



BY US MAIL

November 15, 2016

Mr. Joseph L. Glassman
Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge VA 22193

RE: Response to Comments
Pollution Compliant Number (PC#) 2016-3142
Dominion Crystal City Substation
Site Characterization Report submitted to DEQ on August 31 2016

Dear Mr. Glassman:

Thank you for your comments on the referenced Site Characterization Report (SCR) provided to Dominion by letter dated October 7, 2016. This letter addresses the comments. Your comments are provided below in *italics*, followed by our response.

General Comments:

- * *The SCR concluded that "based on the lack of residual impacts, coupled with the fact that the release was immediately remediated and Dominion has upgraded the secondary containment around the transformers, we recommend that the Pollution Compliant be closed and that no further action is required." DEQ is not in agreement with this conclusion and have requested further clarification on the absence of dye at the monitoring points. Specifically: Could the substation upgrades and cleanup actions have altered the flow conditions?*

We believe that the retrofits made to the substation will prevent future releases from reaching the storm drains and ultimately Roaches Run. Prior to conducting the dye study, Dominion retrofitted the secondary containment within the substation. When the dye study was conducted, eosine dye and non-chlorinated water were introduced into two electrical vaults where oil had been observed following the release, one inside the station

and one outside the station. It was believed the electrical vaults may have been part of the migration pathway. However, based on our findings, it is possible that the initial release of oil to the storm sewer could have occurred from the area of the now retrofitted secondary containment systems. Therefore, the reason the dye was not detected consistently in the storm sewers following our study may be because the pathway of migration was from the area of the retrofitted containments.

With respect to the Figure 3, DEQ offered the following comments:

- *Clarify the two lines emanating from MH-B towards MH-C, as one line connects with MH-C and the other does not.*

There is only one line that connects the two manholes; the figure (attached) has been edited for clarity.

- *There are two symbols around the areas of MH-A. Are there two manholes in the area or only one?*

There are two manholes in this area. Manhole, MH-A, is part of the Arlington County Storm Water System and the other manhole is part of a relocated sanitary sewer that is not connected to the Storm Water System.

- *Please clarify the numbers next to the monitoring wells that indicate groundwater elevation. Are these elevations above mean sea level?*

The groundwater elevations posted next to each well were measured against the North American Vertical Datum 1988, reflect the elevation above mean sea level (AMSL) and represent the measured conditions on site. The figure has been updated to reflect this information. The revised figure is included as an attachment.

With respect to the borescope study, DEQ offers the following comments:

- *The text indicates that the sewers downstream of MH-C were inspected. However, the report in Appendix F does not show any inspection logs beyond MH-C.*

No additional surveys were completed downgradient of MH-C based on its distance from the substation.

- *Was any inspection performed between SS-MH-3 and MH-A?*

A borescope survey between SS-MH-3 and MH-A was not performed because these two manholes are not connected. The map has been updated to show the line associated with SS-MH-1/2/3 as a relocated sanitary sewer line. This line does have a manhole at the location shown near MH-A, but we were unable to access this manhole because it is

covered by landscaping. Due to this access issue, a survey to this point was not completed.

In addition to these comments, DEQ has also required the following actions be taken:

- *Continue the weekly observations of the vaults, manholes and storm sewer outlets at Roaches Run, with reporting each week by e-mail to DEQ. Any observation of visible sheen or measurable free product should be reported to DEQ immediately.*

We are continuing our weekly inspections and the weekly report submittals to DEQ. We are inspecting two manholes adjacent to the substation, Outfalls 1 and 2 at Roaches Run, Roaches Run in the vicinity of the parking area and Gravelly Point in the vicinity of the boat ramp. We will notify DEQ as soon as possible if any sheen or free product is observed.

- *Submit a plan to DEQ for deploying booms and pads in the event that product is observed at any of the outfalls to Roaches Run.*

In the event a sheen or free product is observed during an inspection event, we will notify DEQ, Arlington County and the NRC. If we can determine which outfall is the source of the oil, we will place boom at that outfall. If we cannot determine the source outfall, we will place boom at both Outfalls 1 and 2 and coordinate with the responding agencies to evaluate placing boom at Outfall 3.

- *Before two additional rounds of monitoring well sampling. The first round should occur at the end of October 2015 and the second at the end of January 2017. Each monitoring event should include:*
 - *Gauging each well for measurable free product;*
 - *Recording of water level and preparation of a map showing groundwater flow direction;*
 - *Collection of a water sample from each well, with analysis for TPH-DRO, TPH-ORO, and BTEX/naphthalene; and*
 - *Reporting of results in a brief Post-Site Characterization Monitoring Report.*

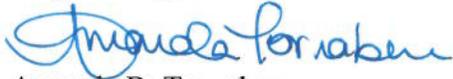
We completed the first round of groundwater sampling on October 25, 2016. The attached monitoring report indicates that there are no residual impacts from the mineral oil release. We will complete the second round of sampling by January 31, 2017 and will submit a monitoring report follow receipt of the results.

November 15, 2016

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Dominion has agreed to these additional actions and will provide documentation to DEQ as noted above. If you have any questions, please do not hesitate to contact Jason Ericson at (804) 273-3012.

