CAS: 7440-50-8

Concentration mg/kg :	1.80E+03	Calculated Hazard/Risk			
RfDo (mg/kg-day):	4.00E-02	Non-Cancer Adult		Non-Cancer Child	
RfCi (mg/m3):		Ingestion:	5.39E-02	Ingestion:	5.75E-01
SFO (mg/kg-day)-1:		Dermal:		Dermal:	
IUR (µg/m3)-1:		Inhalation:		Inhalation:	
Mutagen:		Total:	5.39E-02	Total:	5.75E-01
VOC:					
% Contribution to Media Hazard/Risk		0.22%		0.41%	

	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	N/A

Risk Based Performance Criteria

Default Cumulative Risk (All Chemicals)
1.00E-04

CAS: 98-82-8

Concentration mg/kg :	1.90E+00	Calculated Hazard/Risk				
RfDo (mg/kg-day):	1.00E-01	Non-Cancer Adult		Non-Cancer Child		Cancer
RfCi (mg/m3):	4.00E-01	Ingestion:	2.28E-05	Ingestion:	2.43E-04	Ingestion:
SFO (mg/kg-day)-1:		Dermal:		Dermal:		Dermal:
IUR (µg/m3)-1:		Inhalation:	7.33E-04	Inhalation:	7.33E-04	Inhalation:
Mutagen:		Total:	7.56E-04	Total:	9.76E-04	Total:
VOC:	Y					0.00E+00
% Contribution to Media Hazard/Risk			0.00%		0.00%	0.00%

	mg/kg <i>Non-Cancer Adult</i>	<i>Non-Cancer Child</i>	<i>Cancer</i>
<i>Recommended Acceptable Concentration</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

CAS: 110-82-7

Concentration mg/kg :	1.90E+02	Calculated Hazard/Risk					
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child		Cancer	
RfCi (mg/m3):	6.00E+00	Ingestion:		Ingestion:		Ingestion:	
SFO (mg/kg-day)-1:		Dermal:		Dermal:		Dermal:	
IUR (µg/m3)-1:		Inhalation:		Inhalation:		Inhalation:	
Mutagen:		Total:		Total:		Total:	
VOC:	Y	2.92E-02		2.92E-02		0.00E+00	
% Contribution to Media Hazard/Risk		0.12%		0.02%		0.00%	

	mg/kg <i>Non-Cancer Adult</i>	<i>Non-Cancer Child</i>	<i>Cancer</i>
<i>Recommended Acceptable Concentration</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

CAS: 53-70-3

Concentration mg/kg :	1.30E+02	Calculated Hazard/Risk				
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child		Cancer
RfCi (mg/m3):		Ingestion:		Ingestion:		Ingestion: 8.49E-04
SFO (mg/kg-day)-1:	1.00E+00	Dermal:		Dermal:		Dermal: 2.83E-04
IUR (µg/m3)-1:	6.00E-04	Inhalation:		Inhalation:		Inhalation: 5.66E-08
Mutagen:	Y	Total:	0.00E+00	Total:	0.00E+00	Total: 1.13E-03
VOC:						
% Contribution to Media Hazard/Risk			0.00%	0.00%		10.15%

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	1.15E-01

Analyte: Dibenzofuran
CAS: 132-64-9

Concentration mg/kg :	6.00E+02	Calculated Hazard/Risk		
RfDo (mg/kg-day):	1.00E-03	Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion: 7.19E-01	Ingestion: 7.67E+00	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation:	Inhalation:	Inhalation:
Mutagen:		Total: 7.19E-01	Total: 7.67E+00	Total: 0.00E+00
VOC:	Y			
% Contribution to Media Hazard/Risk		2.95%	5.51%	0.00%

Exceeds Hazard!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	7.82E+01	N/A

Analyte: Fluoranthene
CAS: 206-44-0

Concentration mg/kg :	1.60E+03	Calculated Hazard/Risk		
RfDo (mg/kg-day):	4.00E-02	Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion: 4.79E-02	Ingestion: 5.11E-01	Ingestion:
SFO (mg/kg-day)-1:		Dermal: 2.63E-02	Dermal: 1.58E-01	Dermal:
IUR (µg/m3)-1:		Inhalation:	Inhalation:	Inhalation:
Mutagen:		Total: 7.43E-02	Total: 6.69E-01	Total: 0.00E+00
VOC:				
% Contribution to Media Hazard/Risk		0.30%	0.48%	0.00%

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Analyte: Fluorene
CAS: 86-73-7

Concentration mg/kg : 8.00E+02 RfDo (mg/kg-day): 4.00E-02 RfCi (mg/m3): SFO (mg/kg-day)-1: IUR (µg/m3)-1: Mutagen: VOC: Y	Calculated Hazard/Risk		
	Non-Cancer Adult	Non-Cancer Child	Cancer
	Ingestion: 2.40E-02	Ingestion: 2.56E-01	Ingestion:
	Dermal: 1.32E-02	Dermal: 7.89E-02	Dermal:
	Inhalation:	Inhalation:	Inhalation:
	Total: 3.71E-02	Total: 3.35E-01	Total: 0.00E+00
	% Contribution to Media Hazard/Risk		
			0.15%0.24%0.00%
mg/kg			
Non-Cancer Adult	Non-Cancer Child	Cancer	
Recommended Acceptable Concentration	N/A	N/A	

