Final

Facility-wide Groundwater Monitoring Program Plan
RVAAP-66 Facility-wide Groundwater
Semi-Annual Report for Spring 2019 Sampling Event

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

Contract No. W912QR-16-D-0003
Delivery Order No. W912QR-18-F-0337

Prepared for:



United States Army Corps of Engineers
Louisville District

Prepared by:



Leidos
8866 Commons Boulevard, Suite 201
Twinsburg, Ohio 44087

January 24, 2020

Final

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
24-01-2020	Technical	Sep 2004-Jan 2020

4. TITLE AND SUBTITLE

Final
Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event
Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

5a. CONTRACT NUMBER

W912QR-16-D-0003, DOW912QR-18-F-0337

5b. GRANT NUMBER

NA

5c. PROGRAM ELEMENT NUMBER

NA

6. AUTHOR(S)

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5d. PROJECT NUMBER

NA

5e. TASK NUMBER

NA

5f. WORK UNIT NUMBER

NA

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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8. PERFORMING ORGANIZATION REPORT NUMBER

NA

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

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10. SPONSOR/MONITOR'S ACRONYM(S)

USACE

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

NA

12. DISTRIBUTION/AVAILABILITY STATEMENT

Reference distribution page.

13. SUPPLEMENTARY NOTES

None.

14. ABSTRACT

This Semi-annual Report summarizes activities conducted in spring 2019 as part of the Facility-wide Groundwater Monitoring Program (FWGWMP) in support of the Ravenna Army Ammunition Plant Restoration Program. This report provides a description of field activities performed, presents field and analytical results, and analyzes chemical data collected per the sampling scheme specified in the Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Addendum for 2019.

15. SUBJECT TERMS

groundwater, monitoring well, data quality, well abandonment, sampling

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Jay Trumble
U	U	U	U	666	19b. TELEPHONE NUMBER *(Include area code)* 502.315.6349

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March 2, 2020

RE: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID #267000859036

Mr. David Connolly
Army National Guard Directorate
ARNGD-ILE-CR
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Subject: **Approval of the "Final Semi-Annual Report for the Spring 2019 Sampling Event for RVAAP-66 Facility-wide Groundwater"**

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) has received the **"Final Semi-Annual Report for the Spring 2019 Sampling Event for RVAAP-66 Facility-wide Groundwater"** at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio dated January 24, 2020. The document was prepared for the U.S. Army Corps of Engineers on behalf of the Army National Guard Directorate by Leidos.

The final document was reviewed by personnel from Ohio EPA, DERR and Division of Drinking and Ground Waters. Pursuant to the Director's Findings and Orders paragraph 39 (b), Ohio EPA considers the document final and approved.

If you have any questions, please call me at (330) 963-1292.

Sincerely,

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Division of Environmental Response and Revitalization

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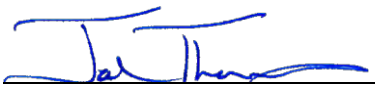
Recieved -
2 MAR 2020 -

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Leidos has completed the Facility-wide Groundwater Monitoring Program Plan, RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event for the Ravenna Army Ammunition Plant Restoration Program. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy. In addition, an independent verification was performed to ensure all applicable changes were made per regulatory and Army comments.



January 24, 2020

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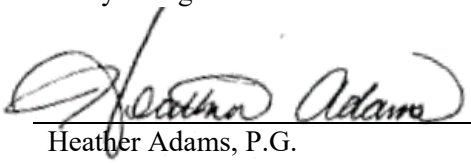
Study/Design Team Leader

Date

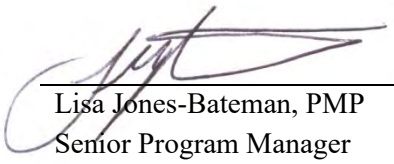


January 24, 2020

Heather Adams, P.G.
Independent Technical Review Team Leader

Date

Significant concerns and the explanation of the resolution are documented within the project file. As noted above, all concerns resulting from independent technical review of the project have been considered.



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DOCUMENT DISTRIBUTION
for the
Final
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Portage and Trumbull Counties, Ohio

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ARNG = Army National Guard.
I&E = Installations and Environment.
NEDO = Northeast District Office.
OHARNG = Ohio Army National Guard.
Ohio EPA = Ohio Environmental Protection Agency.
REIMS = Ravenna Environmental Information Management System.
SWDO = Southwest District Office.
USACE = U.S. Army Corps of Engineers.

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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
Army	U.S. Department of the Army
ARNG	Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CJAG	Camp James A. Garfield
COPC	Chemical of Potential Concern
DFFO	Director's Final Findings and Orders
DoD	U.S. Department of Defense
FCR	Field Change Request
FS	Feasibility Study
FWCUG	Facility-wide Cleanup Goal
FWGW	Facility-wide Groundwater
FWGWMP	Facility-wide Groundwater Monitoring Program
IDW	Investigation-derived Waste
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
MS	Matrix Spike
MSD	Matrix Spike Duplicate
Ohio EPA	Ohio Environmental Protection Agency
P.E.	Professional Engineer
P.G.	Professional Geologist
PCB	Polychlorinated Biphenyl
PMP	Project Management Professional
PP	Proposed Plan
PWS	Performance Work Statement
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RIWP	Remedial Investigation Work Plan
ROD	Record of Decision
RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
SAP	Sampling and Analysis Plan
SVOC	Semi-volatile Organic Compound
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

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1.0 INTRODUCTION

Leidos has been contracted by the U.S. Army Corps of Engineers (USACE), Louisville District to execute the performance work statement (PWS) titled "Groundwater Investigation and Reporting Services, Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Camp James A. Garfield (CJAG) Joint Military Training Center, Portage and Trumbull Counties, Ohio." This work is being performed under a firm-fixed price basis in accordance with USACE, Louisville District Contract No. W912QR-16-D-0003, Delivery Order No. W912QR-18-F-0337. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigation and cleanup are occurring under the U.S. Department of Defense (DoD) Installation Restoration Program (IRP). Activities include monitoring an extensive network of groundwater monitoring wells to determine nature and extent of groundwater impacts, providing additional information in support of hydrogeologic and fate-and-transport models, evaluating potential exit pathways, and evaluating vertical contaminant distribution and/or particle inflow/outflow through the facility. The former RVAAP/CJAG is located in Portage and Trumbull counties, Ohio (Figure 1-1).

1.1 PURPOSE

The Director's Final Findings and Orders (DFFO) was issued to the U.S. Department of the Army (Army) on June 10, 2004. The purpose of the DFFO is for the Army to develop and implement:

- A Remedial Investigation/Feasibility Study (RI/FS), Proposed Plan (PP), Record of Decision (ROD), or other appropriate document and remedy for each area of concern (AOC) or appropriate group of AOCs at the former RVAAP; and
- A Facility-wide Groundwater (FWGW) investigation, monitoring, and remediation program at the former RVAAP.

Section 15 of the DFFO outlines the requirements of the Facility-wide Groundwater Monitoring Program (FWGWMP). The purpose of the *RVAAP-66 Facility-wide Groundwater Addendum for 2019* (Leidos 2019a) (herein referred to as the 2019 Addendum) is to satisfy the requirements of Section 15d, which specifies the FWGWMP Plan will "utilize an iterative process, with an annual review and revision cycle to accommodate the addition or deletion of wells from the groundwater monitoring network." This semi-annual report provides results of the spring 2019 sampling performed in accordance with the 2019 Addendum.

1.2 OBJECTIVES

The primary objectives of the 2019 Addendum and subsequent sampling in spring and fall 2019 are to use the facility-wide monitoring well network to assess potential exit pathways, assess nature and extent data gaps, and monitor contaminant concentrations related to historical RVAAP activities (e.g., explosives/propellants, volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], pesticides, polychlorinated biphenyls [PCBs]) at selected source area wells for trend analysis.

The 2019 Addendum supplements the FWGWMP Plan and discusses the subset of wells at the former RVAAP that will be monitored on a semi-annual basis (spring and fall 2019) and the chemicals of potential concern (COPCs) that will be evaluated at each selected well.

1.3 REPORT ORGANIZATION

The remaining sections of this semi-annual report are organized as follows:

- Section 2.0. Background
- Section 3.0. Spring 2019 Monitoring Event
- Section 4.0. Results
- Section 5.0 Data Quality Assessment
- Section 6.0 Well Abandonment
- Section 7.0. References.

2.0 BACKGROUND

In 2004, the Army and Ohio Environmental Protection Agency (Ohio EPA) finalized the *Facility-wide Groundwater Monitoring Program Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio* (Portage Environmental 2004) for the former RVAAP, now known as CJAG Joint Military Training Center. The FWGWMP was initiated in April 2005 with quarterly sampling of 36 FWGWMP monitoring wells. Fourteen of these wells were identified as "background wells," and the remaining wells were located at various AOCs at CJAG. Five Resource Conservation and Recovery Act (RCRA) wells (RQLmw-007, RQLmw-008, RQLmw-009, DETmw-003, DETmw-004) were incorporated into the FWGWMP after May 2005 and are sampled semi-annually. Beginning in fiscal year 2008, the FWGWMP was expanded to include the characterization of groundwater from 243 existing monitoring wells at the facility.

Since 2005, annual addendums have been developed to specify the sampling scheme for each year. The annual sampling approach has been summarized in an annual report. In 2016, the *Remedial Investigation Work Plan for Groundwater and Environmental Services for RVAAP-66 Facility-Wide Groundwater* (herein referred to as the RIWP; TEC-Weston 2016) was developed. This RIWP serves as a supplement to the FWGWMP Plan and specifies aspects of the RI with the goal of adequately characterizing pertinent physical and chemical groundwater conditions in the multi-aquifer hydrostratigraphic units variably present across CJAG, so that potential current and future risks to potential human and environmental receptors can be ascertained, effectively managed, and mitigated as needed.

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3.0 SPRING 2019 MONITORING EVENT

The 2019 Addendum further addressed AOC-specific nature and extent data gaps in the historical sampling dataset, as indicated by an analysis of results through 2018. To this end, 72 wells (including 5 RCRA wells) were selected for sampling during the semi-annual events in 2019. These wells are depicted in Figure 3-1.

Monitoring well sampling and analytical testing are conducted in accordance with the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) updates provided with the RIWP (TEC-Weston 2016). The following subsections summarize the activities completed in spring 2019 as they relate to the FWGWMP. The primary activity was groundwater sampling.

3.1 GROUNDWATER ELEVATION MONITORING

A comprehensive facility-wide gauging event was conducted between April 23and 29, 2019. The depth to water in each monitoring well was measured from the top of the inner casing-level indicator. Depth to water measurements at wells RQLmw-017, DETmw-004, SCLmw-001, and SCLmw-002 could not be measured during the comprehensive gauging event because water levels were below the top of permanently installed sampling pumps. Depth to water measurements at wells DA2mw-105 and WBGmw-013 could not be measured due to health and safety concerns regarding bees' nests within the well casing.

Measured depths to water during this gauging event are presented in Appendix A. The calculated groundwater elevations and potentiometric surface maps generated from this comprehensive facility-wide event will be presented in the 2019 Annual Report.

3.2 MONITORING WELL INSPECTION AND REPAIRS

Each monitoring well was inspected during the April 2019 comprehensive water level measurement event. Maintenance was not performed at any monitoring well during the well gauging and inspection activities. However, the Army is currently conducting well repair activities, such as painting the wells and bollards and re-stenciling the wells.

A tabulated summary of well inspection notes from April 2017 is included in Appendix B. Detailed well inspection forms and photographs were provided to the Army in the *2019 Annual Monitoring Well Inspection Report* (Leidos 2019b).

3.3 SPRING 2019 MONITORING WELL SAMPLING EVENT

From April 29 to May 13, 2019, all 72 wells specified in the 2019 Addendum were sampled. These wells are depicted in Figure 3-1. This sampling event included the third quarter of sampling at the three permanent monitoring wells installed at the Sand Creek Disposal Road Landfill in October 2018. Monitoring wells SCLmw-001, SCLmw-002, and SCLmw-003 were sampled and analyzed for the RVAAP full-suite.

Monitoring wells were purged and sampled using low-flow methods. Purging and sampling were completed using dedicated bladder pumps and tubing. The sampling was performed in accordance with field change request (FCR) FCR_LEIDOS_FWGW_006 Micro-Purge Procedure. This FCR is presented in Appendix C.

Sampling of each monitoring well began immediately after purging. Samples were placed into iced coolers once collected and maintained under chain-of-custody until shipped to the TestAmerica Laboratory in North Canton, Ohio, via courier.

Table 3-1 summarizes the analyses completed for each monitoring well. The quality assurance/quality control (QA/QC) samples consisted of field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples. Rinsate QA/QC samples were not required because of the use of dedicated and disposable equipment. In addition, USACE split samples were collected from wells DETmw-003, FBQmw-172, LL10mw-003, LL1mw-089, SCLmw-002, and RQLmw-011 and shipped to CT Laboratories in Baraboo, Wisconsin.

Appendix D includes the Task Team Activity Log Sheets, Well Purge Forms, Chains of Custody, and Calibration Logs.

3.4 FIELD CHANGE REQUESTS

In October 2018, three FCRs were approved that are applicable to the spring 2019 sampling event. These FCRs are summarized below and presented in Appendix C:

- FCR_LEIDOS_FWGW_001 – Specifies that, due to the permanent bladder pumps, total depths of wells will not be collected during the facility-wide comprehensive water level measurements.
- FCR_LEIDOS_FWGW_004 – Specifies the field QC sampling frequency.
- FCR_LEIDOS_FWGW_006 – Documents the micro-purge procedure to be implemented during groundwater sampling collected by micro-purging with dedicated bladder pumps.

3.5 INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW) was generated during the field activities. Four 55-gallon drums were used to containerize the estimated 164 gallons of liquid IDW generated. On June 11, 2019, Leidos submitted an IDW Report containing a characterization and disposal plan. The plan recommended that the liquid IDW be characterized as non-hazardous, non-contaminated under Clean Harbors Profile No. CH1784679 and be removed offsite and disposed of at a permitted water treatment or waste facility. This plan was approved by the Army.

On June 13, 2019, the four drums containing the IDW were picked up and transported for disposal. Appendix E contains the IDW Report and final bill of lading (manifest) used for transport of the waste.