Respectfully,

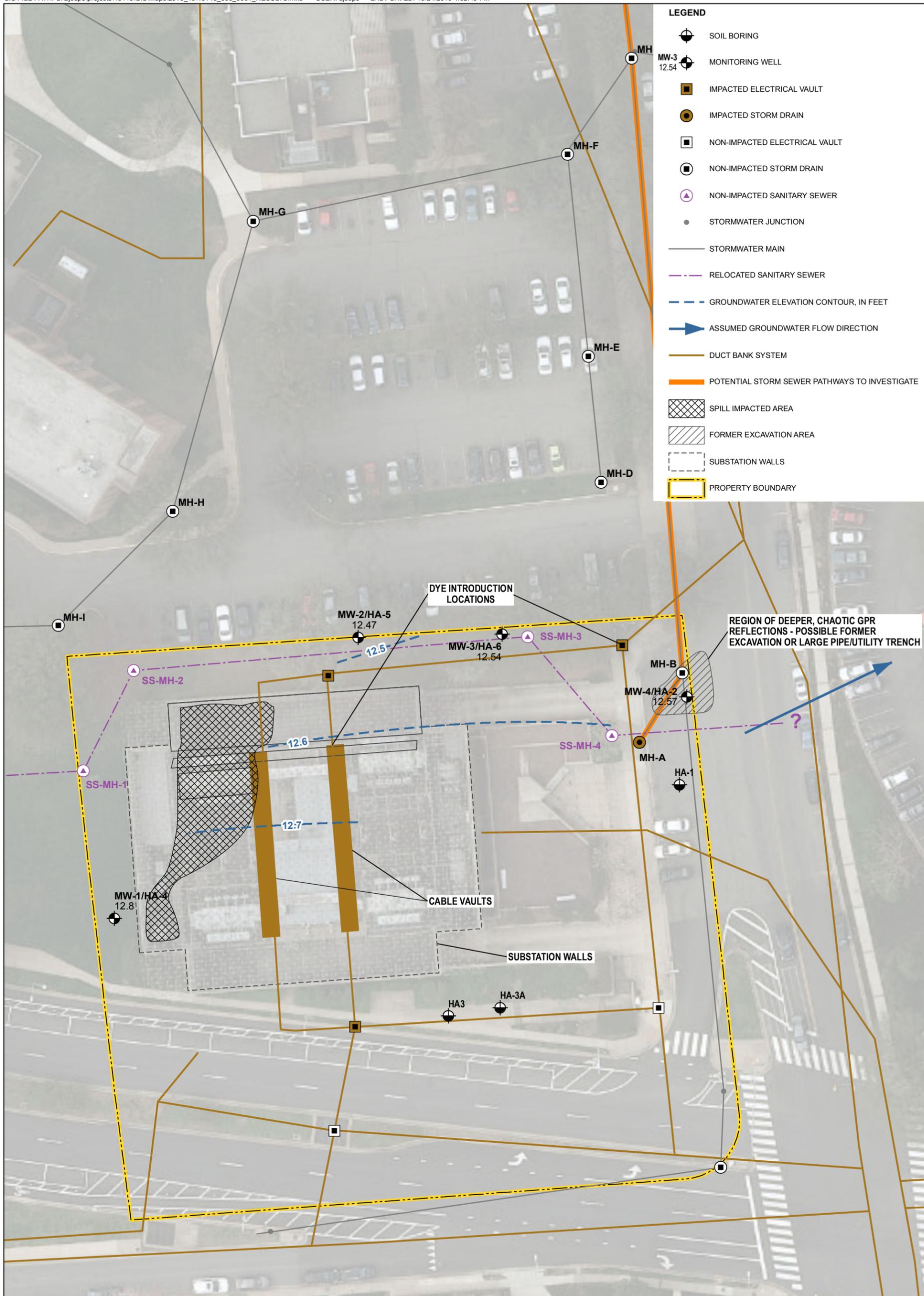


Amanda B. Tornabene

Director, Energy Infrastructure Environmental Services

Attachments:

Figure 3 - Monitoring Well and Soil Boring Locations
Post Site Characterization Monitoring Report

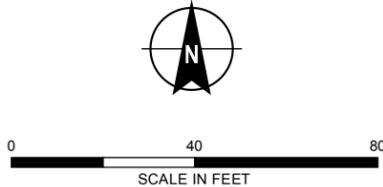


LEGEND

- SOIL BORING
- MONITORING WELL
- IMPACTED ELECTRICAL VAULT
- IMPACTED STORM DRAIN
- NON-IMPACTED ELECTRICAL VAULT
- NON-IMPACTED STORM DRAIN
- NON-IMPACTED SANITARY SEWER
- STORMWATER JUNCTION
- STORMWATER MAIN
- RELOCATED SANITARY SEWER
- GROUNDWATER ELEVATION CONTOUR, IN FEET
- ASSUMED GROUNDWATER FLOW DIRECTION
- DUCT BANK SYSTEM
- POTENTIAL STORM SEWER PATHWAYS TO INVESTIGATE
- SPILL IMPACTED AREA
- FORMER EXCAVATION AREA
- SUBSTATION WALLS
- PROPERTY BOUNDARY

NOTES

1. STORMWATER MAIN AND STORMWATER JUNCTION DATA APPROXIMATED FROM REPORT ENTITLED "STORMWATER CAPACITY ANALYSIS FOR ROACHES RUN WATERSHED", 22 JANUARY 2013, BY CH2M HILL.
2. ELECTRICAL VAULT AND STORM DRAIN INFORMATION EXTRACTED FROM APPENDIX A OF THE REPORT ENTITLED "INITIAL ABATEMENT REPORT" BY DOMINION RESOURCES SERVICES, INC.
3. STORMWATER MAIN AND JUNCTION LOCATIONS ARE APPROXIMATE.
4. THE GEOPHYSICAL SURVEY WILL LOCATE THE STORM SEWER AND DUCT BANK SYSTEM, AS ACCESSIBLE.
5. AERIAL IMAGERY SOURCE: ESRI



HALEY ALDRICH CRYSTAL CITY SUBSTATION
ARLINGTON, VIRGINIA

**MONITORING WELL AND
SOIL BORING LOCATIONS**

OCTOBER 2016 FIGURE 3



HALEY & ALDRICH, INC.
7601 Lewinsville Road
Suite 101
McLean, VA 22102
703.336.6200

14 November 2016
File No. 43148-007

Mr. John M. Black
Dominion Virginia Power
2400 Grayland Avenue
Richmond, Virginia 23220

Subject: Post-Site Characterization Monitoring Report
Virginia Electric and Power Company Crystal City Substation
18th Street South and South Fern Street, Arlington, Arlington County

Dear Mr. Black:

This Post-Site Characterization Monitoring Report has been prepared to document the results from the first of two (2) sampling events at the Crystal City Substation (CCS) (PC#2016-3142) located in Arlington, Virginia (Site). This groundwater sampling program has been completed at the request of the Virginia Department of Environmental Quality (DEQ) in their letter dated 7 October 2016. This letter provided comments on the Site Characterization Report (SCR) that documented the investigations completed following the mineral oil release in February 2016.

The comment letter requested the following:

- Groundwater monitoring shall occur between October 15 and October 31, 2016 and between January 15 and January 31, 2017. Each monitoring event must include:
 - a. Gauging each well for measurable free product;
 - b. Recording of water levels and preparation of a map showing groundwater flow direction;
 - c. Collection of a water sample from each well, with analysis for total petroleum hydrocarbons (TPH) diesel range organics (DRO), TPH oil range organics (ORO) and benzene, ethylbenzene, toluene, and xylenes (BTEX)/naphthalene.

Haley & Aldrich, Inc. (Haley & Aldrich) has completed the post monitoring event for October 2016 with the field activities and data summary presented below.

Groundwater Monitoring Event

Four groundwater monitoring wells were installed as part of the Site Characterization activities associated with the mineral oil release at the CCS. As requested by DEQ, each well was sampled for TPH-DRO, TPH-ORO and BTEX/naphthalene to further evaluate if there are residual impacts to groundwater quality.