Analyte: Indeno[1,2,3-cd]pyrene
CAS: 193-39-5

Concentration mg/kg :	2.80E+02	Calculated Hazard/Risk				
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child		Cancer
RfCi (mg/m3):		Ingestion:		Ingestion:		Ingestion: 1.83E-04
SFO (mg/kg-day)-1:	1.00E-01	Dermal:		Dermal:		Dermal: 6.10E-05
IUR (µg/m3)-1:	6.00E-05	Inhalation:		Inhalation:		Inhalation: 1.22E-08
Mutagen:	Y	Total:	0.00E+00	Total:	0.00E+00	Total: 2.44E-04
VOC:						
% Contribution to Media Hazard/Risk		0.00%		0.00%		2.19%
Exceeds Risk!		mg/kg Non-Cancer Adult		Non-Cancer Child		Cancer
Recommended Acceptable Concentration		N/A		N/A		1.15E+00

Analyte: Lead and Compounds
CAS: 7439-92-1

Concentration mg/kg : 2.20E+03 RfDo (mg/kg-day): RfCi (mg/m3): SFO (mg/kg-day)-1: IUR (µg/m3)-1: Mutagen: VOC:	Calculated Hazard/Risk		
	Non-Cancer Adult	Non-Cancer Child	Cancer
	Ingestion:	Ingestion:	Ingestion:
	Dermal:	Dermal:	Dermal:
	Inhalation:	Inhalation:	Inhalation:
	Total: 0.00E+00	Total: 0.00E+00	Total: 0.00E+00
	% Contribution to Media Hazard/Risk		
			0.00%0.00%0.00%

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Analyte: Mercury (elemental)
CAS: 7439-97-6

Concentration mg/kg :	7.51E+01	Calculated Hazard/Risk		
RfDo (mg/kg-day):		Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):	3.00E-04	Ingestion:	Ingestion:	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation:	Inhalation:	Inhalation:
Mutagen:		Total:	Total:	Total:
VOC:	Y	6.92E+00	6.92E+00	0.00E+00
% Contribution to Media Hazard/Risk		28.38%	4.97%	0.00%

Exceeds Hazard!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	1.09E+01	1.09E+01	N/A

Analyte: Methylnaphthalene, 2-
CAS: 91-57-6

Concentration mg/kg :	1.60E+01	Calculated Hazard/Risk		
RfDo (mg/kg-day):	4.00E-03	Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion:	Ingestion:	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation:	Inhalation:	Inhalation:
Mutagen:		Total:	Total:	Total:
VOC:	Y	7.43E-03	6.69E-02	0.00E+00
% Contribution to Media Hazard/Risk		0.03%	0.05%	0.00%

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Analyte: Naphthalene
CAS: 91-20-3

Concentration mg/kg :		Calculated Hazard/Risk			
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child	
RfCi (mg/m3):		Ingestion: 3.72E-03		Ingestion: 3.96E-02	
SFO (mg/kg-day)-1:		Dermal: 2.04E-03		Dermal: 1.22E-02	
IUR (µg/m3)-1:		Inhalation: 4.28E-01		Inhalation: 4.28E-01	
Mutagen:		Total: 4.34E-01		Total: 4.80E-01	
VOC:		Y		Total: 3.08E-05	
% Contribution to Media Hazard/Risk		1.78%		0.34%	
Exceeds Risk!		mg/kg Non-Cancer Adult		Non-Cancer Child	
Recommended Acceptable Concentration		N/A		N/A	
				Cancer	
				2.01E+00	

Analyte: Phenanthrene
CAS: 85-01-8

Concentration mg/kg :		Calculated Hazard/Risk			
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child	
RfCi (mg/m3):		Ingestion: 8.39E-02		Ingestion: 8.95E-01	
SFO (mg/kg-day)-1:		Dermal: 4.61E-02		Dermal: 2.76E-01	
IUR (µg/m3)-1:		Inhalation:		Inhalation:	
Mutagen:		Total: 1.30E-01		Total: 1.17E+00	
VOC:		Y		Total: 0.00E+00	
% Contribution to Media Hazard/Risk		0.53%		0.84%	
Exceeds Hazard!		mg/kg Non-Cancer Adult		Non-Cancer Child	
Recommended Acceptable Concentration		N/A		1.79E+03	
				Cancer	
				N/A	

Analyte: Pyrene
CAS: 129-00-0

Concentration mg/kg :		Calculated Hazard/Risk			
RfDo (mg/kg-day):		Non-Cancer Adult		Non-Cancer Child	
RfCi (mg/m3):		Ingestion: 5.19E-02		Ingestion: 5.54E-01	
SFO (mg/kg-day)-1:		Dermal: 2.85E-02		Dermal: 1.71E-01	
IUR (µg/m3)-1:		Inhalation:		Inhalation:	
Mutagen:		Total: 8.05E-02		Total: 7.25E-01	
VOC:		Y		Total: 0.00E+00	
% Contribution to Media Hazard/Risk		0.33%		0.52%	

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Analyte: Selenium
CAS: 7782-49-2

Concentration mg/kg :		Calculated Hazard/Risk		
		Non-Cancer Adult	Non-Cancer Child	Cancer
RfDo (mg/kg-day):	5.00E-03			
RfCi (mg/m3):	2.00E-02	Ingestion: 2.88E-03	Ingestion: 3.07E-02	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation: 4.23E-07	Inhalation: 4.23E-07	Inhalation:
Mutagen:		Total: 2.88E-03	Total: 3.07E-02	Total: 0.00E+00
VOC:				
% Contribution to Media Hazard/Risk		0.01%	0.02%	0.00%

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Analyte: Silver
CAS: 7440-22-4

Concentration mg/kg :		Calculated Hazard/Risk		
		Non-Cancer Adult	Non-Cancer Child	Cancer
RfDo (mg/kg-day):	5.00E-03			
RfCi (mg/m3):		Ingestion: 3.84E-03	Ingestion: 4.09E-02	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation:	Inhalation:	Inhalation:
Mutagen:		Total: 3.84E-03	Total: 4.09E-02	Total: 0.00E+00
VOC:				
% Contribution to Media Hazard/Risk		0.02%	0.03%	0.00%