Table 3-1. FWGWMP Wells with Analytical Testing Suite

Well ID	VOCs	SVOCs	PCBs	Explosives	Pesticides	Cyanide	Other	Metals[7]
CBPmw-008						X		
CBPmw-009						X		
DA2mw-115								X
DET-003	X	X[2,3,4,5]	X	X	X	X		X
DET-004	X	X[2,3,4,5]	X	X	X	X		X
EBGmw-125						X		
EBGmw-131						X		
FBQmw-171						X	Sulfate/sulfide, nitrate/nitrite, alkalinity	
FBQmw-172						X		
FBQmw-174				X			Sulfate/sulfide, nitrate/nitrite, alkalinity	
FBQmw-175							Sulfate/sulfide, nitrate/nitrite, alkalinity	Cr[VI]
FBQmw-176						X		
FWGmw-004				X				X
FWGmw-007				X				X
FWGmw-011				X				X
FWGmw-012				X				X
FWGmw-015				X				X
FWGmw-016				X				X
FWGmw-018	X					X		X
FWGmw-019							Nitroguanidine[1], nitrocellulose[1]	
FWGmw-020	X					X		X
FWGmw-021				X				X
FWGmw-022							Nitroguanidine[1], nitrocellulose[1]	
FWGmw-023							Nitroguanidine[1], nitrocellulose[1]	
FWGmw-024				X				X
LL1mw-064								X
LL1mw-065				X				X
LL1mw-080				X				
LL1mw-081				X		X		
LL1mw-083				X			Sulfate/sulfide, nitrate/nitrite, alkalinity	
LL1mw-084				X			Sulfate/sulfide, nitrate/nitrite, alkalinity	X
LL1mw-086						X	Alkalinity	X
LL1mw-087				X				X

Table 3-1. FWGWMP Wells with Analytical Testing Suite (continued)

Well ID	VOCs	SVOCs	PCBs	Explosives	Pesticides	Cyanide	Other	Metals[6]
LL1mw-088				X			Alkalinity	X
LL1mw-089				X			Nitroguanidine[1], nitrocellulose[1]	
LL2mw-059				X				X
LL2mw-264						X		
LL2mw-267				X				X
LL2mw-272						X		
LL3mw-234						X		
LL3mw-237				X				
LL3mw-244				X				X
LL3mw-246				X			Perchlorate	X
LL4mw-200						X		
LL7mw-001						X		X
LL7mw-006				X				
LL10mw-003	X							
LL10mw-005								X
LL11mw-005						X		
LL12mw-183						X		
LL12mw-185							Nitrate	
LL12mw-187							Nitrate	X
LL12mw-242							Nitrate	X
LL12mw-245				X			Nitrate	X
LL12mw-247							Nitrate	X
NTAmw-119		X[4]		X				X
NTAmw-120		X[1,6]						
RQLmw-007	X	X[2,4,5]	X	X	X	X	Phosphorus	X
RQLmw-008	X	X[2,4,5]	X	X	X	X		X
RQLmw-009	X	X[2,4,5]	X	X	X	X		X
RQLmw-011							Sulfate/sulfide, nitrate/nitrite, alkalinity	
RQLmw-012						X	Sulfate/sulfide, nitrate/nitrite, alkalinity	
RQLmw-013							Sulfate/sulfide, nitrate/nitrite, alkalinity	
RQLmw-016						X		
SCFmw-004								X
WBGmw-006				X				X

Table 3-1. FWGWMP Wells with Analytical Testing Suite (continued)

Well ID	VOCs	SVOCs	PCBs	Explosives	Pesticides	Cyanide	Other	Metals[6]
WBGmw-009				X				X
WBGmw-020				X				X
WBGmw-021				X				X
SCLmw-001	X	X	X	X	X	X	Sulfate/sulfide, nitrate/nitrite, alkalinity, perchlorate, phosphorus, nitroguanidine, nitrocellulose	X
SCLmw-002	X	X	X	X	X	X	Sulfate/sulfide, nitrate/nitrite, alkalinity, perchlorate, phosphorus, nitroguanidine, nitrocellulose	X
SCLmw-003	X	X	X	X	X	X	Sulfate/sulfide, nitrate/nitrite, alkalinity, perchlorate, phosphorus, nitroguanidine, nitrocellulose	X

Notes:

X = Indicates well or constituent to be sampled as part of the 2019 FWGWMP. Wells and constituents will be sampled semi-annually unless indicated by the footnotes below.
[1] Indicates monitoring well or constituents to be sampled in spring 2019 due to missed tests or rejected results in 2018. Additional sampling during 2019 for these wells and constituents will be based on review of the spring 2019 results.
[2] SVOCs: phthalates
[3] SVOCs: nitroaromatics
[4] SVOCs: polycyclic aromatic hydrocarbons
[5] SVOCs: phenols
[6] SVOCs: hexachlorocyclopentadiene
[7] Metals sampling in all 2019 will only include wells with one or more metals exceeding screening criteria including a screen against approved background criteria.

Cr[VI] = Hexavalent Chromium.
FWGWMP = Facility-wide Groundwater Monitoring Program.
ID = Identification.
PCB = Polychlorinated Biphenyl.
SVOC = Semi-volatile Organic Compound.
VOC = Volatile Organic Compound.

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4.0 RESULTS

Table 4-1 presents the 2019 FWGWMP sampling recommendations for sampling each individual well, as presented in the 2019 Addendum. In addition, this table provides a discussion of the results for each well. The concentrations are compared to the applicable screening criteria for each chemical. The screening criteria are the highest concentration amongst the aquifer-specific background concentration for metals, maximum contaminant level (MCL), Resident facility-wide cleanup goal (FWCUG), or U.S. Environmental Protection Agency (USEPA) Residential tap water regional screening level (RSL).

Appendix F.1 contains a table with all analytical results from the wells sampled in spring 2019, Appendix F.2 contains the chemical-specific screening criteria, and Appendix F.3 contains a summary of results that exceeded the applicable screening criteria. The laboratory data packages are presented in Appendix G.

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Table 4-1. Recommended FWGWMP Wells for 2019

No	RVAAP-66 Area	Well Name	Aquifer	2019 FWGWMP Sampling Recommendations	Spring 2019 Sampling Results
1	RVAAP-01 Ramsdell Quarry	RQLmw-007	Upper Sharon	• In accordance with the DFFO, analytical parameters for this RCRA well include the same parameters as 2018: VOCs, phthalates, PAHs, phenols, PCBs, explosives, pesticides, cyanide, phosphorus, and metals.	• VOCs, phthalates, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and phosphorus were not detected. • Manganese was the only metal that exceeded the screening criteria and background concentration. Manganese was detected at a concentration of 0.49 mg/L, which exceeds the background concentration of 0.198 mg/L.
2	RVAAP-01 Ramsdell Quarry	RQLmw-008	Upper Sharon	• In accordance with the DFFO, analytical parameters for this RCRA well include the same parameters as 2018: VOCs, phthalates, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and metals.	• VOCs, phthalates, PAHs, phenols, PCBs, explosives, and pesticides were not detected. • Cyanide was detected at an estimated concentration of 0.0053J mg/L, which is below the MCL of 0.2 mg/L. • Arsenic, iron, magnesium, and manganese were the only metals that exceeded the screening criteria and background concentration.
3	RVAAP-01 Ramsdell Quarry	RQLmw-009	Upper Sharon	• In accordance with the DFFO, analytical parameters for this RCRA well include the same parameters as 2018: VOCs, phthalates, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and metals.	• VOCs, phthalates, PAHs, phenols, PCBs, explosives, and pesticides were not detected. • Cyanide was detected at an estimated concentration of 0.013J mg/L, which is below the MCL of 0.2 mg/L. • Manganese was the only metal that exceeded the screening criteria and background concentration. Manganese was detected at a concentration of 0.3 mg/L, which exceeded the background concentration of 0.198 mg/L.
4	RVAAP-01 Ramsdell Quarry	RQLmw-011	Upper Sharon	• In consideration of the pH anomalies, continue to monitor anions, pH, and alkalinity.	• Nitrate, nitrite, sulfide, and alkalinity were not detected. • Sulfate does not have screening criteria and was detected at an estimated concentration of 130J mg/L. • pH was 4.07 S.U. at the time of sample collection.
5	RVAAP-01 Ramsdell Quarry	RQLmw-012	Upper Sharon	• In consideration of the pH anomalies, continue to monitor anions, pH, alkalinity, and cyanide.	• Nitrate, nitrite, and sulfide were either not detected or detected at concentrations below screening criteria. • Sulfate does not have screening criteria and was detected at an estimated concentration of 110J mg/L. • Alkalinity does not have screening criteria and was detected at an estimated concentration of 9.9J mg/L. • Cyanide was detected at an estimated concentration of .04J mg/L, which is below the MCL of 0.2 mg/L. • pH was 5.14 S.U. at the time of sample collection.
6	RVAAP-01 Ramsdell Quarry	RQLmw-013	Upper Sharon	• In consideration of the pH anomalies, continue to monitor anions, pH, and alkalinity.	• Alkalinity, nitrate, and sulfide were not detected. • Sulfate does not have screening criteria and was detected at an estimated concentration of 160J mg/L. • pH was 3.98 S.U. at the time of sample collection.
7	RVAAP-01 Ramsdell Quarry	RQLmw-016	Upper Sharon	• Continue to monitor cyanide.	• Cyanide was not detected.
8	RVAAP-02 Erie Burning Grounds	EBGmw-125	Unconsolidated	• Continue to monitor cyanide.	• Cyanide was detected at a concentration of 0.011 mg/L, which is below the MCL of 0.2 mg/L.
9	RVAAP-02 Erie Burning Grounds	EBGmw-131	Upper Sharon	• Continue to monitor cyanide.	• Cyanide was not detected.
10	RVAAP-04 Demolition Area 2	DA2mw-115	Upper Sharon	• Continue to monitor metals.	• All metal concentrations were below the screening criteria or background concentration.
11	RVAAP-04 Demolition Area 2	DETmw-003	Unconsolidated	• In accordance with the DFFO, analytical parameters for this RCRA well include the same parameters as 2018: VOCs, phthalates, nitroaromatics, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and metals.	• Cyanide, phthalates, nitroaromatics, SVOCs, phenols, PCBs, explosives, or pesticides were not detected. • Acetone was the only VOC detected. Acetone was detected at an estimated concentration of 0.0028J mg/L, which is below the Tapwater RSL. • Manganese was the only metal that exceeded the screening criteria and background concentration. Manganese was detected at a concentration of 0.24 mg/L, which exceeded the background concentration of 0.075 mg/L.

Table 4-1. Recommended FWGWMP Wells for 2019 (continued)

No	RVAAP-66 Area	Well Name	Aquifer	2019 FWGWMP Sampling Recommendations	Spring 2019 Sampling Results
12	RVAAP-04 Demolition Area 2	DETmw-004	Unconsolidated	• In accordance with the DFFO, analytical parameters for this RCRA well include the same parameters as 2018: VOCs, phthalates, nitroaromatics, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and metals.	• SVOCs, pesticides, phthalates, nitroaromatics, PAHs, phenols, cyanide, and PCBs were not detected. • Acetone was the only VOC detected. Acetone was detected at an estimated concentration of 0.0051 mg/L, which is below the Tapwater RSL. • All metal concentrations were below the screening criteria or background concentration, with the exception of calcium. Calcium does not have screening criteria and was detected at a concentration of 120 mg/L, which exceeded the background concentration of 107 mg/L. • No explosives were detected with the exception of HMX and RDX. The HMX concentration was below the screening criteria. The RDX concentration of 0.0014 mg/L exceeded the screening criteria.
13	RVAAP-05 Winklepeck Burning Grounds	WBGmw-006	Unconsolidated	• Continue to monitor explosives and metals.	• No explosives were detected with the exception of HMX and RDX. The HMX concentration was below the screening criteria. The RDX concentration of 0.011 mg/L exceeded the screening criteria. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. The manganese concentration of 0.099 mg/L exceeded the background concentration of 0.075 mg/L.
14	RVAAP-05 Winklepeck Burning Grounds	WBGmw-009	Unconsolidated	• Continue to monitor explosives and metals.	• No explosives were detected with the exception of HMX and RDX. The HMX concentration was below the screening criteria. The RDX concentration of 0.0016 mg/L exceeded the screening criteria. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. The manganese concentration of 0.18 mg/L exceeded the background concentration of 0.075 mg/L.
15	RVAAP-05 Winklepeck Burning Grounds	WBGmw-020	Upper Sharon	• Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of iron and manganese. The iron concentration of 3.4 mg/L exceeded the background concentration of 2.08 mg/L. The manganese concentration of 0.22 mg/L exceeded the background concentration of 0.198 mg/L.
16	RVAAP-05 Winklepeck Burning Grounds	WBGmw-021	Upper Sharon	• Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. The manganese concentration of 0.37 mg/L exceeded the background concentration of 0.198 mg/L.
17	RVAAP-08 Load Line 1 (east of Load Line 1 fence)	LL1mw-064	Unconsolidated	• Continue to monitor metals in this sentinel well.	• All metal concentrations were below the screening criteria or background concentration with the exception of manganese. The manganese concentration of 0.12 mg/L exceeded the background concentration of 0.075 mg/L.
18	RVAAP-08 Load Line 1 (southeast of Load Line 1 fence)	LL1mw-065	Unconsolidated	• Although explosives were not detected, this exit pathway well will continue to monitor migration potential. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration.
19	RVAAP-08 Load Line 1	LL1mw-080	Upper Sharon	• Continue to monitor explosives.	• The explosives 2-amino-4, 6-DNT; 4-amino-2,6-DNT; HMX; and RDX were detected; however, only RDX exceeded the screening criteria at a concentration of 0.013 mg/L.
20	RVAAP-08 Load Line 1	LL1mw-081	Upper Sharon	• Continue to monitor explosives and cyanide.	• All explosive concentrations were not detected or were below the screening criteria. • Cyanide was not detected.
21	RVAAP-08 Load Line 1	LL1mw-083	Upper Sharon	• Continue to monitor explosives, anions, and alkalinity.	• Nitrite and sulfide were not detected, and nitrate is below the screening criteria. • Nitrate was detected but at a concentration below the screening level. • Sulfate does not have screening criteria and was detected at an estimated concentration of 120J mg/L. • Alkalinity does not have screening criteria and was detected at a concentration of 44 mg/L. • TNT; 1,3-DNB; 2,4-DNT; 2-amino-4,6-DNT; and 4-amino-2,6-DNT exceeded the screening criteria. All other explosives were below the screening criteria.

Table 4-1. Recommended FWGWMP Wells for 2019 (continued)

No	RVAAP-66 Area	Well Name	Aquifer	2019 FWGWMP Sampling Recommendations	Spring 2019 Sampling Results
22	RVAAP-08 Load Line 1	LL1mw-084	Upper Sharon	• Continue to monitor explosives, anions, alkalinity, and metals.	• Nitrite and alkalinity were not detected. • Nitrate was detected at a concentration of 0.33J mg/L, which is below the MCL of 10 mg/L. • Sulfate does not have screening criteria and was detected at an estimated concentration of 140J mg/L. • Sulfide does not have screening criteria and was detected at an estimated concentration of 0.8J mg/L. • 1,3-DNB; TNT; 2,4-DNT; 2-amino-4,6-DNT; 4-amino-2,6-DNT; and RDX exceeded the screening criteria. All other explosives were below the screening criteria. • All metal concentrations were below the screening criteria or background concentration.
23	RVAAP-08 Load Line 1 (southeast of Load Line 1 fence)	LL1mw-086	Unconsolidated	• Continue to monitor metals, cyanide, and alkalinity in this sentinel well.	• Cyanide was not detected. • Alkalinity does not have screening criteria but was detected at a concentration of 110 mg/L. • Aluminum, iron, manganese, and potassium were the only metals that exceeded screening criteria.
24	RVAAP-08 Load Line 1 (southeast of Load Line 1 fence)	LL1mw-087	Unconsolidated	• Although explosives were not detected, this exit pathway well will continue to monitor migration potential. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration.
25	RVAAP-08 Load Line 1	LL1mw-088	Unconsolidated	• Continue to monitor explosives, alkalinity, and metals in this sentinel well.	• Alkalinity does not have a screening criteria but was detected at a concentration of 290 mg/L. • Explosives were not detected. • Arsenic and sodium were the only metals that exceeded the screening criteria. Arsenic was detected at a concentration of 0.028 mg/L, exceeding the MCL of 0.01 mg/L. Sodium was detected at an estimated concentration of 23J mg/L, exceeding the background concentration of 18.2 mg/L.
26	RVAAP-08 Load Line 1	LL1mw-089	Unconsolidated	• Continue to monitor explosives and recollect rejected propellant results from 2018.	• All explosive and propellant concentrations were below screening criteria. This includes the nitroguanidine and nitrocellulose that had rejected results in spring 2018.
27	RVAAP-09 Load Line 2 South	LL2mw-059	Upper Sharon	• Continue to monitor explosives and metals.	• The explosives 1,3-DNB and 2,4-DNT exceeded screening criteria. All other explosive concentrations were below screening criteria. • All metal concentrations were below the screening criteria or background concentration.
28	RVAAP-09 Load Line 2	LL2mw-264	Upper Sharon	• Continue to monitor cyanide.	• Cyanide was detected at an estimated concentration of 0.006J mg/L, which is below the MCL of 0.2 mg/L.
29	RVAAP-09 Load Line 2	LL2mw-267	Upper Sharon	• Continue to monitor explosives and metals.	• All explosive concentrations were below screening criteria. • All metal concentrations were below the screening criteria or background concentration with the exception of iron. Iron was detected at a concentration of 2.5 mg/L, which exceeded the background concentration of 2.08 mg/L.
30	RVAAP-09 Load Line 2	LL2mw-272	Upper Sharon	• Continue to monitor cyanide.	• Cyanide was not detected.
31	RVAAP-10 Load Line 3	LL3mw-234	Upper Sharon	• Continue to monitor cyanide.	• Cyanide was detected at an estimated concentration of 0.0087J mg/L, which is below the MCL of 0.2 mg/L.
32	RVAAP-10 Load Line 3	LL3mw-237	Upper Sharon	• Continue to monitor explosives.	• All explosive concentrations were less than screening criteria with the exception of 4-amino-2,6-DNT. • 4-Amino-2,6-DNT was detected at a concentration of 0.004 mg/L, which slightly exceeded the Tapwater RSL of 0.0039 mg/L.
33	RVAAP-10 Load Line 3	LL3mw-244	Upper Sharon	• Continue to monitor explosives and metals.	• All explosive concentrations were below screening criteria. • All metal concentrations were below the screening criteria or background concentration.
34	RVAAP-10 Load Line 3	LL3mw-246	Upper Sharon	• Continue to monitor explosives, perchlorate, and metals.	• All explosive concentrations were below screening criteria. • All metal concentrations were below the screening criteria or background concentration. • Perchlorate was detected, but concentrations were below screening criteria.