Groundwater sampling was conducted by Haley & Aldrich on 21 and 25 October 2016. Activities included the collection of water levels, gauging for free product, and collection of groundwater samples.

The water levels and free product gauging were completed prior to sampling. Based on the data collected during the October 2016 sampling event, groundwater flows to the north (Figure 1), which is consistent with the general flow direction in the SCR (February 2016). No free product was observed in any of the wells.

Each sample was submitted for laboratory analysis of TPH-DRO, TPH-ORO and BTEX/naphthalene. The laboratory reports indicated that the data from this round are consistent with results from groundwater data collected on 15 July 2016; the groundwater samples did not contain any petroleum-related compounds above applicable standards or at levels that suggest an impact from the mineral oil release. Data were compared to the Voluntary Remediation Program (VRP) Risk Assessment Guidance – (unrestricted and restricted) or the DEQ Storage Tank Program TPH “reporting” levels. Table 1 presents a summary of the groundwater results. The laboratory reports are included in Appendix A.

Investigative Derived Waste Management

Following completion of sampling activities, purge water and decontamination water were containerized in a 55-gallon steel drums for disposal by Dominion under an existing non-hazardous waste profile.

Closing

As shown on Figure 1, groundwater flow is generally to the north and is consistent with past groundwater flow observations. Groundwater elevations were observed to be slightly lower than July 2016 event.

Overall the groundwater quality results are typical for an urban setting with no exceedances above applicable standards and the data suggest that there were no residual impacts from the mineral oil release to groundwater.

Dominion Resources Services, Inc.

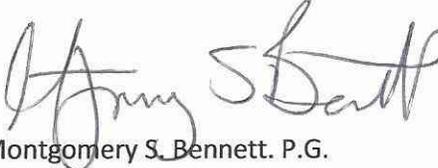
14 November 2016

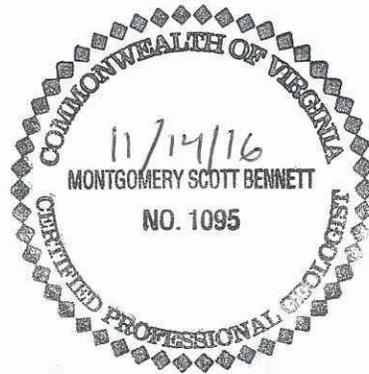
Page 3

The next groundwater sampling event will be completed in late January 2017 in accordance with DEQ's request.

Sincerely yours,
HALEY & ALDRICH, INC.

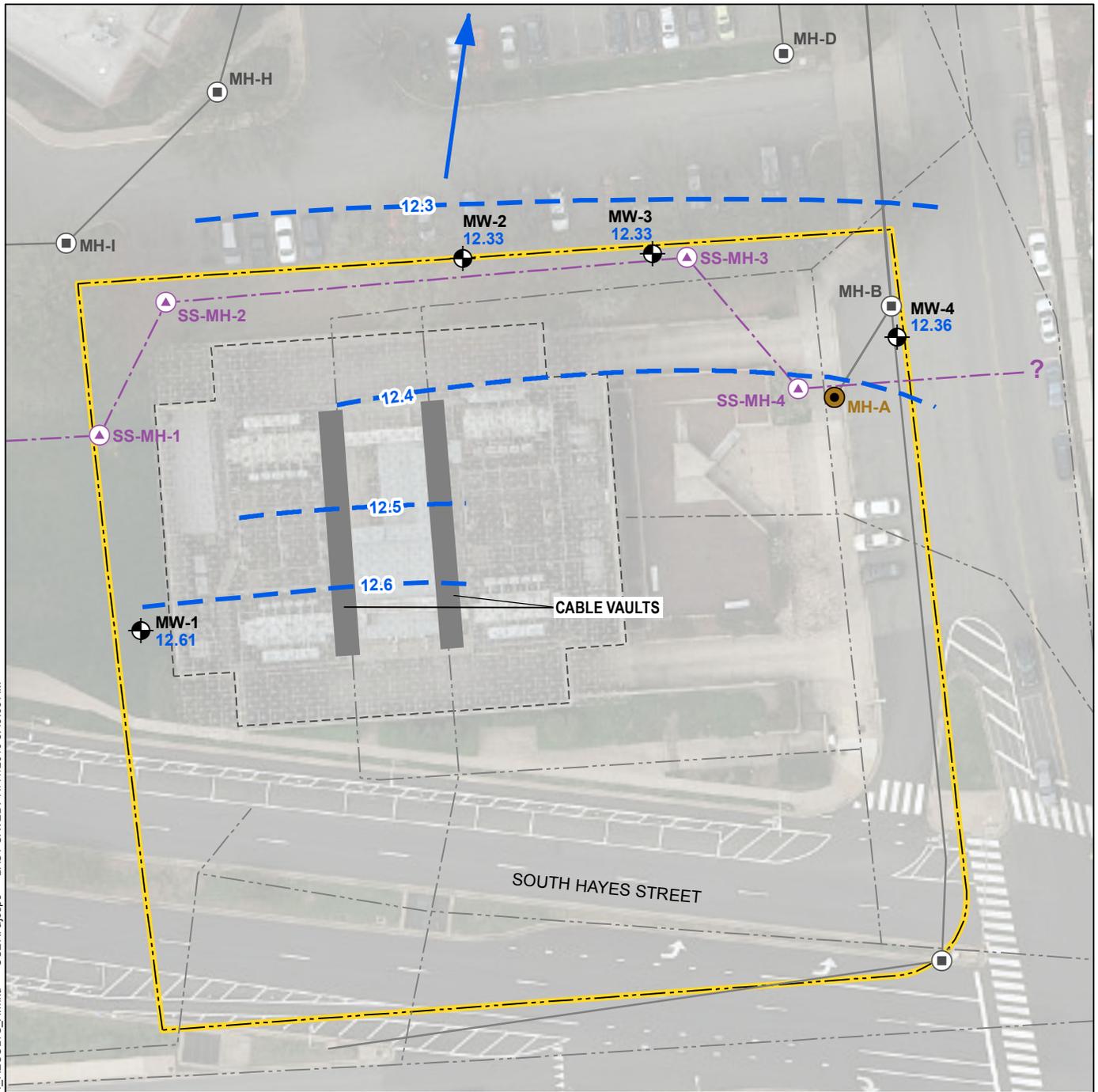

Nadia Glucksberg
Program Manager


Montgomery S. Bennett, P.G.
Senior Client Leader



Figure

GIS FILE PATH: G:\43148-Crystal City\GIS\Map\2016_10\43148_Crystal City\GIS\Map\2016_10_0001_RESULTS_A.mxd — USER: ajosppe — LAST SAVED: 11/11/2016 8:49:05 AM