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Analyte: TCDD, 2,3,7,8-
CAS: 1746-01-6

Concentration mg/kg :		Calculated Hazard/Risk			
		Non-Cancer Adult		Non-Cancer Child	Cancer
RfDo (mg/kg-day):	7.00E-10	Ingestion:	2.12E-02	Ingestion:	2.32E-06
RfCi (mg/m3):	4.00E-08	Dermal:	2.69E-03	Dermal:	1.96E-07
SFO (mg/kg-day)-1:	1.30E+05	Inhalation:	1.52E-04	Inhalation:	8.57E-08
IUR (µg/m3)-1:	3.80E+01	Total:	2.41E-02	Total:	2.60E-06
Mutagen:					
VOC:	Y				
% Contribution to Media Hazard/Risk		0.10%		0.17%	0.02%

Exceeds Risk!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	4.77E-06

Analyte: Tetrachloroethylene
CAS: 127-18-4

Concentration mg/kg :		Calculated Hazard/Risk			
		Non-Cancer Adult		Non-Cancer Child	Cancer
RfDo (mg/kg-day):	6.00E-03	Ingestion:	7.59E-04	Ingestion:	1.15E-08
RfCi (mg/m3):	4.00E-02	Dermal:		Dermal:	
SFO (mg/kg-day)-1:	2.10E-03	Inhalation:	3.88E-02	Inhalation:	1.50E-07
IUR (µg/m3)-1:	2.60E-07	Total:	3.95E-02	Total:	1.61E-07
Mutagen:					
VOC:	Y				
% Contribution to Media Hazard/Risk		0.16%		0.03%	0.00%

	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	N/A

Analyte: Thallium (Soluble Salts)
CAS: 7440-28-0

Concentration mg/kg :		Calculated Hazard/Risk			
		Non-Cancer Adult		Non-Cancer Child	Cancer
RfDo (mg/kg-day):	1.00E-05	Ingestion:	7.79E-01	Ingestion:	
RfCi (mg/m3):		Dermal:		Dermal:	
SFO (mg/kg-day)-1:		Inhalation:		Inhalation:	
IUR (µg/m3)-1:		Total:	7.79E-01	Total:	0.00E+00
Mutagen:					
VOC:					
% Contribution to Media Hazard/Risk		3.20%		5.97%	0.00%

Risk Based Performance Criteria			
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)	
1	1.00E-06	1.00E-04	

Soil

Exceeds Hazard!	mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	7.82E-01	N/A

Analyte: Trimethylbenzene, 1,2,4-
CAS: 95-63-6

Concentration mg/kg :	1.05E+00	Calculated Hazard/Risk			
RfDo (mg/kg-day):	1.00E-02	Non-Cancer Adult		Non-Cancer Child	
RfCi (mg/m3):	6.00E-02	Ingestion: 1.26E-04		Ingestion: 1.34E-03	
SFO (mg/kg-day)-1:		Dermal:		Dermal:	
IUR (µg/m3)-1:		Inhalation: 2.12E-03		Inhalation: 2.12E-03	
Mutagen:		Total: 2.25E-03		Total: 3.46E-03	
VOC:	Y			Total: 0.00E+00	
% Contribution to Media Hazard/Risk		0.01%		0.00%	

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Analyte: Trimethylbenzene, 1,3,5-
CAS: 108-67-8

Concentration mg/kg :	1.87E+00	Calculated Hazard/Risk			
RfDo (mg/kg-day):	1.00E-02	Non-Cancer Adult		Non-Cancer Child	
RfCi (mg/m3):	6.00E-02	Ingestion: 2.24E-04		Ingestion: 2.39E-03	
SFO (mg/kg-day)-1:		Dermal:		Dermal:	
IUR (µg/m3)-1:		Inhalation: 4.52E-03		Inhalation: 4.52E-03	
Mutagen:		Total: 4.75E-03		Total: 6.91E-03	
VOC:	Y			Total: 0.00E+00	
% Contribution to Media Hazard/Risk		0.02%		0.00%	

mg/kg Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

Analyte: Xylene, m-
CAS: 108-38-3

Concentration mg/kg :		Calculated Hazard/Risk		
RfDo (mg/kg-day):		Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion: 1.08E-04	Ingestion: 1.15E-03	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation: 3.16E-02	Inhalation: 3.16E-02	Inhalation:
Mutagen:		Total: 3.17E-02	Total: 3.27E-02	Total: 0.00E+00
VOC:		Y		
% Contribution to Media Hazard/Risk		0.13%	0.02%	0.00%
mg/kg		Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration		N/A	N/A	N/A

Analyte: Xylene, o-
CAS: 95-47-6

Concentration mg/kg :		Calculated Hazard/Risk		
RfDo (mg/kg-day):		Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion: 4.37E-05	Ingestion: 4.67E-04	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation: 1.09E-02	Inhalation: 1.09E-02	Inhalation:
Mutagen:		Total: 1.09E-02	Total: 1.13E-02	Total: 0.00E+00
VOC:		Y		
% Contribution to Media Hazard/Risk		0.04%	0.01%	0.00%
mg/kg		Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration		N/A	N/A	N/A

Analyte: Zinc and Compounds
CAS: 7440-66-6

Concentration mg/kg :		Calculated Hazard/Risk		
RfDo (mg/kg-day):		Non-Cancer Adult	Non-Cancer Child	Cancer
RfCi (mg/m3):		Ingestion: 2.88E-02	Ingestion: 3.07E-01	Ingestion:
SFO (mg/kg-day)-1:		Dermal:	Dermal:	Dermal:
IUR (µg/m3)-1:		Inhalation:	Inhalation:	Inhalation:
Mutagen:		Total: 2.88E-02	Total: 3.07E-01	Total: 0.00E+00
VOC:				
% Contribution to Media Hazard/Risk		0.12%	0.22%	0.00%