Table 4-1. Recommended FWGWMP Wells for 2019 (continued)

No	RVAAP-66 Area	Well Name	Aquifer	2019 FWGWMP Sampling Recommendations	Spring 2019 Sampling Results
35	RVAAP-11 Load Line 4	LL4mw-200	Unconsolidated	• Continue to monitor cyanide.	• Cyanide was not detected.
36	RVAAP-12 Load Line 12	LL12mw-183	Unconsolidated	• Continue to monitor cyanide	• Cyanide was not detected.
37	RVAAP-12 Load Line 12	LL12mw-185	Unconsolidated	• Continue to monitor nitrate.	• Nitrate was detected at a concentration of 92 mg/L, which exceeded the MCL of 10 mg/L.
38	RVAAP-12 Load Line 12	LL12mw-187	Unconsolidated	• Continue to monitor nitrate and metals.	• Nitrate had a concentration of 1,600 mg/L, which exceeded the MCL of 10 mg/L. • All metal concentrations were below the screening criteria or background concentration with the exception of calcium, magnesium, potassium, sodium, and manganese.
39	RVAAP-12 Load Line 12	LL12mw-242	Unconsolidated	• Continue to monitor nitrate and metals.	• Nitrate was not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of arsenic, iron, and sodium. • Arsenic was detected at a concentration of 0.022 mg/L, which exceeded the MCL of 0.01 mg/L. • Iron was detected at a concentration of 3.8mg/L, which exceeded the background concentration of 1.91 mg/L. • Sodium exceeded the background criteria at an estimated concentration of 29J mg/L, exceeding the background concentration of 18.2 mg/L.
40	RVAAP-12 Load Line 12	LL12mw-245	Unconsolidated	• Although nitrate was not detected, a history of nitrate detections in recent years and nearby wells warrant further monitoring. • Continue to monitor explosives, nitrate, and metals.	• Nitrate was detected at an estimated concentration of 0.12J mg/L, which is less than the MCL of 10 mg/L. • All explosive concentrations were below the screening criteria. • All metal concentrations were below the screening criteria or background concentration, with the exception of arsenic. Arsenic was detected at a concentration of 0.012 mg/L, which exceeded the MCL of 0.01 mg/L. Calcium, magnesium, and sodium exceeded the background criteria and have no risk-based criteria.
41	RVAAP-12 Load Line 12 (south of Load Line 12 fence)	LL12mw-247	Unconsolidated	• Although nitrate was not detected, a history of nitrate detections in recent years and nearby wells warrants further monitoring at this exit pathway well. • Continue to monitor metals and nitrate.	• Nitrate was not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. Manganese was detected at a concentration of 0.16 mg/L, which exceeded the background concentration of 0.075 mg/L. Sodium exceeded the background criteria and has no risk-based criteria.
42	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-171	Homewood	• Continue to monitor cyanide, anions, and alkalinity.	• Nitrite and sulfide were not detected. • Nitrate was detected at an estimated concentration of 0.33 mg/L, which is below the MCL of 10 mg/L. • Sulfate does not have screening criteria and was detected at a concentration of 24 mg/L. • Alkalinity does not have screening criteria and was detected at a concentration of 41 mg/L. • Cyanide was not detected.
43	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-172	Homewood	• Continue to monitor cyanide.	• Cyanide was not detected.
44	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-174	Homewood	• Continue to monitor explosives, anions, and alkalinity.	• Nitrite and sulfide were not detected. • Nitrate was detected at a concentration of 1.2 mg/L, which is below the MCL of 10 mg/L. • Sulfate does not have screening criteria and was detected at a concentration of 15 mg/L. • Alkalinity does not have screening criteria and was detected at an estimated concentration of 4.8J mg/L. • The explosives TNT; 2,4-DNT; 2-amino-4,6-DNT; 4-amino-2,6-DNT; and RDX exceeded the screening criteria.

Table 4-1. Recommended FWGWMP Wells for 2019 (continued)

No	RVAAP-66 Area	Well Name	Aquifer	2019 FWGWMP Sampling Recommendations	Spring 2019 Sampling Results
45	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-175	Homewood	• Continue to monitor anions, alkalinity, and hexavalent chromium.	• Nitrite and sulfide were not detected. • Nitrate was detected at a concentration of 1.6 mg/L, which is below the MCL of 10 mg/L. • Sulfate does not have screening criteria and was detected at a concentration of 20 mg/L. • Alkalinity does not have screening criteria and was detected at a concentration of 13 mg/L. • Hexavalent chromium was not detected.
46	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-176	Unconsolidated	• Continue to monitor cyanide.	• Cyanide was not detected.
47	RVAAP-34 Sand Creek Disposal Road Landfill	SCLmw-001	Unconsolidated	• Continue quarterly monitoring.	• Explosives, PCBs, pesticides, SVOCs, VOCs, perchlorate, nitrate, nitrite, and sulfide were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. Manganese was detected at a concentration of 0.31 mg/L, which exceed the background concentration of 0.075 mg/L. Calcium and sodium exceeded the background criteria and have no risk-based criteria. • Sulfate and alkalinity were detected, but these chemicals do not have screening criteria. • Phosphorus was detected at a concentration of 0.018 mg/L, which exceeded the Tapwater RSL of 0.00004 mg/L. • Cyanide was detected at an estimated concentration of 0.015J mg/L, which is below the MCL of 0.2 mg/L.
48	RVAAP-34 Sand Creek Disposal Road Landfill	SCLmw-002	Unconsolidated	• Continue quarterly monitoring.	• Explosives, PCBs, pesticides, SVOCs, perchlorate, nitrate, nitrite, and sulfide were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of iron and manganese. Calcium exceeded the background criteria and has no risk-based criteria. • Sulfate and alkalinity were detected, but these chemicals do not have screening criteria. • Phosphorus was detected at an estimated concentration of 0.011J mg/L, which exceeded the Tapwater RSL of 0.00004 mg/L. • Cyanide was detected at an estimated concentration of 0.0052J mg/L, which is below the MCL of 0.2 mg/L. • Acetone was the only VOC detected. Acetone was detected at an estimated concentration of 0.0021J mg/L, which is below the Tapwater RSL of 1.4 mg/L.
49	RVAAP-34 Sand Creek Disposal Road Landfill	SCLmw-003	Unconsolidated	• Continue quarterly monitoring.	• Explosives, PCBs, pesticides, SVOCs, perchlorate, phosphorus, cyanide, nitrate, nitrite, and sulfide were not detected. • All metal concentrations were below screening criteria or background concentration with the exception of manganese. Calcium, magnesium, potassium, and sodium exceeded the background criteria and have no risk-based criteria. • Sulfate and alkalinity were detected, but these chemicals do not have screening criteria. • Acetone was the only VOC detected. Acetone was detected at an estimated concentration of 0.0021J mg/L, which is below the Tapwater RSL of 1.4 mg/L.
50	RVAAP-38 NACA Test Area	NTAmw-119	Unconsolidated	• Continue to monitor PAHs, explosives, and metals.	• Explosives and SVOCs were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. Manganese was detected at a concentration of 0.33 mg/L, which exceeded the background concentration of 0.075 mg/L.
51	RVAAP-38 NACA Test Area	NTAmw-120	Upper Sharon	• Rejected hexachlorocyclopentadiene results from 2018 require additional monitoring.	• Hexachlorocyclopentadiene was not detected.
52	RVAAP-40 Load Line 7	LL7mw-001	Homewood	• Continue to sample for metals and cyanide.	• All metal concentrations were below the screening criteria or background concentration. • Cyanide was not detected.
53	RVAAP-40 Load Line 7	LL7mw-006	Homewood	• Continue to monitor explosives.	• All explosives were below the screening criteria.
54	RVAAP-43 Load Line 10	LL10mw-003	Homewood	• Continue to monitor VOCs.	• All VOCs were below the screening criteria.

Table 4-1. Recommended FWGWMP Wells for 2019 (continued)

No	RVAAP-66 Area	Well Name	Aquifer	2019 FWGWMP Sampling Recommendations	Spring 2019 Sampling Results
55	RVAAP-43 Load Line 10	LL10mw-005	Homewood	• Continue to monitor metals.	• All metals were below the screening criteria or background concentration.
56	RVAAP-44 Load Line 11	LL11mw-005	Unconsolidated	• Continue to monitor cyanide	• Cyanide was not detected.
57	RVAAP-49 Central Burn Pits	CBPmw-008	Unconsolidated	• Continue to monitor cyanide.	• Cyanide was not detected.
58	RVAAP-49 Central Burn Pits	CBPmw-009	Upper Sharon	• Continue to monitor cyanide.	• Cyanide was not detected.
59	RVAAP-66 Facility-wide Groundwater (southern portion of Admin area)	FWGmw-004	Unconsolidated	• Although explosives were not detected, this exit pathway well will continue to monitor migration potential. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metals were below the screening criteria or background concentration.
60	RVAAP-66 Facility-wide Groundwater (southwestern portion of facility, south of NACA Test Area)	FWGmw-007	Unconsolidated	• Although explosives were not detected, this exit pathway well will continue to monitor migration potential. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below screening criteria or background concentration with the exception of calcium, magnesium, and manganese. Calcium was detected at a concentration of 130 mg/L, exceeding the background concentration of 107 mg/L. Magnesium was detected at a concentration of 66 mg/L, exceeding the background concentration of 55.3 mg/L. Manganese was detected at a concentration of 0.13 mg/L, which exceeded the background concentration of 0.075 mg/L.
61	RVAAP-66 Facility-wide Groundwater (near East Classification Yard)	FWGmw-011	Unconsolidated	• Although explosives were not detected, this exit pathway well will continue to monitor migration. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of iron and manganese. • Iron was detected at a concentration of 8.2 mg/L, which exceeded the background concentration of 1.91 mg/L. • Manganese was detected at a concentration of 0.29 mg/L, which exceed the background concentration of 0.075 mg/L.
62	RVAAP-66 Facility-wide Groundwater (near East Classification Yard)	FWGmw-012	Upper Sharon	• Although explosives were not detected, this exit pathway well will continue to monitor migration potential. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of iron. Iron was detected at a concentration of 2.4 mg/L, which exceeded the background concentration of 2.08 mg/L. Potassium exceeded the background criteria and has no risk-based criteria.
63	RVAAP-66 Facility-wide Groundwater (southeast of Administration Area)	FWGmw-015	Unconsolidated	• Although explosives were not detected, this exit pathway well will continue to monitor migration potential. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below screening criteria or background concentration except calcium, magnesium, and potassium. Calcium was detected at a concentration of 280 mg/L, exceeding the background concentration of 107 mg/L. Magnesium was detected at a concentration of 290 mg/L, exceeding the background concentration of 55.3 mg/L. Potassium was detected at a concentration of 44J mg/L, which is equal to the background concentration of 18.2 mg/L.
64	RVAAP-66 Facility-wide Groundwater (southeast of Administration Area)	FWGmw-016	Upper Sharon	• Although explosives were not detected, this exit pathway well will continue to monitor migration potential. • Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. Manganese was detected at a concentration of 0.22 mg/L, which exceeded the background concentration of 0.198 mg/L.
65	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 12)	FWGmw-018	Basal Sharon Conglomerate	• Although VOCs were not detected, a history of low VOC concentrations warrants monitoring in this exit pathway well. • Continue to monitor VOCs, metals, and cyanide.	• VOCs were not detected. • All metal concentrations were below the screening criteria or background concentration. • Cyanide was detected at an estimated concentration of 0.0065J mg/L, which is below the MCL of 0.2 mg/L.
66	RVAAP-66 Facility-wide Groundwater (located between Load Line 10 and Load Line 9)	FWGmw-019	Basal Sharon Conglomerate	• VOC detections were limited to acetone and methylene chloride, more than an order of magnitude lower than screening criteria; therefore, no additional sampling is warranted at this well with the exception of rejected propellant results from 2018, which require additional monitoring.	• The propellants nitrocellulose and nitroguanidine were not detected.

Table 4-1. Recommended FWGWMP Wells for 2019 (continued)

No	RVAAP-66 Area	Well Name	Aquifer	2019 FWGWMP Sampling Recommendations	Spring 2019 Sampling Results
67	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 12)	FWGmw-020	Upper Sharon	• Although VOCs do not exceed criteria, a history of low VOC concentrations warrants monitoring to monitor vertical and lateral migration in this exit pathway well. • Continue to monitor VOCs, metals, and cyanide.	• VOCs were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of arsenic and potassium. Arsenic was detected at a concentration of 0.023 mg/L, which exceeded the MCL of 0.01 mg/L. Potassium was detected at a concentration of 4.6 mg/L, which exceeded the background concentration of 3.38 mg/L. • Cyanide was detected at a concentration of 0.011 mg/L, which is below the MCL of 0.2 mg/L.
68	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 3)	FWGmw-021	Upper Sharon	• Continue to monitor explosives and metals.	• All explosive concentrations were below screening criteria. • All metal concentrations were below the screening criteria or background concentration.
69	RVAAP-66 Facility-wide Groundwater (located between Load Line 10 and Load Line 9)	FWGmw-022	Upper Sharon	• Rejected propellant results from 2018 require additional monitoring.	• The propellants nitrocellulose and nitroguanidine were not detected.
70	RVAAP-66 Facility-wide Groundwater (located between Load Line 7 and Fuze and Booster Quarry Landfill/Ponds)	FWGmw-023	Upper Sharon	• Rejected propellant results from 2018 require additional monitoring.	• The propellants nitrocellulose and nitroguanidine were not detected.
71	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 2)	FWGmw-024	Upper Sharon	• Continue to monitor explosives and metals.	• Explosives were not detected. • All metal concentrations were below the screening criteria or background concentration with the exception of manganese. Manganese was detected at a concentration of 0.33 mg/L, which exceeded the background concentration of 0.198 mg/L.
72	RVAAP-66 Facility-wide Groundwater (southeast portion of facility)	SCFmw-004	Basal Sharon Conglomerate	• Continue to monitor metals.	• All metal concentrations were below the screening criteria or background concentration except calcium, magnesium, and potassium. Calcium was detected at a concentration of 150 mg/L, exceeding the background concentration of 93 mg/L. Magnesium was detected at a concentration of 58 mg/L, exceeding the background concentration of 30 mg/L. Potassium was detected at a concentration of 2.9J mg/L, which is equal to the background concentration of 2.9 mg/L.