LEGEND

- MONITORING WELL
- IMPACTED STORM DRAIN
- NON-IMPACTED STORM DRAIN
- NON-IMPACTED SANITARY SEWER
- GROUNDWATER ELEVATION CONTOUR, IN FEET ABOVE MEAN SEA LEVEL
- ASSUMED GROUNDWATER FLOW DIRECTION
- STORMWATER MAIN
- RELOCATED SANITARY SEWER
- DUCT BANK SYSTEM
- SUBSTATION WALLS
- PROPERTY BOUNDARY

SCALE IN FEET

- NOTES**
1. STORMWATER MAIN AND STORMWATER JUNCTION DATA APPROXIMATED FROM REPORT ENTITLED "STORMWATER CAPACITY ANALYSIS FOR ROACHES RUN WATERSHED", 22 JANUARY 2013, BY CH2M HILL.
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 4. THE GEOPHYSICAL SURVEY WILL LOCATE THE STORM SEWER AND DUCT BANK SYSTEM, AS ACCESSIBLE.
 5. AERIAL IMAGERY SOURCE: ESRI

HALEY ALDRICH
CRYSTAL CITY SUBSTATION
ARLINGTON, VIRGINIA

OCTOBER 2016 GROUNDWATER
ELEVATION CONTOURS

NOVEMBER 2016
FIGURE 1

Table

TABLE 1
SUMMARY OF GROUNDWATER QUALITY DATA
CRYSTAL CITY SUBSTATION
ARLINGTON, VA

Location Sample ID Sample Date Lab Sample ID	Action Level				MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4
	"Reporting" Level	Tier III Commerical Screening Level	Tier III Residential Screening Level	Tier II Unrestricted Residential Screening Level	MW-1-071516 07/15/2016 L1621964-01	MW-1-102116 10/21/2016 L1633997-01	MW-2-071516 07/15/2016 L1621964-02	MW-2-102116 10/21/2016 L1633997-02	MW-3-071516 07/15/2016 L1621964-03	MW-3-102116 10/21/2016 L1633997-03	MW-4-071516 07/15/2016 L1621964-04	MW-4-102516 10/25/2016 L1634404-01
Semi-Volatile Organic Compounds (ug/L)												
Naphthalene	73	73	17.4	0.61	0.2 U	2 U						
Total Petroleum Hydrocarbons (ug/L)												
Diesel Range Organics	1000	NA	NA	NA	44	33.5	65.5	50.4	151	124	77.2	67.1
Gasoline Range Organics	1000	NA	NA	NA	50 U	-						
Oil Range Organics (C28-C40)	1000	NA	NA	NA	14.6	11 U	24.5	11 U	80.6	11 U	11.3	83.2
Volatile Organic Compounds (ug/L)												
Benzene	NA	1240	941	5	0.5 U							
Ethylbenzene	NA	152	34.9	700	0.5 U							
m,p-Xylenes	NA	149	71.5	19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	NA	207	51.9	19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	NA	8070	1920	1000	0.75 U							
Xylene (total)	NA	2070	492	10000	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

ABBREVIATIONS:

-: Not Analyzed

NA: Not Applicable

U: Not detected, value is the laboratory reporting limit

ug/L: microgram per liter

NOTES:

Virginia Department of Environmental Quality (VADEQ). Voluntary Remediation Program (VRP). Tier II and Tier III Screening Levels. July/August 2014.

<http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/RemediationProgram/VoluntaryRemediationProgram/VRPRiskAssessmentGuidance/Tables.aspx>

Appendix A
Laboratory Report



ANALYTICAL REPORT

Lab Number:	L1633997
Client:	Haley & Aldrich 7601 Lewinsville Road Suite 101 McLean, VA 22102
ATTN:	Jennifer Kingston
Phone:	(703) 336-6214
Project Name:	CRYSTAL CITY-DOMINION
Project Number:	93148-007
Report Date:	11/03/16

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1633997-01	MW-1-102116	WATER	ARLINGTON, VA	10/21/16 12:30	10/21/16
L1633997-02	MW-2-102116	WATER	ARLINGTON, VA	10/21/16 13:30	10/21/16
L1633997-03	MW-3-102116	WATER	ARLINGTON, VA	10/21/16 14:30	10/21/16

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Petroleum Hydrocarbon Quantitation

The WG945882-2/-3 LCS/LCSD recoveries, associated with L1633997-01, -02, and -03, are outside the acceptance criteria for nonane (c9) (44%/49%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 11/03/16

ORGANICS

VOLATILES

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-01
 Client ID: MW-1-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 10/27/16 01:23
 Analyst: PD

Date Collected: 10/21/16 12:30
 Date Received: 10/21/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	100		70-130

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-02
 Client ID: MW-2-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 10/28/16 18:23
 Analyst: BD

Date Collected: 10/21/16 13:30
 Date Received: 10/21/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-03
 Client ID: MW-3-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 10/28/16 18:51
 Analyst: BD

Date Collected: 10/21/16 14:30
 Date Received: 10/21/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	93		70-130

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/26/16 20:14
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG946261-5					
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	101		70-130