Risk Based Performance Criteria		
Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Soil

mg/kg	Non-Cancer Adult	Non-Cancer Child	Cancer
Recommended Acceptable Concentration	N/A	N/A	N/A

Total Calculated Hazard Index/Risk for Soil

Non-Cancer Adult		Non-Cancer Child		Cancer	
Ingestion:	1.05E+01	Ingestion:	1.12E+02	Ingestion:	8.83E-03
Dermal:	2.70E+00	Dermal:	1.62E+01	Dermal:	2.29E-03
Inhalation:	1.12E+01	Inhalation:	1.12E+01	Inhalation:	3.46E-05
Total:	2.44E+01	Total:	1.39E+02	Total:	1.12E-02

Program: Voluntary Remediation Program (VRP)

Risk Based Performance Criteria

Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

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Summary Report Follows

Report Summary

Hazard/risk values of zero (0.00+00) are reflective of non-calculated values. Hazard/risk for zero value analytes must be evaluated outside of quantitative risk assessment.

Hazard/Risk Summary for Soil

Analyte	CAS	Hazard Adult	Hazard Child	Risk
Acenaphthene	83-32-9	2.63E-02	2.37E-01	0.00E+00
Acenaphthylene	208-96-8	3.22E-03	2.90E-02	0.00E+00
Anthracene	120-12-7	4.83E-03	4.35E-02	0.00E+00
Antimony (metallic)	7440-36-0	5.40E-02	5.75E-01	0.00E+00
Arsenic, Inorganic	7440-38-2	7.38E+00	7.16E+01	3.69E-03
Benz[a]anthracene	56-55-3	0.00E+00	0.00E+00	6.01E-04
Benzene	71-43-2	4.78E-02	6.26E-02	4.42E-06
Benzo(g,h,i)perylene	191-24-2	1.18E-02	1.06E-01	0.00E+00
Benzo[a]pyrene	50-32-8	3.73E+00	3.20E+01	4.96E-03
Benzo[b]fluoranthene	205-99-2	0.00E+00	0.00E+00	3.40E-04
Benzo[k]fluoranthene	207-08-9	0.00E+00	0.00E+00	3.66E-05
Biphenyl, 1,1'-	92-52-4	3.37E+00	3.37E+00	1.84E-06
Cadmium (Diet)	7440-43-9-Diet	3.32E-01	3.31E+00	1.11E-08
Chromium(VI)	18540-29-9	1.22E-02	1.28E-01	9.98E-05
Copper	7440-50-8	5.39E-02	5.75E-01	0.00E+00
Cumene	98-82-8	7.56E-04	9.76E-04	0.00E+00
Cyclohexane	110-82-7	2.92E-02	2.92E-02	0.00E+00
Dibenz[a,h]anthracene	53-70-3	0.00E+00	0.00E+00	1.13E-03
Dibenzofuran	132-64-9	7.19E-01	7.67E+00	0.00E+00
Fluoranthene	206-44-0	7.43E-02	6.69E-01	0.00E+00
Fluorene	86-73-7	3.71E-02	3.35E-01	0.00E+00
Indeno[1,2,3-cd]pyrene	193-39-5	0.00E+00	0.00E+00	2.44E-04
Lead and Compounds	7439-92-1	0.00E+00	0.00E+00	0.00E+00
Mercury (elemental)	7439-97-6	6.92E+00	6.92E+00	0.00E+00
Methylnaphthalene, 2-	91-57-6	7.43E-03	6.69E-02	0.00E+00
Naphthalene	91-20-3	4.34E-01	4.80E-01	3.08E-05
Phenanthrene	85-01-8	1.30E-01	1.17E+00	0.00E+00
Pyrene	129-00-0	8.05E-02	7.25E-01	0.00E+00
Selenium	7782-49-2	2.88E-03	3.07E-02	0.00E+00
Silver	7440-22-4	3.84E-03	4.09E-02	0.00E+00
TCDD, 2,3,7,8-	1746-01-6	2.41E-02	2.43E-01	2.60E-06
Tetrachloroethylene	127-18-4	3.95E-02	4.69E-02	1.61E-07

Risk Based Performance Criteria

Default Hazard Index	Default Risk for Individual Chemical	Default Cumulative Risk (All Chemicals)
1	1.00E-06	1.00E-04

Hazard/Risk Summary for Soil

Analyte	CAS	Hazard Adult	Hazard Child	Risk
Thallium (Soluble Salts)	7440-28-0	7.79E-01	8.31E+00	0.00E+00
Trimethylbenzene, 1,2,4-	95-63-6	2.25E-03	3.46E-03	0.00E+00
Trimethylbenzene, 1,3,5-	108-67-8	4.75E-03	6.91E-03	0.00E+00
Xylene, m-	108-38-3	3.17E-02	3.27E-02	0.00E+00
Xylene, o-	95-47-6	1.09E-02	1.13E-02	0.00E+00
Zinc and Compounds	7440-66-6	2.88E-02	3.07E-01	0.00E+00

Total Hazard Index/Risk for All Media

Non-Cancer Adult		Non-Cancer Child		Cancer	
Ingestion:	1.05E+01	Ingestion:	1.12E+02	Ingestion:	8.83E-03
Dermal:	2.70E+00	Dermal:	1.62E+01	Dermal:	2.29E-03
Inhalation:	1.12E+01	Inhalation:	1.12E+01	Inhalation:	3.46E-05
Total:	2.44E+01	Total:	1.39E+02	Total:	1.12E-02
Exceeds Hazard Index!		Exceeds Hazard Index!		Exceeds Cumulative Risk!	