Note: Background concentrations for metals vary by aquifer.

DFFO = Director's Final Findings and Orders.
DNB = Dinitrobenzene.
DNT = Dinitrotoluene.
FWGWMP = Facility-wide Groundwater Monitoring Plan.
HMX = Octahydro-1,3,5,7- tetranitro-1,3,5,7-tetrazocine.
MCL = Maximum Contaminant Level.
mg/L = Milligrams per Liter.
NACA = National Advisory Committee on Aeronautics.
PAH = Polycyclic Aromatic Hydrocarbon.
PCB = Polychlorinated Biphenyl.
RCRA = Resource Conservation and Recovery Act.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
RSL = Regional Screening Level.
RVAAP = Ravenna Army Ammunition Plant.
S.U. = Standard Unit.
SVOC = Semi-volatile Organic Compound.
TNT = 2,4,6-Trinitrotoluene.
VOC = Volatile Organic Compound.

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5.0 DATA QUALITY ASSESSMENT

A data quality assessment was performed to support the results of the spring 2019 sampling event. The purpose of this DQA report is to document the following:

- The QC procedures followed to ensure data generated by Leidos, during the implementation of the April 2019 sampling event to support the FWGWMP at the former RVAAP, meet project requirements;
- The quality of the data collected; and
- Any problems encountered during the course of the study and their solutions.

The entire data quality assessment report is presented in Appendix H.

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6.0 WELL ABANDONMENT

In a letter dated May 30, 2019, the Army National Guard (ARNG) notified Ohio EPA of the field activities to abandon the one temporary well at Open Demolition Area #1 (DA1tw-001) and three temporary wells at Electric Substation No. 3 (ES3tw-001, ES3tw-002, and ES3tw-003). This notification letter is provided in Appendix I.1.

On June 12, 2019, all four temporary wells were abandoned. The entire casing was removed from wells ES3tw-001, ES3tw-002, and ES3tw-003 by manual methods. The entire casing at DA1tw-001 could not be removed; therefore, the casing was cut to a depth below ground surface. Bentonite pellets were used to seal the existing borehole. The well abandonment logs are provided in Appendix I.2, and the Water Well Sealing Reports submitted to the Ohio Department of Natural Resources are provided in Appendix I.3.

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7.0 REFERENCES

Leidos 2019a. *Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Addendum for 2019.* May 2019.

Leidos 2019b. *2019 Annual Monitoring Well Inspection Report for the Groundwater Investigation and Reporting Services*. May 2019.

Portage Environmental 2004. *Facility-wide Groundwater Monitoring Program Plan for the Ravenna Army Ammunition Plant, Ravenna, Ohio*. September 2004.

TEC-Weston 2016. *Remedial Investigation Work Plan for Groundwater and Environmental Investigation Services for RVAAP-66 Facility-Wide Groundwater*. December 2016.

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FIGURES

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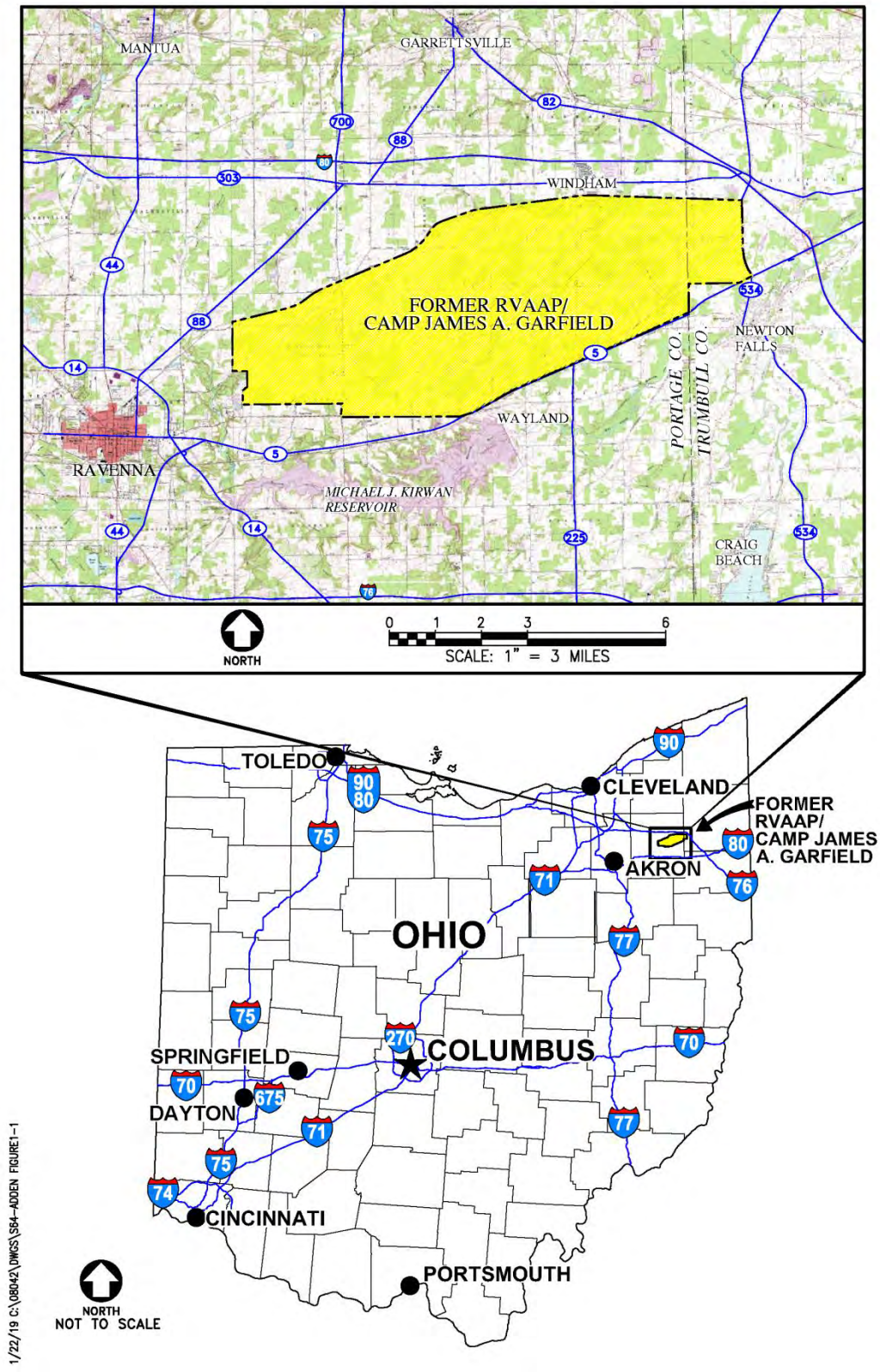

Figure 1-1. General Location and Orientation of the Former RVAAP/CJAG

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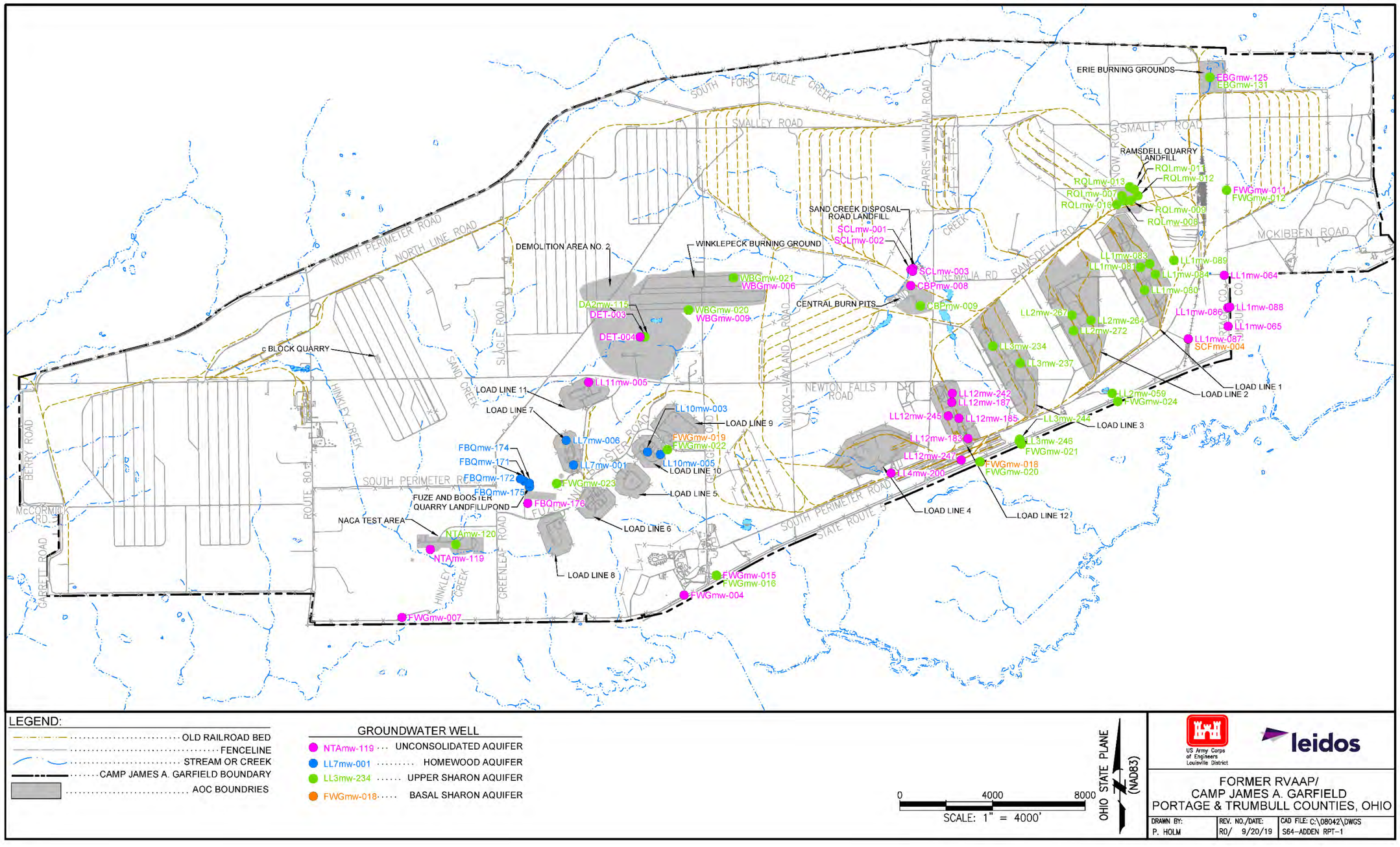

Figure 3-1. 2019 FWGWMP Wells

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APPENDIX A

Well Gauging Results

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RVAAP Facility Wide Monitoring Well Gauging Results			
April 2019			
RVAAP Area	Well ID	Date Gauged	Depth to Water (below TOC)
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-006	4/29/2019	35.38
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-007	4/29/2019	5.28
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-008	4/29/2019	5.76
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-009	4/29/2019	4.00
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-010	4/29/2019	24.70
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-011	4/29/2019	21.00
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-012	4/29/2019	20.92
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-013	4/29/2019	24.31
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-014	4/29/2019	18.76
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-015	4/29/2019	31.93
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-016	4/29/2019	36.52
RVAAP-01 Ramsdell Quarry Landfill	RQLmw-017	4/29/2019	NM
RVAAP-02 Erie Burning Grounds	EBGmw-123	4/25/2019	9.98
RVAAP-02 Erie Burning Grounds	EBGmw-124	4/25/2019	3.82
RVAAP-02 Erie Burning Grounds	EBGmw-125	4/25/2019	12.54
RVAAP-02 Erie Burning Grounds	EBGmw-126	4/25/2019	1.91
RVAAP-02 Erie Burning Grounds	EBGmw-127	4/25/2019	5.25
RVAAP-02 Erie Burning Grounds	EBGmw-128	4/25/2019	6.87
RVAAP-02 Erie Burning Grounds	EBGmw-129	4/25/2019	5.17
RVAAP-02 Erie Burning Grounds	EBGmw-130	4/25/2019	6.42
RVAAP-02 Erie Burning Grounds	EBGmw-131	4/25/2019	8.93
RVAAP-04 Open Demolition Area #2	DA2mw-104	4/23/2019	21.49
RVAAP-04 Open Demolition Area #2	DA2mw-105	4/23/2019	NM
RVAAP-04 Open Demolition Area #2	DA2mw-106	4/23/2019	3.92
RVAAP-04 Open Demolition Area #2	DA2mw-107	4/23/2019	7.05
RVAAP-04 Open Demolition Area #2	DA2mw-108	4/23/2019	5.88
RVAAP-04 Open Demolition Area #2	DA2mw-109	4/23/2019	11.47
RVAAP-04 Open Demolition Area #2	DA2mw-110	4/23/2019	6.01
RVAAP-04 Open Demolition Area #2	DA2mw-111	4/23/2019	7.53
RVAAP-04 Open Demolition Area #2	DA2mw-112	4/23/2019	6.73
RVAAP-04 Open Demolition Area #2	DA2mw-113	4/23/2019	7.20
RVAAP-04 Open Demolition Area #2	DA2mw-114	4/23/2019	4.83
RVAAP-04 Open Demolition Area #2	DA2mw-115	4/23/2019	6.03
RVAAP-04 Open Demolition Area #2	DETmw-001B	4/23/2019	22.31
RVAAP-04 Open Demolition Area #2	DETmw-002	4/23/2019	32.25
RVAAP-04 Open Demolition Area #2	DETmw-003	4/23/2019	9.25
RVAAP-04 Open Demolition Area #2	DETmw-004	4/23/2019	NM
RVAAP-05 Winklepeck Burning Grounds	WBGmw-005	4/23/2019	4.49
RVAAP-05 Winklepeck Burning Grounds	WBGmw-006	4/23/2019	5.88
RVAAP-05 Winklepeck Burning Grounds	WBGmw-007	4/23/2019	16.35
RVAAP-05 Winklepeck Burning Grounds	WBGmw-008	4/23/2019	13.95
RVAAP-05 Winklepeck Burning Grounds	WBGmw-009	4/23/2019	12.08
RVAAP-05 Winklepeck Burning Grounds	WBGmw-010	4/23/2019	7.05
RVAAP-05 Winklepeck Burning Grounds	WBGmw-011	4/23/2019	9.79
RVAAP-05 Winklepeck Burning Grounds	WBGmw-012	4/23/2019	24.45