Project Name: CRYSTAL CITY-DOMINION

Lab Number: L1633997

Project Number: 93148-007

Report Date: 11/03/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 10/28/16 10:27
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 02-03 Batch: WG947037-5					
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	94		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG946261-3 WG946261-4								
Dichlorodifluoromethane	99		100		36-147	1		20
Chloromethane	75		76		64-130	1		20
Vinyl chloride	100		100		55-140	0		20
Bromomethane	89		99		39-139	11		20
Chloroethane	100		100		55-138	0		20
Trichlorofluoromethane	110		110		62-150	0		20
1,1-Dichloroethene	100		110		61-145	10		20
Carbon disulfide	96		100		51-130	4		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	110		120		70-130	9		20
Methylene chloride	100		110		70-130	10		20
Acetone	140		130		58-148	7		20
trans-1,2-Dichloroethene	100		110		70-130	10		20
Methyl Acetate	120		120		70-130	0		20
Methyl tert butyl ether	100		110		63-130	10		20
1,1-Dichloroethane	110		110		70-130	0		20
cis-1,2-Dichloroethene	110		110		70-130	0		20
Cyclohexane	120		120		70-130	0		20
Bromochloromethane	110		120		70-130	9		20
Chloroform	110		110		70-130	0		20
Carbon tetrachloride	96		100		63-132	4		20
1,1,1-Trichloroethane	100		110		67-130	10		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG946261-3 WG946261-4								
2-Butanone	120		120		63-138	0		20
Benzene	110		110		70-130	0		20
1,2-Dichloroethane	120		120		70-130	0		20
Methyl cyclohexane	110		110		70-130	0		20
Trichloroethene	110		110		70-130	0		20
1,2-Dichloropropane	100		100		70-130	0		20
Bromodichloromethane	100		110		67-130	10		20
cis-1,3-Dichloropropene	96		98		70-130	2		20
Toluene	100		100		70-130	0		20
Tetrachloroethene	110		110		70-130	0		20
4-Methyl-2-pentanone	92		100		59-130	8		20
trans-1,3-Dichloropropene	89		93		70-130	4		20
1,1,2-Trichloroethane	100		100		70-130	0		20
Dibromochloromethane	90		97		63-130	7		20
1,2-Dibromoethane	100		100		70-130	0		20
2-Hexanone	110		120		57-130	9		20
Chlorobenzene	100		100		75-130	0		20
Ethylbenzene	110		110		70-130	0		20
p/m-Xylene	110		115		70-130	4		20
o-Xylene	110		115		70-130	4		20
Styrene	115		115		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION

Project Number: 93148-007

Lab Number: L1633997

Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG946261-3 WG946261-4								
Bromoform	63		70		54-136	11		20
Isopropylbenzene	100		100		70-130	0		20
1,1,2,2-Tetrachloroethane	95		100		67-130	5		20
1,3,5-Trimethylbenzene	100		100		64-130	0		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		100		70-130	0		20
1,2-Dichlorobenzene	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	74		86		41-144	15		20
1,2,4-Trichlorobenzene	94		100		70-130	6		20
Naphthalene	100		120		70-130	18		20
1,2,3-Trichlorobenzene	100		120		70-130	18		20
tert-Butyl Alcohol	84		116		70-130	32	Q	20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	113		114		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	93		92		70-130
Dibromofluoromethane	102		105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG947037-3 WG947037-4								
Dichlorodifluoromethane	84		77		36-147	9		20
Chloromethane	88		80		64-130	10		20
Vinyl chloride	94		84		55-140	11		20
Bromomethane	100		88		39-139	13		20
Chloroethane	100		94		55-138	6		20
Trichlorofluoromethane	95		88		62-150	8		20
1,1-Dichloroethene	99		91		61-145	8		20
Carbon disulfide	93		84		51-130	10		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	96		88		70-130	9		20
Methylene chloride	100		92		70-130	8		20
Acetone	94		61		58-148	43	Q	20
trans-1,2-Dichloroethene	100		94		70-130	6		20
Methyl Acetate	79		67	Q	70-130	16		20
Methyl tert butyl ether	93		82		63-130	13		20
1,1-Dichloroethane	100		92		70-130	8		20
cis-1,2-Dichloroethene	100		93		70-130	7		20
Cyclohexane	92		86		70-130	7		20
Bromochloromethane	100		91		70-130	9		20
Chloroform	100		91		70-130	9		20
Carbon tetrachloride	100		89		63-132	12		20
1,1,1-Trichloroethane	100		91		67-130	9		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG947037-3 WG947037-4								
2-Butanone	90		77		63-138	16		20
Benzene	100		91		70-130	9		20
1,2-Dichloroethane	98		88		70-130	11		20
Methyl cyclohexane	98		88		70-130	11		20
Trichloroethene	100		90		70-130	11		20
1,2-Dichloropropane	100		91		70-130	9		20
Bromodichloromethane	99		91		67-130	8		20
cis-1,3-Dichloropropene	100		90		70-130	11		20
Toluene	100		91		70-130	9		20
Tetrachloroethene	100		90		70-130	11		20
4-Methyl-2-pentanone	90		79		59-130	13		20
trans-1,3-Dichloropropene	98		87		70-130	12		20
1,1,2-Trichloroethane	97		88		70-130	10		20
Dibromochloromethane	99		88		63-130	12		20
1,2-Dibromoethane	100		87		70-130	14		20
2-Hexanone	92		80		57-130	14		20
Chlorobenzene	100		91		75-130	9		20
Ethylbenzene	100		90		70-130	11		20
p/m-Xylene	100		90		70-130	11		20
o-Xylene	100		85		70-130	16		20
Styrene	95		85		70-130	11		20

Lab Control Sample Analysis Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 02-03 Batch: WG947037-3 WG947037-4								
Bromoform	96		82		54-136	16		20
Isopropylbenzene	110		98		70-130	12		20
1,1,2,2-Tetrachloroethane	97		88		67-130	10		20
1,3,5-Trimethylbenzene	110		96		64-130	14		20
1,2,4-Trimethylbenzene	110		96		70-130	14		20
1,3-Dichlorobenzene	100		92		70-130	8		20
1,4-Dichlorobenzene	100		92		70-130	8		20
1,2-Dichlorobenzene	100		92		70-130	8		20
1,2-Dibromo-3-chloropropane	87		84		41-144	4		20
1,2,4-Trichlorobenzene	98		88		70-130	11		20
Naphthalene	85		78		70-130	9		20
1,2,3-Trichlorobenzene	85		82		70-130	4		20
tert-Butyl Alcohol	50	Q	82		70-130	48	Q	20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		98		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	108		108		70-130
Dibromofluoromethane	97		97		70-130

SEMIVOLATILES

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-01
 Client ID: MW-1-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 10/27/16 01:34
 Analyst: RC

Date Collected: 10/21/16 12:30
 Date Received: 10/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 10/26/16 00:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/l	2.0	0.68	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	58		15-120
4-Terphenyl-d14	62		41-149

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-02
 Client ID: MW-2-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 10/27/16 01:08
 Analyst: RC

Date Collected: 10/21/16 13:30
 Date Received: 10/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 10/26/16 00:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Naphthalene	ND		ug/l	2.0	0.68	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	56		15-120
4-Terphenyl-d14	59		41-149

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-03
 Client ID: MW-3-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 10/27/16 00:41
 Analyst: RC

Date Collected: 10/21/16 14:30
 Date Received: 10/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 10/26/16 00:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Naphthalene	ND		ug/l	2.0	0.68	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	63		15-120
4-Terphenyl-d14	61		41-149

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/26/16 23:22
Analyst: ALS

Extraction Method: EPA 3510C
Extraction Date: 10/26/16 00:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG945749-1					
Naphthalene	ND		ug/l	2.0	0.68