Residential Exposure Default Values

Symbol	Description	Value	Units
AF0-02	Soil Adherence Factor - age segment 0-2	0.2	(mg/cm2)
AF02-06	Soil Adherence Factor - age segment 2-6	0.2	(mg/cm2)
AF06-16	Soil Adherence Factor - age segment 6-16	0.07	(mg/cm2)
AF16-26	Soil Adherence Factor - age segment 16-26	0.07	(mg/cm2)
AFres-a	Resident Soil Adherence Factor - adult	0.07	(mg/cm2)
AFres-c	Resident Soil Adherence Factor - child	0.2	(mg/cm2)
ATr	Resident Averaging Time	365	(days/yr)
ATres	Resident Averaging Time: 365 x LT	25550	(days)
ATres-a	Resident Averaging Time - adult: 365 x EDres	9490	(days)
ATres-c	Resident Averaging Time - child: 365 x EDres-c	2190	(days)
BW0-02	Body Weight - age segment 0-2	15	(kg)

Program: Voluntary Remediation Program (VRP)

Risk Based Performance Criteria

Default Hazard Index

Default Risk for Individual Chemical

Default Cumulative Risk (All Chemicals)

1

1.00E-06

1.00E-04

BW02-06	Body Weight - age segment 2-6	15	(kg)
BW06-16	Body Weight - age segment 6-16	80	(kg)
BW16-26	Body Weight - age segment 16-26	80	(kg)
BWres-a	Resident Body Weight - adult	80	(kg)
BWres-c	Resident Body Weight - child	15	(kg)
DFSMres-adj	Resident Soil Mutagenic Dermal Contact Factor - age adjusted	428260	(mg/kg)
DFSres-adj	Resident Soil Dermal Contact Factor - age adjusted	103390	(mg/kg)
DFWMres-adj	Resident Groundwater Mutagenic Dermal Contact Factor - age adjusted	8191633.33333333	(cm2-event/kg)
DFWres-adj	Resident Groundwater Dermal Contact Factor - age adjusted	2610650	(cm2-event/kg)
ED0-02	Exposure Duration - age segment 0-2	2	(yrs)
ED02-06	Exposure Duration - age segment 2-6	4	(yrs)
ED06-16	Exposure Duration - age segment 6-16	10	(yrs)
ED16-26	Exposure Duration - age segment 16-26	10	(yrs)
EDres	Resident Total Exposure Duration	26	(yrs)
EDres-a	Resident Exposure Duration - adult	20	(yrs)
EDres-c	Resident Exposure Duration - child	6	(yrs)
EFres	Resident Exposure Frequency	350	(days/yr)
EFres0-02	Resident Exposure Frequency - age segment 0-2	350	(days/yr)
EFres02-06	Resident Exposure Frequency - age segment 2-6	350	(days/yr)
EFres06-16	Resident Exposure Frequency - age segment 6-16	350	(days/yr)
EFres16-26	Resident Exposure Frequency - age segment 16-26	350	(days/yr)
EFres-a	Resident Exposure Frequency - adult	350	(days/yr)
EFres-c	Resident Exposure Frequency - child	350	(days/yr)
ETevent-res(0-02)	Resident Water Exposure Time - age segment 0-2	0.54	(hrs/event)
ETevent-res(02-06)	Resident Water Exposure Time - age segment 2-6	0.54	(hrs/event)
ETevent-res(06-16)	Resident Water Exposure Time - age segment 6-16	0.71	(hrs/event)

Program: Voluntary Remediation Program (VRP)

Risk Based Performance Criteria

Default Hazard Index

Default Risk for Individual Chemical

Default Cumulative Risk (All Chemicals)

1

1.00E-06

1.00E-04

ETevent-res(16-26)	Resident Water Exposure Time - age segment 16-26	0.71	(hrs/event)
ETevent-res-a	Resident Groundwater Exposure Time -adult	0.71	(hrs/event)
ETevent-res-adj	Resident Water Exposure Time -age adjusted	0.670769230769231	(hrs/event)
ETevent-res-c	Resident Groundwater Exposure Time - child	0.54	(hrs/event)
ETevent-res-madj	Resident Water Exposure Time - mutagen age adjusted	0.670769230769231	(hrs/event)
ETrai	Resident Air Inhalation Exposure Time	24	(hrs/day)
ETres	Resident Soil Exposure Time	24	(hrs/day)
ETres0-02	Resident Exposure Time - age segment 0-2	24	(hrs/day)
ETres02-06	Resident Exposure Time - age segment 2-6	24	(hrs/day)
ETres06-16	Resident Exposure Time - age segment 6-16	24	(hrs/day)
ETres16-26	Resident Exposure Time - age segment 16-26	24	(hrs/day)
ETres-a	Resident Exposure Time - adult	24	(hrs/day)
ETres-c	Resident Exposure Time - child	24	(hrs/day)
ETres-gwi	Resident Groundwater Inhalation Exposure Time	24	(hrs/day)
EVres-a	Resident Groundwater Events - adult	1	(events/day)
EVres-c	Resident Groundwater Events - child	1	(events/day)
IFSMres-adj	Resident Mutagenic Soil Ingestion Rate - age adjusted	166833.333333333	(mg/kg)
IFSres-adj	Resident Soil Ingestion Rate - age adjusted	36750	(mg/kg)
IFWMres-adj	Resident Mutagenic Drinking Groundwater Ingestion Rate - age adjusted	1019.9	(L/kg)
IFWres-adj	Resident Drinking Groundwater Ingestion Rate - age adjusted	327.95	(L/kg)
INHMres-ai-adj	Resident Air Inhalation Exposure Duration Mutagen - age adjusted	604800	(hrs)
INHMres-gw-adj	Resident Groundwater Inhalation Exposure Duration Mutagen - age adjusted	25200	(days)
INHMres-s-adj	Resident Soil Inhalation Exposure Duration Mutagen - age adjusted	25200	(days)
IREres-a	Resident Food Eggs Ingestion Rate - Virginia DEQ	150000	(mg/day)
IRFres-a	Resident Food Fish/Shellfish Ingestion Rate - Exposure Defaults Handbook	54000	(mg/day)
IRFVres-a	Resident Food Fruit/Vegetables Ingestion Rate - Exposure Defaults Handbook	122000	(mg/day)