RVAAP Facility Wide Monitoring Well Gauging Results (continued)			
April 2019			
RVAAP Area	Well ID	Date Gauged	Depth to Water (below TOC)
RVAAP-05 Winklepeck Burning Grounds	WBGmw-013	4/23/2019	NM
RVAAP-05 Winklepeck Burning Grounds	WBGmw-014	4/23/2019	15.22
RVAAP-05 Winklepeck Burning Grounds	WBGmw-015	4/23/2019	11.26
RVAAP-05 Winklepeck Burning Grounds	WBGmw-016	4/23/2019	15.94
RVAAP-05 Winklepeck Burning Grounds	WBGmw-017	4/23/2019	7.70
RVAAP-05 Winklepeck Burning Grounds	WBGmw-018	4/23/2019	13.62
RVAAP-05 Winklepeck Burning Grounds	WBGmw-019	4/23/2019	16.59
RVAAP-05 Winklepeck Burning Grounds	WBGmw-020	4/23/2019	11.68
RVAAP-05 Winklepeck Burning Grounds	WBGmw-021	4/23/2019	8.36
RVAAP-06 C Block Quarry	CBLmw-001	4/24/2019	41.30
RVAAP-06 C Block Quarry	CBLmw-002	4/24/2019	35.97
RVAAP-06 C Block Quarry	CBLmw-003	4/24/2019	32.85
RVAAP-06 C Block Quarry	CBLmw-004	4/24/2019	33.85
RVAAP-06 C Block Quarry	CBLmw-005	4/24/2019	25.52
RVAAP-08 Load Line 1	LL1mw-063	4/25/2019	24.61
RVAAP-08 Load Line 1	LL1mw-064	4/25/2019	0.25
RVAAP-08 Load Line 1	LL1mw-065	4/25/2019	10.70
RVAAP-08 Load Line 1	LL1mw-067	4/25/2019	20.30
RVAAP-08 Load Line 1	LL1mw-078	4/25/2019	34.19
RVAAP-08 Load Line 1	LL1mw-079	4/25/2019	33.68
RVAAP-08 Load Line 1	LL1mw-080	4/25/2019	10.96
RVAAP-08 Load Line 1	LL1mw-081	4/25/2019	29.90
RVAAP-08 Load Line 1	LL1mw-082	4/25/2019	27.60
RVAAP-08 Load Line 1	LL1mw-083	4/25/2019	34.79
RVAAP-08 Load Line 1	LL1mw-084	4/25/2019	27.91
RVAAP-08 Load Line 1	LL1mw-085	4/25/2019	36.74
RVAAP-08 Load Line 1	LL1mw-086	4/25/2019	7.12
RVAAP-08 Load Line 1	LL1mw-087	4/25/2019	4.95
RVAAP-08 Load Line 1	LL1mw-088	4/25/2019	4.90
RVAAP-08 Load Line 1	LL1mw-089	4/25/2019	26.04
RVAAP-09 Load Line 2	LL2mw-059	4/25/2019	14.44
RVAAP-09 Load Line 2	LL2mw-060	4/25/2019	10.49
RVAAP-09 Load Line 2	LL2mw-261	4/29/2019	5.45
RVAAP-09 Load Line 2	LL2mw-262	4/29/2019	5.83
RVAAP-09 Load Line 2	LL2mw-263	4/29/2019	6.26
RVAAP-09 Load Line 2	LL2mw-264	4/29/2019	5.05
RVAAP-09 Load Line 2	LL2mw-265	4/29/2019	10.48
RVAAP-09 Load Line 2	LL2mw-266	4/29/2019	9.25
RVAAP-09 Load Line 2	LL2mw-267	4/29/2019	7.91
RVAAP-09 Load Line 2	LL2mw-268	4/29/2019	13.30
RVAAP-09 Load Line 2	LL2mw-269	4/29/2019	15.45
RVAAP-09 Load Line 2	LL2mw-270	4/29/2019	5.63
RVAAP-09 Load Line 2	LL2mw-271	4/29/2019	11.38
RVAAP-09 Load Line 2	LL2mw-272	4/29/2019	7.02
RVAAP-10 Load Line 3	LL3mw-232	4/25/2019	17.12

RVAAP Facility Wide Monitoring Well Gauging Results (continued)			
April 2019			
RVAAP Area	Well ID	Date Gauged	Depth to Water (below TOC)
RVAAP-10 Load Line 3	LL3mw-233	4/25/2019	25.68
RVAAP-10 Load Line 3	LL3mw-234	4/25/2019	9.30
RVAAP-10 Load Line 3	LL3mw-235	4/25/2019	16.43
RVAAP-10 Load Line 3	LL3mw-236	4/25/2019	15.81
RVAAP-10 Load Line 3	LL3mw-237	4/25/2019	13.81
RVAAP-10 Load Line 3	LL3mw-238	4/25/2019	15.42
RVAAP-10 Load Line 3	LL3mw-239	4/25/2019	23.63
RVAAP-10 Load Line 3	LL3mw-240	4/25/2019	26.74
RVAAP-10 Load Line 3	LL3mw-241	4/25/2019	8.54
RVAAP-10 Load Line 3	LL3mw-242	4/25/2019	13.58
RVAAP-10 Load Line 3	LL3mw-243	4/25/2019	10.69
RVAAP-10 Load Line 3	LL3mw-244	4/25/2019	8.70
RVAAP-10 Load Line 3	LL3mw-245	4/25/2019	13.22
RVAAP-10 Load Line 3	LL3mw-246	4/24/2019	19.22
RVAAP-11 Load Line 4	LL4mw-193	4/25/2019	5.85
RVAAP-11 Load Line 4	LL4mw-194	4/25/2019	6.80
RVAAP-11 Load Line 4	LL4mw-195	4/25/2019	12.58
RVAAP-11 Load Line 4	LL4mw-196	4/25/2019	9.93
RVAAP-11 Load Line 4	LL4mw-197	4/25/2019	13.97
RVAAP-11 Load Line 4	LL4mw-198	4/25/2019	5.93
RVAAP-11 Load Line 4	LL4mw-199	4/25/2019	7.20
RVAAP-11 Load Line 4	LL4mw-200	4/25/2019	18.17
RVAAP-11 Load Line 4	LL4mw-201	4/25/2019	10.01
RVAAP-12 Load Line 12	LL12mw-088	4/25/2019	6.63
RVAAP-12 Load Line 12	LL12mw-107	4/25/2019	9.31
RVAAP-12 Load Line 12	LL12mw-113	4/25/2019	5.45
RVAAP-12 Load Line 12	LL12mw-128	4/25/2019	9.28
RVAAP-12 Load Line 12	LL12mw-153	4/25/2019	6.02
RVAAP-12 Load Line 12	LL12mw-154	4/25/2019	8.62
RVAAP-12 Load Line 12	LL12mw-182	4/25/2019	8.90
RVAAP-12 Load Line 12	LL12mw-182ss	4/25/2019	8.42
RVAAP-12 Load Line 12	LL12mw-183	4/25/2019	11.99
RVAAP-12 Load Line 12	LL12mw-184	4/25/2019	12.38
RVAAP-12 Load Line 12	LL12mw-185	4/25/2019	7.05
RVAAP-12 Load Line 12	LL12mw-186	4/25/2019	5.74
RVAAP-12 Load Line 12	LL12mw-187	4/25/2019	9.31
RVAAP-12 Load Line 12	LL12mw-188	4/25/2019	4.34
RVAAP-12 Load Line 12	LL12mw-189	4/25/2019	3.42
RVAAP-12 Load Line 12	LL12mw-242	4/25/2019	8.55
RVAAP-12 Load Line 12	LL12mw-243	4/25/2019	9.28
RVAAP-12 Load Line 12	LL12mw-244	4/25/2019	9.52
RVAAP-12 Load Line 12	LL12mw-245	4/25/2019	8.22
RVAAP-12 Load Line 12	LL12mw-246	4/25/2019	16.65
RVAAP-12 Load Line 12	LL12mw-247	4/25/2019	4.73
RVAAP-13 Building 1200	B12mw-010	4/25/2019	17.08

RVAAP Facility Wide Monitoring Well Gauging Results (continued)			
April 2019			
RVAAP Area	Well ID	Date Gauged	Depth to Water (below TOC)
RVAAP-13 Building 1200	B12mw-011	4/25/2019	19.32
RVAAP-13 Building 1200	B12mw-012	4/25/2019	20.75
RVAAP-13 Building 1200	B12mw-013	4/25/2019	21.21
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-166	4/24/2019	5.03
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-167	4/24/2019	3.81
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-168	4/24/2019	10.06
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-169	4/24/2019	5.42
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-170	4/24/2019	16.95
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-171	4/24/2019	16.09
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-172	4/24/2019	23.20
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-173	4/24/2019	42.95
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-174	4/24/2019	14.69
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-175	4/24/2019	16.24
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-176	4/24/2019	7.34
RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-177	4/24/2019	10.65
RVAAP-19 Landfill North of Winklepeck Burning Grounds	LNWmw-024	4/23/2019	10.73
RVAAP-19 Landfill North of Winklepeck Burning Grounds	LNWmw-025	4/23/2019	4.33
RVAAP-19 Landfill North of Winklepeck Burning Grounds	LNWmw-026	4/23/2019	3.52
RVAAP-19 Landfill North of Winklepeck Burning Grounds	LNWmw-027	4/23/2019	5.60
RVAAP-28 Suspected Mustard Agent Burial Site	MBSmw-001	4/24/2019	17.31
RVAAP-28 Suspected Mustard Agent Burial Site	MBSmw-002	4/24/2019	17.95
RVAAP-28 Suspected Mustard Agent Burial Site	MBSmw-003	4/24/2019	18.35
RVAAP-28 Suspected Mustard Agent Burial Site	MBSmw-004	4/24/2019	16.78
RVAAP-28 Suspected Mustard Agent Burial Site	MBSmw-005	4/24/2019	17.56
RVAAP-28 Suspected Mustard Agent Burial Site	MBSmw-006	4/24/2019	17.02
RVAAP-29 Upper and Lower Cobbs Ponds	CPmw-001	4/25/2019	1.57
RVAAP-29 Upper and Lower Cobbs Ponds	CPmw-002	4/29/2019	0.01
RVAAP-29 Upper and Lower Cobbs Ponds	CPmw-003	4/25/2019	1.28
RVAAP-29 Upper and Lower Cobbs Ponds	CPmw-004	4/25/2019	9.81
RVAAP-29 Upper and Lower Cobbs Ponds	CPmw-005	4/25/2019	11.20
RVAAP-29 Upper and Lower Cobbs Ponds	CPmw-006	4/25/2019	8.53
RVAAP-33 Load Line 6	LL6mw-001	4/24/2019	11.25
RVAAP-33 Load Line 6	LL6mw-002	4/24/2019	19.35
RVAAP-33 Load Line 6	LL6mw-003	4/24/2019	15.25
RVAAP-33 Load Line 6	LL6mw-004	4/24/2019	16.16
RVAAP-33 Load Line 6	LL6mw-005	4/24/2019	11.41
RVAAP-33 Load Line 6	LL6mw-006	4/24/2019	13.20
RVAAP-33 Load Line 6	LL6mw-007	4/24/2019	3.55
RVAAP-33 Load Line 6	LL6mw-008	4/24/2019	13.84
RVAAP-33 Load Line 6	LL6mw-009	4/24/2019	13.50
RVAAP-34 Sand Creek Disposal Road Landfill	SCLmw-001	4/23/2019	NM
RVAAP-34 Sand Creek Disposal Road Landfill	SCLmw-002	4/23/2019	NM
RVAAP-34 Sand Creek Disposal Road Landfill	SCLmw-003	4/23/2019	16.88
RVAAP-38 NACA Test Area	NTAmw-107	4/24/2019	12.17
RVAAP-38 NACA Test Area	NTAmw-108	4/24/2019	17.25

RVAAP Facility Wide Monitoring Well Gauging Results (continued)			
April 2019			
RVAAP Area	Well ID	Date Gauged	Depth to Water (below TOC)
RVAAP-38 NACA Test Area	NTAmw-109	4/24/2019	11.43
RVAAP-38 NACA Test Area	NTAmw-110	4/24/2019	13.54
RVAAP-38 NACA Test Area	NTAmw-111	4/24/2019	3.52
RVAAP-38 NACA Test Area	NTAmw-112	4/24/2019	8.33
RVAAP-38 NACA Test Area	NTAmw-113	4/24/2019	6.46
RVAAP-38 NACA Test Area	NTAmw-114	4/24/2019	5.65
RVAAP-38 NACA Test Area	NTAmw-115	4/24/2019	10.99
RVAAP-38 NACA Test Area	NTAmw-116	4/24/2019	4.94
RVAAP-38 NACA Test Area	NTAmw-117	4/24/2019	12.81
RVAAP-38 NACA Test Area	NTAmw-118	4/24/2019	8.28
RVAAP-38 NACA Test Area	NTAmw-119	4/24/2019	12.18
RVAAP-38 NACA Test Area	NTAmw-120	4/24/2019	33.09
RVAAP-39 Load Line 5	LL5mw-001	4/24/2019	18.96
RVAAP-39 Load Line 5	LL5mw-002	4/24/2019	19.50
RVAAP-39 Load Line 5	LL5mw-003	4/24/2019	17.36
RVAAP-39 Load Line 5	LL5mw-004	4/24/2019	16.75
RVAAP-39 Load Line 5	LL5mw-005	4/24/2019	20.45
RVAAP-39 Load Line 5	LL5mw-006	4/24/2019	19.00
RVAAP-40 Load Line 7	LL7mw-001	4/23/2019	20.13
RVAAP-40 Load Line 7	LL7mw-002	4/23/2019	14.98
RVAAP-40 Load Line 7	LL7mw-003	4/23/2019	11.24
RVAAP-40 Load Line 7	LL7mw-004	4/23/2019	14.56
RVAAP-40 Load Line 7	LL7mw-005	4/23/2019	21.17
RVAAP-40 Load Line 7	LL7mw-006	4/23/2019	9.81
RVAAP-41 Load Line 8	LL8mw-001	4/23/2019	9.85
RVAAP-41 Load Line 8	LL8mw-002	4/24/2019	16.12
RVAAP-41 Load Line 8	LL8mw-003	4/24/2019	10.84
RVAAP-41 Load Line 8	LL8mw-004	4/24/2019	9.09
RVAAP-41 Load Line 8	LL8mw-005	4/24/2019	10.24
RVAAP-41 Load Line 8	LL8mw-006	4/24/2019	18.47
RVAAP-42 Load Line 9	LL9mw-001	4/24/2019	13.57
RVAAP-42 Load Line 9	LL9mw-002	4/24/2019	11.10
RVAAP-42 Load Line 9	LL9mw-003	4/24/2019	7.58
RVAAP-42 Load Line 9	LL9mw-004	4/24/2019	18.65
RVAAP-42 Load Line 9	LL9mw-005	4/24/2019	14.16
RVAAP-42 Load Line 9	LL9mw-006	4/24/2019	16.79
RVAAP-42 Load Line 9	LL9mw-007	4/24/2019	7.50
RVAAP-43 Load Line 10	LL10mw-001	4/24/2019	23.89
RVAAP-43 Load Line 10	LL10mw-002	4/24/2019	15.75
RVAAP-43 Load Line 10	LL10mw-003	4/24/2019	18.81
RVAAP-43 Load Line 10	LL10mw-004	4/24/2019	11.67
RVAAP-43 Load Line 10	LL10mw-005	4/24/2019	13.59
RVAAP-43 Load Line 10	LL10mw-006	4/24/2019	9.84
RVAAP-44 Load Line 11	LL11mw-001	4/23/2019	8.28
RVAAP-44 Load Line 11	LL11mw-002	4/23/2019	0.95