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	52		23-120
2-Fluorobiphenyl	47		15-120
4-Terphenyl-d14	56		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION

Lab Number: L1633997

Project Number: 93148-007

Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG945749-2 WG945749-3								
Naphthalene	56		57		40-140	2		30
2-Methylnaphthalene	53		55		40-140	4		30
1-Methylnaphthalene ¹	62		65		41-103	5		30
2-Chloronaphthalene	62		64		40-140	3		30
Acenaphthylene	68		68		45-123	0		30
Acenaphthene	61		61		37-111	0		30
Fluorene	66		64		40-140	3		30
Phenanthrene	69		69		40-140	0		30
Anthracene	74		73		40-140	1		30
Fluoranthene	71		71		40-140	0		30
Pyrene	70		71		26-127	1		30
Benzo(a)anthracene	72		72		40-140	0		30
Chrysene	72		73		40-140	1		30
Benzo(b)fluoranthene	68		66		40-140	3		30
Benzo(k)fluoranthene	72		72		40-140	0		30
Benzo(a)pyrene	70		69		40-140	1		30
Indeno(1,2,3-cd)Pyrene	70		69		40-140	1		30
Dibenzo(a,h)anthracene	68		69		40-140	1		30
Benzo(ghi)perylene	68		67		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION

Lab Number: L1633997

Project Number: 93148-007

Report Date: 11/03/16

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG945749-2 WG945749-3

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	75		77		23-120
2-Fluorobiphenyl	62		66		15-120
4-Terphenyl-d14	67		67		41-149

PETROLEUM HYDROCARBONS

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-01
 Client ID: MW-1-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8015D(M)
 Analytical Date: 10/29/16 04:12
 Analyst: NL

Date Collected: 10/21/16 12:30
 Date Received: 10/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 10/26/16 09:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Diesel/Other Range Organics by GC-FID - Mansfield Lab						
DRO (C10-C28)	33.5		ug/l	21.0	3.61	1
ORO (C28-C40)	ND		ug/l	11.0	1.62	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	95		50-130
d50-Tetracosane	91		50-130

Project Name: CRYSTAL CITY-DOMINION**Lab Number:** L1633997**Project Number:** 93148-007**Report Date:** 11/03/16**SAMPLE RESULTS**

Lab ID: L1633997-02
Client ID: MW-2-102116
Sample Location: ARLINGTON, VA
Matrix: Water
Analytical Method: 1,8015D(M)
Analytical Date: 10/29/16 05:40
Analyst: NL

Date Collected: 10/21/16 13:30
Date Received: 10/21/16
Field Prep: Not Specified
Extraction Method: EPA 3510C
Extraction Date: 10/26/16 09:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Diesel/Other Range Organics by GC-FID - Mansfield Lab						
DRO (C10-C28)	50.4		ug/l	21.0	3.61	1
ORO (C28-C40)	ND		ug/l	11.0	1.62	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	97		50-130
d50-Tetracosane	92		50-130

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

SAMPLE RESULTS

Lab ID: L1633997-03
 Client ID: MW-3-102116
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8015D(M)
 Analytical Date: 10/29/16 07:09
 Analyst: NL

Date Collected: 10/21/16 14:30
 Date Received: 10/21/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 10/26/16 09:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Diesel/Other Range Organics by GC-FID - Mansfield Lab						
DRO (C10-C28)	124		ug/l	21.0	3.61	1
ORO (C28-C40)	ND		ug/l	11.0	1.62	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	102		50-130
d50-Tetracosane	98		50-130

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 10/28/16 22:18
Analyst: NL

Extraction Method: EPA 3510C
Extraction Date: 10/26/16 09:42

Parameter	Result	Qualifier	Units	RL	MDL
Diesel/Other Range Organics by GC-FID - Mansfield Lab for sample(s): 01-03 Batch: WG945882-1					
DRO (C10-C28)	12.5	J	ug/l	21.0	3.61
ORO (C28-C40)	ND		ug/l	11.0	1.62

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	98		50-130
d50-Tetracosane	93		50-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Diesel/Other Range Organics by GC-FID - Mansfield Lab Associated sample(s): 01-03 Batch: WG945882-2 WG945882-3								
Nonane (C9)	44	Q	49	Q	50-130	11		30
Decane (C10)	52		57		50-130	9		30
Dodecane (C12)	64		71		50-130	10		30
Tetradecane (C14)	81		81		50-130	0		30
Hexadecane (C16)	96		96		50-130	0		30
Octadecane (C18)	98		100		50-130	2		30
Nonadecane (C19)	102		96		50-130	6		30
Eicosane (C20)	97		98		50-130	1		30
Docosane (C22)	97		99		50-130	2		30
Tetracosane (C24)	97		100		50-130	3		30
Hexacosane (C26)	96		98		50-130	2		30
Octacosane (C28)	98		100		50-130	2		30
Triacontane (C30)	98		100		50-130	2		30
Hexatriacontane (C36)	97		99		50-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	95		100		50-130
d50-Tetracosane	93		96		50-130

Project Name: CRYSTAL CITY-DOMINION

Project Number: 93148-007

Lab Number: L1633997

Report Date: 11/03/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler

A Absent

B Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1633997-01A	Vial HCl preserved	A	N/A	4.1	Y	Absent	PA-8260-BTEX(14)
L1633997-01B	Vial HCl preserved	A	N/A	4.1	Y	Absent	PA-8260-BTEX(14)
L1633997-01C	Vial HCl preserved	A	N/A	4.1	Y	Absent	PA-8260-BTEX(14)
L1633997-01D	Amber 1000ml unpreserved	A	7	4.1	Y	Absent	PA-8270(7)
L1633997-01E	Amber 1000ml unpreserved	A	7	4.1	Y	Absent	PA-8270(7)
L1633997-01F	Amber 1000ml unpreserved	A	7	4.1	Y	Absent	A2-TPHDRO/ORO(7)
L1633997-01G	Amber 1000ml unpreserved	A	7	4.1	Y	Absent	A2-TPHDRO/ORO(7)
L1633997-02A	Vial HCl preserved	B	N/A	2.6	Y	Absent	PA-8260-BTEX(14)
L1633997-02B	Vial HCl preserved	B	N/A	2.6	Y	Absent	PA-8260-BTEX(14)
L1633997-02C	Vial HCl preserved	B	N/A	2.6	Y	Absent	PA-8260-BTEX(14)
L1633997-02D	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	PA-8270(7)
L1633997-02E	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	PA-8270(7)
L1633997-02F	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	A2-TPHDRO/ORO(7)
L1633997-02G	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	A2-TPHDRO/ORO(7)
L1633997-03A	Vial HCl preserved	B	N/A	2.6	Y	Absent	PA-8260-BTEX(14)
L1633997-03B	Vial HCl preserved	B	N/A	2.6	Y	Absent	PA-8260-BTEX(14)
L1633997-03C	Vial HCl preserved	B	N/A	2.6	Y	Absent	PA-8260-BTEX(14)
L1633997-03D	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	PA-8270(7)
L1633997-03E	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	PA-8270(7)
L1633997-03F	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	A2-TPHDRO/ORO(7)
L1633997-03G	Amber 1000ml unpreserved	B	7	2.6	Y	Absent	A2-TPHDRO/ORO(7)