Program: Voluntary Remediation Program (VRP)

Risk Based Performance Criteria

Default Hazard Index

Default Risk for Individual Chemical

Default Cumulative Risk (All Chemicals)

1

1.00E-06

1.00E-04

IRMDres-a	Resident Food Meat/Dairy - Virginia DEQ	280000	(mg/day)
IRS0-02	Soil/Sediment Ingestion Rate - age segment 0-2	200	(mg/day)
IRS02-06	Soil/Sediment Ingestion Rate - age segment 2-6	200	(mg/day)
IRS06-16	Soil/Sediment Ingestion Rate - age segment 6-16	100	(mg/day)
IRS16-26	Soil/Sediment Ingestion Rate - age segment 16-26	100	(mg/day)
IRSres-a	Resident Soil Ingestion Rate - adult	100	(mg/day)
IRSres-c	Resident Soil Ingestion Rate - child	200	(mg/day)
IRW0-02	Drinking Water Ingestion Rate - age segment 0-2	0.78	(L/day)
IRW02-06	Drinking Water Ingestion Rate - age segment 2-6	0.78	(L/day)
IRW06-16	Drinking Water Ingestion Rate - age segment 6-16	2.5	(L/day)
IRW16-26	Drinking Water Ingestion Rate - age segment 16-26	2.5	(L/day)
IRWres-a	Resident Drinking Groundwater Ingestion Rate - adult	2.5	(L/day)
IRWres-c	Resident Drinking Groundwater Ingestion Rate - child	0.78	(L/day)
SAres-a	Resident Soil Surface Area - adult	6032	(cm ² /day)
SAres-a	Resident Water Surface Area - adult	19652	(cm ²)
SAres-c	Resident Water Surface Area - child	6365	(cm ²)
SAres-c	Resident Soil Surface Area - child	2373	(cm ² /day)
SAs0-02	Surface Area Soil/Sediment - age segment 0-2	2373	(cm ² /day)
SAs02-06	Surface Area Soil/Sediment - age segment 2-6	2373	(cm ² /day)
SAs06-16	Surface Area Soil/Sediment - age segment 6-16	6032	(cm ² /day)
SAs16-26	Surface Area Soil/Sediment - age segment 16-26	6032	(cm ² /day)
SAw0-02	Surface Area Water - age segment 0-2	6365	(cm ²)
SAw02-06	Surface Area Water - age segment 2-6	6365	(cm ²)
SAw06-16	Surface Area Water - age segment 6- 16	19652	(cm ²)
SAw16-26	Surface Area Water - age segment 16- 26	19652	(cm ²)

END OF REPORT

ATTACHMENT 2

VAPOR INTRUSION SCREENING LEVEL OUTPUT

Resident Air Inputs

1

Variable	Resident Air Default Value	Site-Specific Value
AF _{gw} (Attenuation Factor Groundwater) unitless	0.001	0.001
AF _{ee} (Attenuation Factor Sub-Slab) unitless	0.03	0.03
ED _{res} (exposure duration) years	26	26
ED ₁₋₃ (mutagenic exposure duration first phase) years	2	2
ED ₃₋₆ (mutagenic exposure duration second phase) years	4	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) years	10	10
ED ₁₆₋₇₆ (mutagenic exposure duration fourth phase) years	10	10
EF _{res} (exposure frequency) days/year	350	350
EF ₁₋₃ (mutagenic exposure frequency first phase) days/year	350	350
EF ₃₋₆ (mutagenic exposure frequency second phase) days/year	350	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/year	350	350
EF ₁₆₋₇₆ (mutagenic exposure frequency fourth phase) days/year	350	350
ET _{res} (exposure time) hours/day	24	24
ET ₁₋₃ (mutagenic exposure time first phase) hours/day	24	24
ET ₃₋₆ (mutagenic exposure time second phase) hours/day	24	24
ET ₆₋₁₆ (mutagenic exposure time third phase) hours/day	24	24
ET ₁₆₋₇₆ (mutagenic exposure time fourth phase) hours/day	24	24
THQ (target hazard quotient) unitless	0.1	0.1
LT (lifetime) years	70	70
TR (target risk) unitless	1.0E-06	1.0E-06

Resident Vapor Intrusion Screening Levels (VISL)

2

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? (C _{vp} > C _{ia} ,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? (C _{hc} > C _{ia} ,Target?)	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN(C _{ia,c} ,C _{ia,nc}) (µg/m ³)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C _{sg} ,Target (µg/m ³)	Target Groundwater Concentration (TCR=1E-06 or THQ=0.1) C _{gw} ,Target (µg/L)
Benz[a]anthracene	56-55-3	Yes	Yes	Yes	Yes	1.69E-02	CA	5.63E-01	3.44E+01
Benzene	71-43-2	Yes	Yes	Yes	Yes	3.60E-01	CA	1.20E+01	1.59E+00
Biphenyl, 1,1'-	92-52-4	Yes	Yes	Yes	Yes	4.17E-02	NC	1.39E+00	3.31E+00
Chloroform	67-66-3	Yes	Yes	Yes	Yes	1.22E-01	CA	4.07E+00	8.14E-01
Chlorophenol, 2-	95-57-8	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Cyclohexane	110-82-7	Yes	Yes	Yes	Yes	6.26E+02	NC	2.09E+04	1.02E+02
Dibenzofuran	132-64-9	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Fluorene	86-73-7	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Methylnaphthalene, 2-	91-57-6	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Naphthalene	91-20-3	Yes	Yes	Yes	Yes	8.26E-02	CA	2.75E+00	4.59E+00
Phenanthrene	85-01-8	Yes	No	No Inhal. Tox. Info	No Inhal. Tox. Info	-		-	-
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	Yes	4.17E+00	NC	1.39E+02	5.76E+00
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	2.09E-01	NC	6.95E+00	5.18E-01
Xylene, m-	108-38-3	Yes	Yes	Yes	Yes	1.04E+01	NC	3.48E+02	3.55E+01
Xylene, o-	95-47-6	Yes	Yes	Yes	Yes	1.04E+01	NC	3.48E+02	4.92E+01