RVAAP Facility Wide Monitoring Well Gauging Results (continued)			
April 2019			
RVAAP Area	Well ID	Date Gauged	Depth to Water (below TOC)
RVAAP-44 Load Line 11	LL11mw-003	4/23/2019	0.71
RVAAP-44 Load Line 11	LL11mw-004	4/23/2019	0.11
RVAAP-44 Load Line 11	LL11mw-005	4/23/2019	5.49
RVAAP-44 Load Line 11	LL11mw-006	4/23/2019	2.05
RVAAP-44 Load Line 11	LL11mw-007	4/23/2019	13.48
RVAAP-44 Load Line 11	LL11mw-008	4/23/2019	0.81
RVAAP-44 Load Line 11	LL11mw-009	4/23/2019	1.80
RVAAP-44 Load Line 11	LL11mw-010	4/23/2019	3.34
RVAAP-44 Load Line 11	LL11mw-011	4/23/2019	7.76
RVAAP-44 Load Line 11	LL11mw-012	4/23/2019	18.81
RVAAP-49 Central Burn Pits	CBPmw-001	4/23/2019	13.31
RVAAP-49 Central Burn Pits	CBPmw-002	4/23/2019	8.95
RVAAP-49 Central Burn Pits	CBPmw-003	4/23/2019	12.00
RVAAP-49 Central Burn Pits	CBPmw-004	4/23/2019	10.86
RVAAP-49 Central Burn Pits	CBPmw-005	4/23/2019	12.16
RVAAP-49 Central Burn Pits	CBPmw-006	4/23/2019	7.94
RVAAP-49 Central Burn Pits	CBPmw-007	4/23/2019	15.40
RVAAP-49 Central Burn Pits	CBPmw-008	4/23/2019	16.15
RVAAP-49 Central Burn Pits	CBPmw-009	4/23/2019	10.31
RVAAP-50 Atlas Scrap Yard	ASYmw-001	4/24/2019	11.24
RVAAP-50 Atlas Scrap Yard	ASYmw-002	4/24/2019	14.64
RVAAP-50 Atlas Scrap Yard	ASYmw-003	4/24/2019	12.24
RVAAP-50 Atlas Scrap Yard	ASYmw-004	4/24/2019	9.39
RVAAP-50 Atlas Scrap Yard	ASYmw-005	4/24/2019	7.98
RVAAP-50 Atlas Scrap Yard	ASYmw-006	4/24/2019	14.05
RVAAP-50 Atlas Scrap Yard	ASYmw-007	4/24/2019	15.46
RVAAP-50 Atlas Scrap Yard	ASYmw-008	4/24/2019	5.13
RVAAP-50 Atlas Scrap Yard	ASYmw-009	4/24/2019	11.54
RVAAP-50 Atlas Scrap Yard	ASYmw-010	4/24/2019	12.39
RVAAP-66 Facility-wide Groundwater	FWGmw-001	4/29/2019	7.10
RVAAP-66 Facility-wide Groundwater	FWGmw-002	4/29/2019	21.71
RVAAP-66 Facility-wide Groundwater	FWGmw-003	4/24/2019	5.03
RVAAP-66 Facility-wide Groundwater	FWGmw-004	4/29/2019	9.96
RVAAP-66 Facility-wide Groundwater	FWGmw-005	4/24/2019	21.15
RVAAP-66 Facility-wide Groundwater	FWGmw-006	4/24/2019	3.85
RVAAP-66 Facility-wide Groundwater	FWGmw-007	4/24/2019	24.35
RVAAP-66 Facility-wide Groundwater	FWGmw-008	4/24/2019	5.26
RVAAP-66 Facility-wide Groundwater	FWGmw-009	4/24/2019	1.93
RVAAP-66 Facility-wide Groundwater	FWGmw-010	4/25/2019	11.40
RVAAP-66 Facility-wide Groundwater	FWGmw-011	4/25/2019	1.75
RVAAP-66 Facility-wide Groundwater	FWGmw-012	4/25/2019	0.25
RVAAP-66 Facility-wide Groundwater	FWGmw-013	4/23/2019	18.50
RVAAP-66 Facility-wide Groundwater	FWGmw-014	4/24/2019	3.35
RVAAP-66 Facility-wide Groundwater	FWGmw-015	4/29/2019	2.81
RVAAP-66 Facility-wide Groundwater	FWGmw-016	4/29/2019	15.87

RVAAP Facility Wide Monitoring Well Gauging Results (continued)			
April 2019			
RVAAP Area	Well ID	Date Gauged	Depth to Water (below TOC)
RVAAP-66 Facility-wide Groundwater	FWGmw-018	4/24/2019	21.12
RVAAP-66 Facility-wide Groundwater	FWGmw-019	4/24/2019	114.57
RVAAP-66 Facility-wide Groundwater	FWGmw-020	4/24/2019	21.95
RVAAP-66 Facility-wide Groundwater	FWGmw-021	4/24/2019	19.60
RVAAP-66 Facility-wide Groundwater	FWGmw-022	4/24/2019	113.68
RVAAP-66 Facility-wide Groundwater	FWGmw-023	4/23/2019	116.48
RVAAP-66 Facility-wide Groundwater	FWGmw-024	4/24/2019	14.36
RVAAP-66 Facility-wide Groundwater	SCFmw-001	4/25/2019	88.68
RVAAP-66 Facility-wide Groundwater	SCFmw-002	4/25/2019	19.27
RVAAP-66 Facility-wide Groundwater	SCFmw-003	4/25/2019	8.67
RVAAP-66 Facility-wide Groundwater	SCFmw-004	4/25/2019	-0.03
RVAAP-66 Facility-wide Groundwater	SCFmw-005	4/29/2019	9.20
RVAAP-66 Facility-wide Groundwater	SCFmw-006	4/29/2019	16.35
RVAAP-66 Facility-wide Groundwater	BKGmw-004	4/29/2019	11.80
RVAAP-66 Facility-wide Groundwater	BKGmw-005	4/24/2019	10.73
RVAAP-66 Facility-wide Groundwater	BKGmw-006	4/24/2019	23.72
RVAAP-66 Facility-wide Groundwater	BKGmw-008	4/25/2019	16.58
RVAAP-66 Facility-wide Groundwater	BKGmw-010	4/25/2019	14.54
RVAAP-66 Facility-wide Groundwater	BKGmw-012	4/29/2019	7.40
RVAAP-66 Facility-wide Groundwater	BKGmw-013	4/24/2019	11.76
RVAAP-66 Facility-wide Groundwater	BKGmw-015	4/24/2019	48.78
RVAAP-66 Facility-wide Groundwater	BKGmw-016	4/24/2019	5.82
RVAAP-66 Facility-wide Groundwater	BKGmw-017	4/24/2019	17.24
RVAAP-66 Facility-wide Groundwater	BKGmw-018	4/24/2019	15.70
RVAAP-66 Facility-wide Groundwater	BKGmw-019	4/24/2019	20.83
RVAAP-66 Facility-wide Groundwater	BKGmw-020	4/23/2019	7.46
RVAAP-66 Facility-wide Groundwater	BKGmw-021	4/29/2019	11.52
RVAAP-66 Facility-wide Groundwater	BKGmw-022	4/24/2019	14.23
RVAAP-66 Facility-wide Groundwater	BKGmw-023	4/24/2019	4.80
RVAAP-66 Facility-wide Groundwater	BKGmw-024	4/24/2019	10.59
RVAAP-66 Facility-wide Groundwater	BKGmw-025	4/24/2019	41.70