*Values in parentheses indicate holding time in days

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: DU Report with 'J' Qualifiers



Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

Data Qualifiers

- reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
 - D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
 - E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
 - G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
 - H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
 - I** - The lower value for the two columns has been reported due to obvious interference.
 - M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
 - NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
 - P** - The RPD between the results for the two columns exceeds the method-specified criteria.
 - Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
 - R** - Analytical results are from sample re-analysis.
 - RE** - Analytical results are from sample re-extraction.
 - S** - Analytical results are from modified screening analysis.
 - J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
 - ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: CRYSTAL CITY-DOMINION
Project Number: 93148-007

Lab Number: L1633997
Report Date: 11/03/16

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: **EPA 3050B**

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.**

Mansfield Facility:

Drinking Water

EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.**

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L1634404
Client:	Haley & Aldrich 7601 Lewinsville Road Suite 101 McLean, VA 22102
ATTN:	Jennifer Kingston
Phone:	(703) 336-6214
Project Name:	CRYSTAL CITY- DOMINION
Project Number:	93148-007
Report Date:	11/04/16

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1634404-01	MW-4-102516	WATER	ARLINGTON, VA	10/25/16 14:00	10/25/16

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

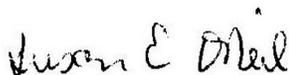
Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 11/04/16

ORGANICS

VOLATILES

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

SAMPLE RESULTS

Lab ID: L1634404-01
 Client ID: MW-4-102516
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 11/02/16 10:19
 Analyst: PD

Date Collected: 10/25/16 14:00
 Date Received: 10/25/16
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS - Westborough Lab						
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	0.75	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.33	1
Xylenes, Total	ND		ug/l	1.0	0.33	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	103		70-130

Project Name: CRYSTAL CITY- DOMINION

Lab Number: L1634404

Project Number: 93148-007

Report Date: 11/04/16

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 11/02/16 09:52
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG948352-5					
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	0.75	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.33
Xylenes, Total	ND		ug/l	1.0	0.33

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	102		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY- DOMINION

Lab Number: L1634404

Project Number: 93148-007

Report Date: 11/04/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG948352-3 WG948352-4								
Dichlorodifluoromethane	120		120		36-147	0		20
Chloromethane	100		100		64-130	0		20
Vinyl chloride	100		100		55-140	0		20
Bromomethane	87		92		39-139	6		20
Chloroethane	120		120		55-138	0		20
Trichlorofluoromethane	120		120		62-150	0		20
1,1-Dichloroethene	100		100		61-145	0		20
Carbon disulfide	100		100		51-130	0		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	100		100		70-130	0		20
Methylene chloride	99		99		70-130	0		20
Acetone	98		88		58-148	11		20
trans-1,2-Dichloroethene	100		100		70-130	0		20
Methyl Acetate	84		88		70-130	5		20
Methyl tert butyl ether	84		90		63-130	7		20
1,1-Dichloroethane	100		100		70-130	0		20
cis-1,2-Dichloroethene	98		99		70-130	1		20
Cyclohexane	100		100		70-130	0		20
Bromochloromethane	96		98		70-130	2		20
Chloroform	100		100		70-130	0		20
Carbon tetrachloride	110		110		63-132	0		20
1,1,1-Trichloroethane	110		110		67-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY- DOMINION

Lab Number: L1634404

Project Number: 93148-007

Report Date: 11/04/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG948352-3 WG948352-4								
2-Butanone	82		83		63-138	1		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	110		110		70-130	0		20
Methyl cyclohexane	97		99		70-130	2		20
Trichloroethene	100		100		70-130	0		20
1,2-Dichloropropane	94		96		70-130	2		20
Bromodichloromethane	99		99		67-130	0		20
cis-1,3-Dichloropropene	94		96		70-130	2		20
Toluene	100		100		70-130	0		20
Tetrachloroethene	100		100		70-130	0		20
4-Methyl-2-pentanone	64		70		59-130	9		20
trans-1,3-Dichloropropene	84		86		70-130	2		20
1,1,2-Trichloroethane	92		96		70-130	4		20
Dibromochloromethane	93		93		63-130	0		20
1,2-Dibromoethane	90		92		70-130	2		20
2-Hexanone	61		65		57-130	6		20
Chlorobenzene	100		100		75-130	0		20
Ethylbenzene	110		110		70-130	0		20
p/m-Xylene	110		105		70-130	5		20
o-Xylene	110		105		70-130	5		20
Styrene	105		105		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG948352-3 WG948352-4								
Bromoform	83		85		54-136	2		20
Isopropylbenzene	120		110		70-130	9		20
1,1,2,2-Tetrachloroethane	88		91		67-130	3		20
1,3,5-Trimethylbenzene	110		110		64-130	0		20
1,2,4-Trimethylbenzene	120		110		70-130	9		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	100		99		70-130	1		20
1,2-Dichlorobenzene	97		98		70-130	1		20
1,2-Dibromo-3-chloropropane	64		69		41-144	8		20
1,2,4-Trichlorobenzene	83		89		70-130	7		20
Naphthalene	58	Q	67	Q	70-130	14		20
1,2,3-Trichlorobenzene	72		82		70-130	13		20
tert-Butyl Alcohol	66	Q	76		70-130	14		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	111		112		70-130
Toluene-d8	105		104		70-130
4-Bromofluorobenzene	103		102		70-130
Dibromofluoromethane	103		104		70-130

SEMIVOLATILES

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

SAMPLE RESULTS

Lab ID: L1634404-01
 Client ID: MW-4-102516
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8270D
 Analytical Date: 11/02/16 15:19
 Analyst: ALS

Date Collected: 10/25/16 14:00
 Date Received: 10/25/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 10/28/16 19:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Naphthalene	ND		ug/l	2.0	0.68	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	56		15-120
4-Terphenyl-d14	55		41-149