Resident Vapor Intrusion Screening Levels (VISL)

3

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Is Target Groundwater Concentration < MCL? (C _{gw} < MCL?)	Pure Phase Vapor Concentration C _{vp} \ (25 °C) \ (μg/m ³)	Maximum Groundwater Vapor Concentration C _{hc} \ (μg/m ³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m ³) ⁻¹	IUR Ref	RfC (mg/m ³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 C _{ia,c} (μg/m ³)	Noncarcinogenic VISL THQ=0.1 C _{ia,nc} (μg/m ³)
--	2.58E+00	4.61E+00	25	-		6.00E-05	E	-		Mut	1.69E-02	-
Yes (5)	3.98E+08	4.06E+08	25	1.20	CRC	7.80E-06	I	3.00E-02	I	No	3.60E-01	3.13E+00
--	7.41E+04	9.42E+04	25	0.60	CRC	-		4.00E-04	X	No	-	4.17E-02
Yes (80)	1.26E+09	1.19E+09	25	-		2.30E-05	I	1.95E-03	A	No	1.22E-01	2.03E-01
	1.75E+07	5.17E+06	25	1.70	YAWS	-		-		No	-	-
--	4.38E+08	3.37E+08	25	1.30	CRC	-		6.00E+00	I	No	-	6.26E+02
	2.24E+04	2.70E+04	25	0.80	YAWS	-		-		No	-	-
	5.36E+03	6.65E+03	25	0.70	YAWS	-		-		No	-	-
	4.21E+05	5.21E+05	25	0.80	YAWS	-		-		No	-	-
--	5.86E+05	5.58E+05	25	0.90	CRC	3.40E-05	C	3.00E-03	I	No	8.26E-02	3.13E-01
	1.16E+03	1.99E+03	25	0.70	YAWS	-		-		No	-	-
No (5)	1.65E+08	1.49E+08	25	-		2.60E-07	I	4.00E-02	I	No	1.08E+01	4.17E+00
Yes (5)	4.88E+08	5.15E+08	25	8.00	CRC	4.10E-06	I	2.00E-03	I	Mut	4.78E-01	2.09E-01
--	4.73E+07	4.73E+07	25	1.10	CRC	-		1.00E-01	G	No	-	1.04E+01
--	3.77E+07	3.77E+07	25	0.90	CRC	-		1.00E-01	G	No	-	1.04E+01

Resident Vapor Intrusion Risk

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Chemical	CAS Number	Site Groundwater Concentration C_{gw} (\(\mu\text{g/L}\))	Site Indoor Air Concentration C_{ia} (\(\mu\text{g/m}^3\))	VI Carcinogenic Risk CDI (\(\mu\text{g/m}^3\))	VI Carcinogenic Risk CR	VI Hazard CDI (\(\text{mg/m}^3\))	VI Hazard HQ	IUR (\(\text{ug/m}^3\))^{-1}
Benz[a]anthracene	56-55-3	0.41	2.01E-04	1.98E-04	1.19E-08	1.93E-07	-	6.00E-05
Benzene	71-43-2	630	1.43E+02	5.09E+01	3.97E-04	1.37E-01	4.57E+00	7.80E-06
Biphenyl, 1,1'-	92-52-4	29	3.65E-01	1.30E-01	-	3.50E-04	8.75E-01	-
Chloroform	67-66-3	63	9.45E+00	3.37E+00	7.74E-05	9.06E-03	4.65E+00	2.30E-05
Chlorophenol, 2-	95-57-8	47	-	-	-	-	-	-
Cyclohexane	110-82-7	1600	9.81E+03	3.49E+03	-	9.41E+00	1.57E+00	-
Dibenzofuran	132-64-9	28	-	-	-	-	-	-
Fluorene	86-73-7	35	-	-	-	-	-	-
Methylnaphthalene, 2-	91-57-6	270	-	-	-	-	-	-
Naphthalene	91-20-3	1900	3.42E+01	1.22E+01	4.14E-04	3.28E-02	1.09E+01	3.40E-05
Phenanthrene	85-01-8	34	-	-	-	-	-	-
Tetrachloroethylene	127-18-4	76	5.50E+01	1.96E+01	5.09E-06	5.27E-02	1.32E+00	2.60E-07
Trichloroethylene	79-01-6	27	1.09E+01	5.54E+00	2.27E-05	1.04E-02	5.21E+00	4.10E-06
Xylene, m-	108-38-3	250	7.34E+01	2.61E+01	-	7.04E-02	7.04E-01	-
Xylene, o-	95-47-6	77	1.63E+01	5.81E+00	-	1.56E-02	1.56E-01	-
*Sum		-	-	-	9.16E-04	-	3.00E+01	-