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APPENDIX B

Summary of Groundwater Monitoring Well Conditions and Repair Recommendations

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RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
ASYmw-001	04/24/19	The guard posts are heavily rusted. The well paint and ID are in good condition.
ASYmw-002	04/24/19	The guard posts have minor rust. The well paint and ID are in good condition.
ASYmw-003	04/24/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is fading.
ASYmw-004	04/24/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is fading.
ASYmw-005	04/24/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is not visible. The well pad is loose from freeze/thaw.
ASYmw-006	04/24/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is starting to fade.
ASYmw-007	04/24/19	The guard posts are heavily rusted. The well paint and ID are in good condition.
ASYmw-008	04/24/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is faded and barely visible.
ASYmw-009	04/24/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is faded and hard to read.
ASYmw-010	04/24/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is starting to fade.
B12mw-010	04/25/19	The guard posts are heavily rusted and leaning. The well paint is in good condition, but the ID is faded and hard to read.
B12mw-011	04/25/19	The guard posts are heavily rusted. The well paint is in good condition, but the ID is very slightly faded.
B12mw-012	04/25/19	The guard posts have moderate rust. The well paint is in good condition, but the full ID is not visible. The AOC ID looks to have been repainted, but the well number has not been repainted.
B12mw-013	04/25/19	The well is in good condition; no issues.
BKGmw-004	04/29/19	The guard posts and well paint show minor rust. The ID is not visible.
BKGmw-005	04/24/19	The guard posts and well paint show minor rust. The ID is very slightly faded.
BKGmw-006	04/24/19	The guard posts and well paint show minor rust. The ID is in good condition.
BKGmw-008	04/25/19	The guard posts and well paint show minor rust. The ID is beginning to fade.
BKGmw-010	04/25/19	The guard posts and well paint show moderate rust. The ID is faded. The hinge on the well lid is broken and cannot be secured.
BKGmw-012	04/29/19	The guard posts and well paint show very minor rusting. The ID is in good condition.
BKGmw-013	04/24/19	The guard posts and well paint show very minor rusting. The ID is in good condition. The hinge on the well lid is broken and cannot be secured. The compression cap was installed on 4/25/19.
BKGmw-015	04/24/19	The guard posts and well paint show moderate rust. The ID is faded.
BKGmw-016	04/24/19	The guard posts and well paint show minor rusting. The ID is beginning to fade. The hinge on the well lid is broken and cannot be secured.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
BKGmw-017	04/24/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
BKGmw-018	04/24/19	The guard posts and well paint show minor rusting. The ID is in good condition.
BKGmw-019	04/24/19	The guard posts and well paint show very minor rusting. The ID is in good condition. The hinge on the well lid is broken and cannot be secured.
BKGmw-020	04/23/19	The guard posts and well paint show very minor rusting. The ID is in good condition.
BKGmw-021	04/29/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
BKGmw-022	04/24/19	The well is in good condition; the ID needs to be painted on.
BKGmw-023	04/24/19	The well is in good condition; the ID needs to be painted on.
BKGmw-024	04/24/19	The well is in good condition; the ID needs to be painted on.
BKGmw-025	04/24/19	The well is in good condition; the ID needs to be painted on.
CBLmw-001	04/24/19	The guard posts show moderate to heavy rusting. The well paint and ID are in good condition.
CBLmw-002	04/24/19	The guard posts show heavy rusting. The well paint and ID are in good condition.
CBLmw-003	04/24/19	The guard posts show heavy rusting. The well paint and ID are in good condition.
CBLmw-004	04/24/19	The guard posts show moderate rusting. The well paint and ID are in good condition.
CBLmw-005	04/24/19	The well is in good condition; no issues.
CBPmw-001	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CBPmw-002	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CBPmw-003	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CBPmw-004	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CBPmw-005	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CBPmw-006	04/23/19	The guard posts and well paint show minor rusting. The ID is showing minor fading.
CBPmw-007	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CBPmw-008	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CBPmw-009	04/23/19	The well is in good condition. The paint is white (incorrect color).
CPmw-001	04/25/19	The well is in good condition; no issues.
CPmw-002	04/29/19	The guard posts show minor rusting. The ID is in good condition.
CPmw-003	04/25/19	The guard posts show moderate rusting. The ID is in fair condition. Flush mount well; the bolt holders are stripped and the lid cannot be secured.
CPmw-004	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
CPmw-005	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and not visible.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
CPmw-006	04/25/19	The guard posts and well paint show moderate rusting. The ID is faded and not visible.
DA1tw-001	04/24/19	N/A – The temporary well was installed in October 2018.
DA2mw-104	04/23/19	The guard posts and well paint show minor rust. The ID is faded.
DA2mw-105	04/23/19	The guard posts and well paint show minor rusting. The ID is in good condition.
DA2mw-106	04/23/19	The guard posts and well paint show minor rusting. The ID is in good condition.
DA2mw-107	04/23/19	The guard posts and well paint show minor rusting. The ID is in good condition.
DA2mw-108	04/23/19	The guard posts and well paint show minor rusting. The ID is hard to read due to paint chipping.
DA2mw-109	04/23/19	The guard posts and well paint show minor rust. The ID is in good condition. The well pad is elevated off of the ground due to frost heave.
DA2mw-110	04/23/19	The paint and ID are in good condition. The well pad is raised off of the ground due to frost heave.
DA2mw-111	04/23/19	The guard posts and well paint show minor rusting. The ID is hard to read due to paint chipping. The well pad is elevated due to frost heave.
DA2mw-112	04/23/19	The guard post and well paint are in good condition. There is slight paint chipping around the ID.
DA2mw-113	04/23/19	The guard post and well paint are in good condition. There is paint chipping around the ID.
DA2mw-114	04/23/19	The well is in good condition. The paint is white (incorrect color).
DA2mw-115	04/23/19	The well is in good condition. The paint is white (incorrect color).
DET-001B	04/23/19	The guard posts and well paint show minor rusting. The ID is in good condition. The well pad is elevated due to frost heave.
DET-002	04/23/19	The guard posts and well paint show moderate rusting. The ID is in good condition. One guard post is leaning.
DET-003	04/23/19	The guard posts and well paint show moderate rusting. The ID is faded and not visible.
DET-004	04/23/19	The guard posts and well paint show moderate rusting. The ID is in good condition.
EBGmw-123	04/25/19	The guard posts and well paint show minor rusting. The ID is beginning to fade.
EBGmw-124	04/25/19	The well is in good condition; no issues.
EBGmw-125	04/25/19	The well is in good condition; the ID is beginning to fade.
EBGmw-126	04/25/19	The guard posts and well paint show very minor rusting. The ID is faded and hard to read. Some posts are leaning.
EBGmw-127	04/25/19	The well is in good condition; no issues.
EBGmw-128	04/25/19	The ID is slightly faded; no other issues.
EBGmw-129	04/25/19	The guard posts show minor rusting. The ID is in good condition.
EBGmw-130	04/25/19	The well is in good condition; the ID is beginning to fade.
EBGmw-131	04/25/19	The paint is in good condition; there is a crack in the well pad.
FBQmw-166	04/24/19	The guard posts and well paint are in good condition. The ID is faded and not visible.
FBQmw-167	04/24/19	The guard posts and well paint are in good condition. The ID is faded and not visible.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
FBQmw-168	04/24/19	The well is in good condition; no issues.
FBQmw-169	04/24/19	The paint is in good condition. The well pad is elevated due to frost heave.
FBQmw-170	04/24/19	The guard posts and well paint are in good condition. The ID is faded and not visible.
FBQmw-171	04/24/19	The guard posts and well paint are in good condition. The ID is faded.
FBQmw-172	04/24/19	The guard posts and well paint are in good condition. The ID is faded and not visible.
FBQmw-173	04/24/19	The guard posts and well paint are in good condition. The ID is faded.
FBQmw-174	04/24/19	The guard posts and well paint are in good condition. The ID is faded.
FBQmw-175	04/24/19	The paint is in good condition. The well cap does not sit flush with the top of the PVC (can't be pushed down).
FBQmw-176	04/24/19	The well is in good condition; no issues.
FBQmw-177	04/24/19	The guard posts and well paint are in good condition. The ID is faded and not visible.
FWGmw-001	04/29/19	The well is in good condition. The paint is white (incorrect color).
FWGmw-002	04/29/19	The well is in good condition. The paint is white (incorrect color).
FWGmw-003	04/24/19	The guard posts and well paint show moderate rusting. The ID is in good condition.
FWGmw-004	04/29/19	The guard post paint is in good condition. Minor chipping on the well paint around the ID has occurred.
FWGmw-005	04/24/19	The well is in good condition; no issues.
FWGmw-006	04/24/19	The guard posts and well paint show minor rusting/chipping. Chipping near the ID makes it hard to read.
FWGmw-007	04/24/19	The guard post paint is in in good condition. Chipping near the well ID makes it hard to read. The well pad has a hairline crack.
FWGmw-008	04/24/19	The guard posts and well paint show minor chipping/rusting. The ID is in good condition, but may be affected by surrounding chipping.
FWGmw-009	04/24/19	The guard posts show minor rusting, and moderate rusting/chipping on the well paint has occurred. The ID is visible but affected by surrounding paint chipping.
FWGmw-010	04/25/19	The guard posts are in good condition. The well paint is heavily rusted/chipped. The ID is not visible.
FWGmw-011	04/25/19	The guard posts and well show minor rust/chipping. The paint is white (incorrect color).
FWGmw-012	04/25/19	The well is in good condition. The paint is white (incorrect color).
FWGmw-013	04/23/19	The paint is in good condition; the well pad is cracked.
FWGmw-014	04/24/19	The well is in good condition. The paint is white (incorrect color).
FWGmw-015	04/29/19	The well is in good condition; minor rust/chipping on the well has occurred.
FWGmw-016	04/29/19	The well is in good condition; minor fading on the ID has occurred.
FWGmw-018	04/24/19	The well is in good condition; the ID needs to be painted on.
FWGmw-019	04/24/19	The well is in good condition; the ID needs to be painted on.
FWGmw-020	04/24/19	The well is in good condition; the ID needs to be painted on.
FWGmw-021	04/24/19	The well is in good condition; the ID needs to be painted on.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
FWGmw-022	04/24/19	The well is in good condition; the ID needs to be painted on.
FWGmw-023	04/23/19	The well is in good condition; the ID needs to be painted on.
FWGmw-024	04/24/19	The well is in good condition; the ID needs to be painted on.
LL1mw-063	04/25/19	The guard posts show moderate rusting; the well paint is in good condition. The ID is faded and hard to read.
LL1mw-064	04/25/19	The guard posts show moderate rusting. The well paint and ID are in good condition.
LL1mw-065	04/25/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is faded.
LL1mw-067	04/25/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is faded.
LL1mw-078	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL1mw-079	04/25/19	The guard posts and well paint show minor rusting. The ID is in good condition.
LL1mw-080	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL1mw-081	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL1mw-082	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL1mw-083	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL1mw-084	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL1mw-085	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL1mw-086	04/25/19	The well is in good condition; no issues.
LL1mw-087	04/25/19	The guard posts are in good condition. Rust/chipping on the well paint makes the ID hard to read.
LL1mw-088	04/25/19	The guard posts are in good condition. The well is not painted and no ID is present.
LL1mw-089	04/25/19	The well is in good condition, but the ID needs to be painted on.
LL2mw-059	04/25/19	The guard posts show minor to moderate rusting. The well paint and ID are in good condition.
LL2mw-060	04/25/19	The well is in good condition; no issues.
LL2mw-261	04/29/19	The guard posts and well paint show minor rusting. The ID is slightly faded.
LL2mw-262	04/29/19	The guard posts and well paint show minor rusting. The ID is slightly faded.
LL2mw-263	04/29/19	The guard posts and well paint show minor rusting. The ID is slightly faded.
LL2mw-264	04/29/19	The guard posts show minor rusting. The well paint is moderately to heavily rusting/chipping, and the ID is not visible.
LL2mw-265	04/29/19	The guard posts and well paint show minor rusting. The ID is faded.
LL2mw-266	04/29/19	The guard posts and well paint show minor rusting. The ID is faded.
LL2mw-267	04/29/19	The guard posts and well paint show minor rusting. The ID is faded. One guard post is leaning.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
LL2mw-268	04/29/19	The guard posts and well paint show minor rusting. The ID is slightly faded.
LL2mw-269	04/29/19	The guard posts and well paint show minor rusting. The ID is slightly faded.
LL2mw-270	04/29/19	The guard posts and well paint show minor rusting. The ID is faded and not visible.
LL2mw-271	04/29/19	The guard posts are in good condition. The well casing is not painted and there is no ID.
LL2mw-272	04/29/19	The well is in good condition, but the ID needs to be painted on.
LL3mw-232	04/25/19	The guard posts and well paint show minor rusting. The ID is slightly faded.
LL3mw-233	04/25/19	The guard posts and well paint show minor rusting. The ID is slightly faded.
LL3mw-234	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read. The well lid is cracked but can be closed and secured.
LL3mw-235	04/25/19	The guard posts and well paint show minor rusting. The ID is starting to fade.
LL3mw-236	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
LL3mw-237	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read. One post is leaning over.
LL3mw-238	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
LL3mw-239	04/25/19	The guard posts and well paint show minor rusting. The ID is faded.
LL3mw-240	04/25/19	The well is in good condition; no issues.
LL3mw-241	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
LL3mw-242	04/25/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
LL3mw-243	04/25/19	The well is in good condition; no issues.
LL3mw-244	04/25/19	The well is in good condition; white paint (incorrect color).
LL3mw-245	04/25/19	The well is in good condition; no issues.
LL3mw-246	04/24/19	The guard posts show minor rusting. The well casing is not painted, and there is no ID.
LL4mw-193	04/25/19	The guard posts and well show minor rusting. The ID is beginning to fade.
LL4mw-194	04/25/19	The guard posts and well show minor rusting. The ID is beginning to fade.
LL4mw-195	04/25/19	The well was repainted during the April 2019 event; good condition.
LL4mw-196	04/25/19	The guard posts and well show minor rusting. The ID is beginning to fade.
LL4mw-197	04/25/19	The guard posts and well show minor rusting. The ID is beginning to fade.
LL4mw-198	04/25/19	The guard posts and well show moderate rusting. The ID is beginning to fade.
LL4mw-199	04/25/19	The guard posts and well show minor rusting. The ID is beginning to fade.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
LL4mw-200	04/25/19	The well was repainted during the April 2019 event; the well is in good condition.
LL4mw-201	04/25/19	The guard posts and well show minor rusting. The ID is beginning to fade.
LL5mw-001	04/24/19	The guard posts show heavy rusting. The well paint is in good condition, but the ID is faded.
LL5mw-002	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is faded.
LL5mw-003	04/24/19	The guard posts show heavy rusting. The well paint is in good condition, but the ID is faded.
LL5mw-004	04/24/19	The guard posts show heavy rusting. The well paint is in good condition, but the ID is faded.
LL5mw-005	04/24/19	The guard posts show heavy rusting. The well paint is in good condition, but the ID is faded.
LL5mw-006	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is faded.
LL6mw-001	04/24/19	The guard posts show heavy rusting, but the ID is still visible on one post. Flush mount well; one bolt holder is missing, but the well can still be secured.
LL6mw-002	04/24/19	The guard posts and well show heavy rusting. The ID has been rusted over and is not visible.
LL6mw-003	04/24/19	The guard posts and well show moderate rusting. The ID has been rusted over.
LL6mw-004	04/24/19	The guard posts and well show moderate rusting. The ID is in good condition.
LL6mw-005	04/24/19	The guard posts and well show moderate rusting. The ID has been rusted over.
LL6mw-006	04/24/19	The guard posts show heavy rusting, but the ID is still visible on one post. Flush mount well.
LL6mw-007	04/24/19	The guard posts show heavy rusting, but the ID is still visible on one post. Flush mount well; one bolt holder is stripped and the other is missing. The well cannot be secured.
LL6mw-008	04/24/19	The well is in good condition; no issues.
LL6mw-009	04/24/19	The well is in good condition; no issues.
LL7mw-001	04/23/19	The guard posts show heavy to moderate rusting, but the well paint is in good condition. The ID is faded and not visible.
LL7mw-002	04/23/19	The guard posts show heavy rusting, but the well paint is in good condition. The ID is faded and not visible.
LL7mw-003	04/23/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is faded and not visible.
LL7mw-004	04/23/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is faded and not visible.
LL7mw-005	04/23/19	The guard posts show heavy to moderate rusting, but the well paint is in good condition. The ID is faded and hard to read.
LL7mw-006	04/23/19	The guard posts show heavy to moderate rusting, but the well paint is in good condition. The ID is faded and hard to read.
LL8mw-001	04/23/19	The guard posts show heavy to moderate rusting, but the well paint is in good condition. The ID is in good condition.
LL8mw-002	04/24/19	The guard posts show heavy to moderate rusting, but the well paint is in good condition. The ID is faded and not visible.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
LL8mw-003	04/24/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is starting to fade. The well pad is cracked. The well casing has two dent marks.
LL8mw-004	04/24/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is starting to fade.
LL8mw-005	04/24/19	The guard posts show heavy rusting, but the well paint is in good condition. The ID is faded and not visible. One post is leaning over. The well pad is cracked.
LL8mw-006	04/24/19	The guard posts show moderate rusting, but the well paint is in good condition. Half of the ID is faded and not visible. The well pad is cracked.
LL9mw-001	04/24/19	The guard posts and well paint show moderate rusting. The ID is visible on one post but rusted over on the casing. One post is leaning over.
LL9mw-002	04/24/19	The guard posts show minor to moderate rusting. The ID is rusted over. One post is leaning over.
LL9mw-003	04/24/19	The guard posts and well paint show minor rusting. The ID is faded and not visible.
LL9mw-004	04/24/19	The guard posts and well paint show moderate rusting. The ID is rusted over.
LL9mw-005	04/24/19	The guard posts and well paint show moderate rusting. The ID is rusted over.
LL9mw-006	04/24/19	The guard posts and well paint show moderate rusting. The ID is rusted over.
LL9mw-007	04/24/19	The guard posts show minor rusting. The ID on the post is faded and not visible. Flush mount well.
LL10mw-001	04/24/19	The guard posts show severe rusting, but the well paint is in good condition. The ID is faded and not visible.
LL10mw-002	04/24/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is faded and not visible.
LL10mw-003	04/24/19	The guard posts show severe rusting, but the well paint is in good condition. The ID is faded and not visible.
LL10mw-004	04/24/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is faded and not visible.
LL10mw-005	04/24/19	The guard posts show severe rusting, but the well paint is in good condition. The ID is faded and not visible.
LL10mw-006	04/24/19	The guard posts show severe rusting, but the well paint and ID are in good condition. The well pad is cracked.
LL11mw-001	04/23/19	The guard posts and well paint show minor rusting. The ID is faded.
LL11mw-002	04/23/19	The guard posts show moderate rusting. The ID is faded and not visible. Flush mount well; both bolt holders are stripped and the lid cannot be secured.
LL11mw-003	04/23/19	The guard posts show minor rusting. The ID is faded and not visible.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
LL11mw-004	04/23/19	The guard posts show minor to moderate rusting, but the ID is in good condition. Flush mount well; the bolt holders are broken off and the lid cannot be secured.
LL11mw-005	04/23/19	The guard posts show moderate rusting, but the ID is in okay condition. Flush mount well; one of the bolts is too small, but the lid can be secured.
LL11mw-006	04/23/19	The guard posts show minor to moderate rusting, and the ID is faded and hard to read.
LL11mw-007	04/23/19	The guard posts and well paint show minor rusting/chipping. The ID is in good condition. The well pad is cracked.
LL11mw-008	04/23/19	The guard posts show minor to moderate rusting, and the ID is faded and hard to read. Flush mount well; both bolt holders are stripped and the lid cannot be secured.
LL11mw-009	04/23/19	The guard posts show moderate rusting, and the ID is painted on the post and is fading. The well casing is not painted.
LL11mw-010	04/23/19	The guard posts and well paint show minor rusting. The ID is faded and hard to read.
LL11mw-011	04/23/19	The well is in good condition; no issues.
LL11mw-012	04/23/19	All paint is in good condition. The well pad is cracked.
LL12mw-088	04/25/19	The guard posts and well paint show minor rusting. The ID is in good condition.
LL12mw-107	04/25/19	The guard posts and well paint show minor rusting. The ID is fading.
LL12mw-113	04/25/19	The guard posts and well paint are in good condition. The ID is fading.
LL12mw-128	04/25/19	The guard posts show minor rusting. The well paint and ID are in good condition.
LL12mw-153	04/25/19	The guard posts show minor rusting. The well paint and ID are in good condition.
LL12mw-154	04/25/19	The guard posts show minor rusting. The well paint and ID are in good condition.
LL12mw-182	04/25/19	The well appears to have been recently repainted and is in good condition.
LL12mw-182ss	04/25/19	The well appears to have been recently repainted and is in good condition.
LL12mw-183	04/25/19	The guard posts show minor rusting. The well paint and ID are in good condition.
LL12mw-184	04/25/19	The well is in good condition; no issues.
LL12mw-185	04/25/19	The guard posts show minor rusting. The well paint and ID are in good condition.
LL12mw-186	04/25/19	The guard posts and well paint show minor rusting. The ID is in good condition.
LL12mw-187	04/25/19	The guard posts and well paint show minor rusting. The ID is in good condition.
LL12mw-188	04/25/19	The guard posts and well paint show minor rusting. The ID is in good condition.
LL12mw-189	04/25/19	The guard posts and well paint show minor rusting. The ID is in good condition.
LL12mw-242	04/25/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is fading.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
LL12mw-243	04/25/19	The guard posts show moderate rusting. The well paint and ID are in good condition.
LL12mw-244	04/25/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is faded.
LL12mw-245	04/25/19	The guard posts show moderate rusting. The well paint and ID are in good condition.
LL12mw-246	04/25/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
LL12mw-247	04/25/19	The guard posts are in good condition. The well paint is showing moderate rust, and the ID is not visible.
LNWmw-024	04/23/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is beginning to fade.
LNWmw-025	04/23/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is beginning to fade.
LNWmw-026	04/23/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is beginning to fade.
LNWmw-027	04/23/19	The guard posts show moderate rusting, but the well paint is in good condition. The ID is beginning to fade.
MBS-001	04/24/19	The guard posts and well paint are in good condition. The ID is faded.
MBS-002	04/24/19	The guard posts and well paint are in good condition. The ID is faded.
MBS-003	04/24/19	The guard posts and well paint are in good condition. The ID is faded.
MBS-004	04/24/19	The guard posts and well paint are in good condition. The ID is faded. The well pad is raised due to frost heaving.
MBS-005	04/24/19	The guard posts and well paint show moderate rusting. The ID is faded and not visible.
MBS-006	04/24/19	The guard posts and well paint show moderate rusting. The ID is faded and not visible.
NTAmw-107	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-108	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-109	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-110	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-111	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-112	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading. One post is leaning over.
NTAmw-113	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-114	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-115	04/24/19	The guard posts show moderate rusting. The well paint and ID are in good condition.
NTAmw-116	04/24/19	The guard posts show moderate rusting. The well paint and ID are in good condition.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
NTAmw-117	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is faded.
NTAmw-118	04/24/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
NTAmw-119	04/24/19	The guard posts are in good condition. The well paint is moderately rusted/chipped, and the ID is not visible. The well pad is cracked.
NTAmw-120	04/24/19	The well is in good condition; the ID needs to be painted on.
RQLmw-006	04/29/19	The guard posts are in good condition. The well paint is showing minor rust, and the ID is faded.
RQLmw-007	04/29/19	No guard posts. The well paint is showing minor rust, and the ID is fading.
RQLmw-008	04/29/19	No guard posts. The well paint is showing minor rust, and the ID is fading.
RQLmw-009	04/29/19	No guard posts. The well paint is showing minor rust, and the ID is fading.
RQLmw-010	04/29/19	The guard posts and well paint show minor rusting. The ID is in good condition.
RQLmw-011	04/29/19	The guard posts and well paint show minor rusting. The ID is fading. The well pad is cracked.
RQLmw-012	04/29/19	The guard posts and well paint show minor rusting. The ID is fading.
RQLmw-013	04/29/19	The well is in good condition; no issues.
RQLmw-014	04/29/19	The guard posts and well paint show very minor rusting. The ID is fading.
RQLmw-015	04/29/19	The guard posts show minor rusting. The well paint and ID are in good condition.
RQLmw-016	04/29/19	The guard posts show minor rusting. The well paint and ID are in good condition.
RQLmw-017	04/29/19	The well is in good condition; no issues.
SCFmw-001	04/25/19	The well is in good condition; no issues.
SCFmw-002	04/25/19	The guard posts show minor rusting. The well paint and ID are in good condition.
SCFmw-003	04/25/19	The well is in good condition; the ID needs to be painted on.
SCFmw-004	04/25/19	The guard posts and well paint show moderate to heavy rusting. The ID is no longer visible.
SCFmw-005	04/29/19	The guard posts show moderate rusting. The well paint is in good condition, but the ID is fading.
SCFmw-006	04/29/19	The guard posts show minor rusting. The well paint and ID are in good condition.
SCLmw-001	04/23/19	The well is in good condition; the ID needs to be painted on.
SCLmw-002	04/23/19	The well is in good condition; the ID needs to be painted on.
SCLmw-003	04/23/19	The well is in good condition; the ID needs to be painted on.
WBGmw-005	04/23/19	The guard posts and well paint show minor rusting. The ID is fading. The hinge on the well lid is broken and cannot be secured.
WBGmw-006	04/23/19	The guard posts and well paint show minor rusting. The ID is fading.
WBGmw-007	04/23/19	The guard posts and well paint are in good condition. The ID is faded and not visible.
WBGmw-008	04/23/19	The guard posts and well paint are in good condition. The ID is faded and not visible.