Project Name: CRYSTAL CITY- DOMINION

Lab Number: L1634404

Project Number: 93148-007

Report Date: 11/04/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 10/29/16 12:17
 Analyst: MW

Extraction Method: EPA 3510C
 Extraction Date: 10/28/16 19:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG948664-1					
Naphthalene	ND		ug/l	2.0	0.68

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	64		15-120
4-Terphenyl-d14	67		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY- DOMINION

Lab Number: L1634404

Project Number: 93148-007

Report Date: 11/04/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG948664-2 WG948664-3								
Naphthalene	72		69		40-140	4		30
2-Methylnaphthalene	73		72		40-140	1		30
1-Methylnaphthalene ¹	85		83		41-103	2		30
2-Chloronaphthalene	81		78		40-140	4		30
Acenaphthylene	85		82		45-123	4		30
Acenaphthene	76		77		37-111	1		30
Fluorene	81		81		40-140	0		30
Phenanthrene	80		80		40-140	0		30
Anthracene	82		82		40-140	0		30
Fluoranthene	87		87		40-140	0		30
Pyrene	86		85		26-127	1		30
Benzo(a)anthracene	84		87		40-140	4		30
Chrysene	88		89		40-140	1		30
Benzo(b)fluoranthene	90		89		40-140	1		30
Benzo(k)fluoranthene	87		92		40-140	6		30
Benzo(a)pyrene	92		94		40-140	2		30
Indeno(1,2,3-cd)Pyrene	84		87		40-140	4		30
Dibenzo(a,h)anthracene	85		88		40-140	3		30
Benzo(ghi)perylene	86		87		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG948664-2 WG948664-3

<i>Surrogate</i>	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>Acceptance</i> Criteria
Nitrobenzene-d5	100		92		23-120
2-Fluorobiphenyl	88		82		15-120
4-Terphenyl-d14	85		81		41-149

PETROLEUM HYDROCARBONS

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

SAMPLE RESULTS

Lab ID: L1634404-01
 Client ID: MW-4-102516
 Sample Location: ARLINGTON, VA
 Matrix: Water
 Analytical Method: 1,8015D(M)
 Analytical Date: 11/04/16 03:00
 Analyst: NL

Date Collected: 10/25/16 14:00
 Date Received: 10/25/16
 Field Prep: Not Specified
 Extraction Method: EPA 3510C
 Extraction Date: 10/31/16 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Diesel/Other Range Organics by GC-FID - Mansfield Lab						
DRO (C10-C28)	67.1		ug/l	18.9	3.25	1
ORO (C28-C40)	83.2		ug/l	9.90	1.46	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	91		50-130
d50-Tetracosane	88		50-130

Project Name: CRYSTAL CITY- DOMINION

Lab Number: L1634404

Project Number: 93148-007

Report Date: 11/04/16

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8015D(M)
 Analytical Date: 11/03/16 21:05
 Analyst: NL

Extraction Method: EPA 3510C
 Extraction Date: 10/31/16 16:00

Parameter	Result	Qualifier	Units	RL	MDL
Diesel/Other Range Organics by GC-FID - Mansfield Lab for sample(s): 01 Batch: WG947639-1					
DRO (C10-C28)	15.0	J	ug/l	18.9	3.25
ORO (C28-C40)	ND		ug/l	9.90	1.46

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	96		50-130
d50-Tetracosane	88		50-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Diesel/Other Range Organics by GC-FID - Mansfield Lab Associated sample(s): 01 Batch: WG947639-2 WG947639-3								
Nonane (C9)	56		60		50-130	7		30
Decane (C10)	70		72		50-130	3		30
Dodecane (C12)	84		86		50-130	2		30
Tetradecane (C14)	88		87		50-130	1		30
Hexadecane (C16)	98		96		50-130	2		30
Octadecane (C18)	97		95		50-130	2		30
Nonadecane (C19)	94		87		50-130	8		30
Eicosane (C20)	92		92		50-130	0		30
Docosane (C22)	94		92		50-130	2		30
Tetracosane (C24)	94		92		50-130	2		30
Hexacosane (C26)	93		91		50-130	2		30
Octacosane (C28)	95		93		50-130	2		30
Triacontane (C30)	94		92		50-130	2		30
Hexatriacontane (C36)	92		89		50-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	93		91		50-130
d50-Tetracosane	87		83		50-130

Project Name: CRYSTAL CITY- DOMINION**Project Number:** 93148-007**Lab Number:** L1634404**Report Date:** 11/04/16**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

Cooler Information Custody Seal**Cooler**

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1634404-01A	Vial HCl preserved	A	N/A	5.3	Y	Absent	PA-8260-BTEX(14)
L1634404-01B	Vial HCl preserved	A	N/A	5.3	Y	Absent	PA-8260-BTEX(14)
L1634404-01C	Vial HCl preserved	A	N/A	5.3	Y	Absent	PA-8260-BTEX(14)
L1634404-01D	Amber 1000ml unpreserved	A	7	5.3	Y	Absent	PA-8270(7)
L1634404-01E	Amber 1000ml unpreserved	A	7	5.3	Y	Absent	PA-8270(7)
L1634404-01F	Amber 1000ml unpreserved	A	7	5.3	Y	Absent	A2-TPHDRO/ORO(7)
L1634404-01G	Amber 1000ml unpreserved	A	7	5.3	Y	Absent	A2-TPHDRO/ORO(7)

*Values in parentheses indicate holding time in days

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: DU Report with 'J' Qualifiers



Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

Data Qualifiers

- reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
 - D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
 - E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
 - G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
 - H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
 - I** - The lower value for the two columns has been reported due to obvious interference.
 - M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
 - NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
 - P** - The RPD between the results for the two columns exceeds the method-specified criteria.
 - Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
 - R** - Analytical results are from sample re-analysis.
 - RE** - Analytical results are from sample re-extraction.
 - S** - Analytical results are from modified screening analysis.
 - J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
 - ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Project Name: CRYSTAL CITY- DOMINION
Project Number: 93148-007

Lab Number: L1634404
Report Date: 11/04/16

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 300: DW: Bromide

EPA 6860: NPW and SCM: Perchlorate

EPA 9010: NPW and SCM: Amenable Cyanide Distillation

EPA 9012B: NPW: Total Cyanide

EPA 9050A: NPW: Specific Conductance

SM3500: NPW: Ferrous Iron

SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.

SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS

EPA 3005A NPW

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: **EPA 3050B**

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **SM4500NO3-F, EPA 353.2:** Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**

EPA 624: Volatile Halocarbons & Aromatics,

EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF.**

Mansfield Facility:

Drinking Water

EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1 Hg.**

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