IUR Ref	Chronic RfC (mg/m³)	RfC Ref	Temperature (°C)\ for Groundwater Vapor Concentration	Mutagen?
E	-		25	Mut
I	3.00E-02	I	25	No
	4.00E-04	X	25	No
I	1.95E-03	A	25	No
	-		25	No
	6.00E+00	I	25	No
	-		25	No
	-		25	No
	-		25	No
C	3.00E-03	I	25	No
	-		25	No
I	4.00E-02	I	25	No
I	2.00E-03	I	25	Mut
	1.00E-01	G	25	No
	1.00E-01	G	25	No
	-		-	

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)	HLC (atm-m ³ /mole)
Benz[a]anthracene	56-55-3	Yes	Yes	228.30	PHYSPROP	2.10E-07	PHYSPROP	9.40E-03	PHYSPROP	-	1.20E-05
Benzene	71-43-2	Yes	Yes	78.12	PHYSPROP	9.48E+01	PHYSPROP	1.79E+03	PHYSPROP	5	5.55E-03
Biphenyl, 1,1'-	92-52-4	Yes	Yes	154.21	PHYSPROP	8.93E-03	PHYSPROP	7.48E+00	PHYSPROP	-	3.08E-04
Chloroform	67-66-3	Yes	Yes	119.38	PHYSPROP	1.97E+02	PHYSPROP	7.95E+03	PHYSPROP	80	3.67E-03
Chlorophenol, 2-	95-57-8	Yes	No	128.56	PHYSPROP	2.53E+00	PHYSPROP	1.13E+04	PHYSPROP	-	1.12E-05
Cyclohexane	110-82-7	Yes	Yes	84.16	PHYSPROP	9.69E+01	PHYSPROP	5.50E+01	PHYSPROP	-	1.50E-01
Dibenzofuran	132-64-9	Yes	No	168.20	PHYSPROP	2.48E-03	PHYSPROP	3.10E+00	PHYSPROP	-	2.13E-04
Fluorene	86-73-7	Yes	No	166.22	PHYSPROP	6.00E-04	PHYSPROP	1.69E+00	PHYSPROP	-	9.62E-05
Methylnaphthalene, 2-	91-57-6	Yes	No	142.20	PHYSPROP	5.50E-02	PHYSPROP	2.46E+01	PHYSPROP	-	5.18E-04
Naphthalene	91-20-3	Yes	Yes	128.18	PHYSPROP	8.50E-02	PHYSPROP	3.10E+01	PHYSPROP	-	4.40E-04
Phenanthrene	85-01-8	Yes	No	178.24	PHYSPROP	1.21E-04	PHYSPROP	1.15E+00	PHYSPROP	-	4.23E-05
Tetrachloroethylene	127-18-4	Yes	Yes	165.83	PHYSPROP	1.85E+01	PHYSPROP	2.06E+02	PHYSPROP	5	1.77E-02
Trichloroethylene	79-01-6	Yes	Yes	131.39	PHYSPROP	6.90E+01	PHYSPROP	1.28E+03	PHYSPROP	5	9.85E-03
Xylene, m-	108-38-3	Yes	Yes	106.17	PHYSPROP	8.29E+00	PHYSPROP	1.61E+02	PHYSPROP	-	7.18E-03
Xylene, o-	95-47-6	Yes	Yes	106.17	PHYSPROP	6.61E+00	PHYSPROP	1.78E+02	PHYSPROP	-	5.18E-03

Henry's Law Constant (unitless)	H ⁺ and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T _c (K)	T _c \ Ref	Enthalpy of vaporization at the normal boiling point ΔH _{v,b} (cal/mol)	ΔH _{v,b} \ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
4.91E-04	PHYSPROP	4.91E-04	710.75	PHYSPROP	9.79E+02	YAWS	16000.00	Weast	-	
2.27E-01	PHYSPROP	2.27E-01	353.15	PHYSPROP	5.62E+02	CRC	7342.26	CRC	1.20	CRC
1.26E-02	PHYSPROP	1.26E-02	529.25	PHYSPROP	7.73E+02	CRC	10890.00	DECHEMA	0.60	CRC
1.50E-01	PHYSPROP	1.50E-01	334.25	PHYSPROP	5.36E+02	CRC	6988.53	CRC	-	
4.58E-04	PHYSPROP	4.58E-04	448.05	PHYSPROP	6.75E+02	YAWS	9572.00	Weast	1.70	YAWS
6.13E+00	PHYSPROP	6.13E+00	353.85	PHYSPROP	5.53E+02	CRC	7163.00	CRC	1.30	CRC
8.71E-03	EPI	8.71E-03	560.15	PHYSPROP	8.24E+02	CRC	66400.00	TOXNET	0.80	YAWS
3.93E-03	PHYSPROP	3.93E-03	568.15	PHYSPROP	8.26E+02	YAWS	12666.00	Weast	0.70	YAWS
2.12E-02	PHYSPROP	2.12E-02	514.25	PHYSPROP	7.61E+02	CRC	12600.00	DECHEMA	0.80	YAWS
1.80E-02	PHYSPROP	1.80E-02	491.05	PHYSPROP	7.48E+02	CRC	10325.05	CRC	0.90	CRC
1.73E-03	PHYSPROP	1.73E-03	613.15	PHYSPROP	8.69E+02	YAWS	12915.15	YAWS	0.70	YAWS
7.24E-01	PHYSPROP	7.24E-01	394.45	PHYSPROP	6.20E+02	YAWS	8288.72	CRC	-	
4.03E-01	PHYSPROP	4.03E-01	360.35	PHYSPROP	5.71E+02	YAWS	7504.78	CRC	8.00	CRC
2.94E-01	PHYSPROP	2.94E-01	412.25	PHYSPROP	6.17E+02	CRC	8522.94	CRC	1.10	CRC
2.12E-01	PHYSPROP	2.12E-01	417.65	PHYSPROP	6.30E+02	CRC	8661.57	CRC	0.90	CRC