RVAAP Facility-Wide Monitoring Well Conditions
April 2019

Well ID	Date Gauged	Repairs Needed
WBGmw-009	04/23/19	The guard posts and well paint are in good condition. The ID is fading. The hinge on the well lid is broken and cannot be secured.
WBGmw-010	04/23/19	The guard posts and well paint show moderate rusting. The ID is still in good condition. The well pad is raised from frost heave.
WBGmw-011	04/23/19	The guard posts and well paint are in good condition. The ID is faded and hard to read. The well pad is raised from frost heave.
WBGmw-012	04/23/19	The guard posts and well paint show minor to moderate rusting. The ID is not visible. One post is leaning over.
WBGmw-013	04/23/19	The guard posts and well paint show moderate rusting. The ID is not visible.
WBGmw-014	04/23/19	The guard posts show moderate rusting. The ballistic steel casing is in good condition, but the ID is faded and not visible. The well pad is raised due to frost heave.
WBGmw-015	04/23/19	The guard posts show moderate rusting. The ballistic steel casing is in good condition, but the ID is faded and not visible. The well pad is raised due to frost heave.
WBGmw-016	04/23/19	The guard posts and well paint show moderate to heavy rusting. The ID is no longer visible.
WBGmw-017	04/23/19	The guard posts and well paint show moderate to heavy rusting. The ID is no longer visible. The well pad is raised due to frost heave.
WBGmw-018	04/23/19	The well casing is painted white (incorrect color). The ID is not readable. The well pad is cracked.
WBGmw-019	04/23/19	The well casing is painted white (incorrect color). The ID is not present on the well pad. The well pad is cracked.
WBGmw-020	04/23/19	The well casing is painted white (incorrect color).
WBGmw-021	04/23/19	The well casing is painted white (incorrect color).

APPENDIX C

Field Change Requests

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FIELD CHANGE REQUEST

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_001
PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program
CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337
BRIEF DESCRIPTION: Monitoring Well Total Depth Collection

REQUESTOR IDENTIFICATION
NAME/TITLE: Jed Thomas, Deputy Project Manager ORGANIZATION: Leidos
PHONE: 330-405-5802

SIGNATURE 10/4/18 DATE

BASELINE IDENTIFICATION
BASELINE(S) AFFECTED ☐ Cost ☐ Scope ☐ Milestone ☒ Method of Accomplishment

AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION):
Final Remedial Investigation Work Plan for Groundwater and Environmental Investigation Services for RVAAP-66 Facility-wide Groundwater (RI Work Plan)
Section 3.8 Monitoring Well Network Review

DESCRIPTION OF CHANGE:
Section 3.8 of the RI Work Plan specifies that total well depths will be measured during the annual, comprehensive water level measurements at each monitoring well within Camp Ravenna. However, permanent bladder pumps have been placed in monitoring wells. Therefore, total depths of the wells will not be collected during the comprehensive water level measurements for each well within the network.

JUSTIFICATION:
Removal of the permanent bladder pumps during the comprehensive annual water level measurement activity may disturb the groundwater within the monitoring well prior to sampling.

IMPACT OF NOT IMPLEMENTING REQUEST:
See justification.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:
Leidos field teams.

COST ESTIMATE: $0 (No cost impact to USACE)

Estimator Signature: Not applicable DATE

PREVIOUS FCR AFFECTED ☐ YES ☒ NO; IF YES, FCR NO.

APPROVAL SIGNATURES:

USACE Representative TRUMBLE.JAMES.NAPOLEON.III.1207239727 Digitally signed by TRUMBLE.JAMES.NAPOLEON.III.1207239727 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TRUMBLE.JAMES.NAPOLEON.III.1207239727 Date: 2018.10.10 09:26:27 -04'00' 10 Oct 2018 DATE

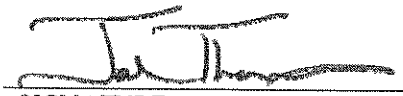
Ohio EPA Project Coordinator [signature] 11-7-18 DATE

Leidos H&S Manager (if applicable) Not applicable DATE

FIELD CHANGE REQUEST

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_004
PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program
CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337
BRIEF DESCRIPTION: Groundwater Quality Control (QC) Sampling Frequency

REQUESTOR IDENTIFICATION
NAME/TITLE: Jed Thomas, Deputy Project Manager ORGANIZATION: Leidos
PHONE: 330-405-5802



SIGNATURE 10/4/18
DATE

BASELINE IDENTIFICATION
BASELINE(S) AFFECTED ☐ Cost ☐ Scope ☐ Milestone ☒ Method of Accomplishment

AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION):
Final Remedial Investigation Work Plan for Groundwater and Environmental Investigation Services for RVAAP-66 Facility-wide Groundwater (RI Work Plan)

DESCRIPTION OF CHANGE:
Worksheet 20 of the RI Work Plan QAPP discusses the Field Quality Control Sample Summary. This section indicates that "The frequency and location of field quality control samples (e.g. field duplicates, MS/MSD samples, etc.) are specified in Section 3.0 of the WP."

However, Section 3.0 of the RI Work Plan does not discuss field quality control samples. For documentation purposes, below is what will be collected with respect to field quality control samples. This is consistent with the specifications provided in the Facility-wide Sampling and Analysis Plan.

- Field duplicate – collected at 10% frequency
- Split samples – collected at 10% frequency
- MS/MSD samples – collected at 5% frequency
- Equipment rinsate – not required due to use of dedicated equipment (e.g., in place bladder pumps).

JUSTIFICATION:
The justification for this field change request is to document and obtain concurrence of the frequency at which groundwater quality control samples will be collected and analyzed.

IMPACT OF NOT IMPLEMENTING REQUEST:
The impact of not implementing the request is potential disagreement regarding the quality control sample collection requirements.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:
Leidos field teams and laboratory.

FIELD CHANGE REQUEST

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_004
PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program
CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337
BRIEF DESCRIPTION: Groundwater Quality Control (QC) Sampling Frequency

COST ESTIMATE: $0 (No cost impact to USACE)

Estimator Signature:	Not applicable	DATE

PREVIOUS FCR AFFECTED ☐ YES ☒ NO; IF YES, FCR NO.

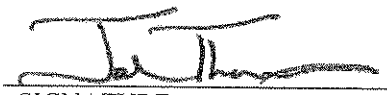
APPROVAL SIGNATURES:

USACE Representative	TRUMBLE.JAMES.NAPOLEON.III.1207239727 Digitally signed by TRUMBLE.JAMES.NAPOLEON.III.1207239727 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=TRUMBLE.JAMES.NAPOLEON.III.1207239727 Date: 2018.10.10 09:20:11 -04'00'	10 Oct 2018 DATE
Ohio EPA Project Coordinator	[signature]	11-7-18 DATE
Leidos H&S Manager (if applicable)	Not applicable	DATE

FIELD CHANGE REQUEST

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_006
PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program
CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337
BRIEF DESCRIPTION: Micro-Purge Procedure

REQUESTOR IDENTIFICATION
NAME/TITLE: Jed Thomas, Deputy Project Manager ORGANIZATION: Leidos
PHONE: 330-405-5802



SIGNATURE 10/26/18
DATE

BASELINE IDENTIFICATION
BASELINE(S) AFFECTED ☐ Cost ☐ Scope ☐ Milestone ☒ Method of Accomplishment

AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION):
Final Remedial Investigation Work Plan for Groundwater and Environmental Investigation Services for RVAAP-66 Facility-wide Groundwater (RI Work Plan)
Main Text: Section 3.7 2016 FWGW Monitoring Program and RI Groundwater Sampling
Appendix A: Sampling and Analysis Plan, Section 4.9.1 Micro-Purge Procedure

DESCRIPTION OF CHANGE:
Section 3.7 of the Main Text and Section 4.9.1 of Appendix A have some variances regarding the micro-purge procedure and stabilization parameters. This request is to document the micro-purge procedure to be implemented during groundwater sampling collected by micro-purging with dedicated bladder pumps.

Micro-purge Procedure
Step 1. Connect all applicable hoses at the surface.

Step 2. Turn the pump on and begin purging two times the amount of any stagnant water in the pump and tubing. (This purging does not represent a parameter for sampling.) For micro-purging, the pumping rate will not exceed 100 milliliters per minute (mL/min), unless it can be shown that higher purge rates (maximum of 500 mL/min) will not result in a drawdown greater than 0.3 ft. The pump rate is established once drawdown has been stabilized.

Step 3. After two times the amount of stagnant water has been purged from the pump and tubing and water level drawdown has been stabilized, begin recording water quality parameters every 3 to 5 minutes on tbe Groundwater Sample Form.

Step 4. Continue purging until water quality parameters have stabilized. Stabilization of water quality parameters is defined as three consecutive readings shown in Table 1.

Step 5. Collect sample immediately after micro-purging.

Additional Guidance
Minimum purging – A minimum of two times the volume of the pump and tubing quantity containing stagnant water must be purged.

Turbidity - If the turbidity cannot be reduced to less than or equal to 10 NTUs after 2 hours of purging and if all other parameters are stable, the well will be sampled.

Sample Collection for Metals - If turbidity is below 50 NTUs at the time of sampling, the sample collected for metals will not require filtering. If the turbidity cannot be brought below 50 NTUs, then both an unfiltered and a filtered sample will be collected for metals analysis, each in their own separate pre-preserved container. The unfiltered sample will be collected first. The filtered sample will be collected through a 5-micron filter.

FIELD CHANGE REQUEST

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_006
PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program
CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337
BRIEF DESCRIPTION: Micro-Purge Procedure

Table 1. Water Quality Stabilization Requirements for Micro-purging

Water Quality Parameter	Stabilization Requirement
pH	± 0.1 SU
Conductivity	± 3%
ORP	± 20mV
Turbidity	≤ 10 NTU
DO	± 10% or 0.2 mg/L (whichever is greater)
Temperature	± 0.5 degC

JUSTIFICATION:
Section 3.7 of the Main Text and Section 4.9.1 of Appendix A have some variances regarding the micro-purge procedure and stabilization parameters.

IMPACT OF NOT IMPLEMENTING REQUEST:
The field teams implementing micro-purge groundwater sampling may use different stabilization requirements for guidance regarding when a groundwater sample can be collected.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:
Groundwater sampling staff.

COST ESTIMATE: $0 (No cost impact to USACE)

Estimator Signature: Not applicable _____ DATE _____

PREVIOUS FCR AFFECTED ☐ YES ☒ NO; IF YES, FCR NO.

APPROVAL SIGNATURES:

USACE Representative _____ 7 Nov 2018 DATE

Ohio EPA Project Coordinator _____ 11-7-18 DATE

Leidos H&S Manager (if applicable) Not applicable _____ DATE

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APPENDIX D

Field Forms

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D.1 Task Team Activity Log Sheets

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/23/19 Page 1 of 1

Task Team Members:

Charles Spurr CS

Jed Thomas 4/23/19

Narrative (include time and location):

0910 Jed & Charles on site at Central Burn Pits area (CBP) for gauging activities.

1050 Stop work for thunder / lightning. Return to 1036

1120 Jed offsite. Team up with Rich Sprinzl for remainder of the day.

CS 4/23/19

Daily Weather Condition: A.M. Sunny; some clouds; scattered rain; 63°F

P.M. CS 4/23/19

Recorded By: Charles Spurr 4/23/19 (Signature) QC Checked by: RSprinzl 4/23/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 04/23/19 Page 1 of 1

Task Team Members:

RYAN LAUNICH

LINDSEY MOYER

JS 8/1/2019

Narrative (include time and location):

0907 - ARRIVE AT DEMOLITION AREA 2 START GAUGING

1040 - SWA LIGHTNING + THUNDER, LIGHT RAIN

1035 - ASSOC 4/23/19 SWA AT DA2MW-105 HORNET NEST IN WELL CASING.

1125 - RETURN TO WORK, RAIN, LIGHTNING STOPPED.

1227 - DA2 GAUGING COMPLETE COULD NOT GAUGE DA2MW-105 DUE TO WASP NEST IN WELL. LOCK GATE AT DA2.

1235 - START GAUGING AT LL11

1400 - EXIT LL11, LOCK GATE.

1408 - GAUGING COMPLETE AT LL11.

1427 - START GAUGING LL7

1515 - GAUGING COMPLETE AT LL7, LOCK GATE.

1516 - GAUGE FAULKTH WIDE FWGMW-022.

1537 - START GAUGING LL8.

1545. DEPART LL8, LOCK GATE.

1600 - RETURN TO 1036 + DEMOBILIZE.

TW

4/23/19

Daily Weather Condition: A.M. 64°F P. CLOUDS

P.M. 71°F MOSTLY CLOUDY

Recorded By: RE (Signature) QC Checked by: Q.MGM (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 04/23/19 Page 1 of 2

Task Team Members:

Rich Sprinz
Jasmine Stefansky
Charles Spurr

CS 4/23/19

Narrative (include time and location):

0845 Depart B1036 for LNW.
0855 Winkepeck Gate @ George Rd Locked. Inform FM - will call Range Control.
0910 Range Control unlocked gate. Enter toward WBG/LNW.
0918 Arrived @ LNW. Appears mowing has occurred recently.
0920 Arrived @ LNWmw-024 (Wasp exited cap). Water Level not functioning properly. Inform FM. (Heloron 100' #2178 Pine
0935 Met FM @ WBG. Troubleshoot WL meter and test 2nd meter.
-Tested ok in potable water
0950 Return to LNW. Recontinue MW Inspection and Gauging (4 MWs)
1030 Gauging @ LNW completed. Thunder heard in distance (dark clouds imminent).
1035 Arrived @ WBG and wait for storm/thunder to clear (Lightning seen). Inform FM
1045 Arrived B1036. Heavy Rain/Lightning
1053 Rain stopped/No Lightning
1102 Thunder @ B1036 (and Rain)
1132 Depart B1036 (Rich + Charles) for WBG (No thunder/lightning for 30 min)
1138 Arrived @ WBG. Begin MW Gauging (15)
1200 WBGmw-013 - active Bee Nest under Lid. Inform FM.
1305 Lunch Break
1320 Continue gauging @ WBG.
1445 Completed mw gauging @ WBG. Depart WBG, close gate - Inform FM/Range Control.
1455 Gauge BKGmw-026
1502 Gauge FWGmw-013 (Enter WSA)

Daily Weather Condition: A.M. 60s cloudy, brief rain ⇒ on/off t-storm

P.M. 70° overcast

Recorded By: KS 04/23/19 (Signature) QC Checked by: [signature] 4/23/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/23/19 Page 2 of 2

Task Team Members:

Rich Sprnz

Charles Spurr CS 4/23/19

Narrative (include time and location):

1510 Depart WSA. Inform FM. Head to CBP + SCL (1 MW left @ CBP)
1520 Arrive @ CBP. Gauge last MW CBPmw-0008
1525 Depart CBP.
1530 Arrive @ SCL. Gauge MWs (3) + Inspections.
1600 Gauging completed. Site Restoration photos taken for Ted (PM).
1602 Depart SCL.
1613 Return to B1036.
1630 Depart B1036/offsite.

CS 4/23/19

Daily Weather Condition: A.M. 60s cloudy, on/off t-storm

P.M. 70 overcast

Recorded By: RS 4/23/19 (Signature) QC Checked by: CS 4/23/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 04/24/19 Page 1 of 1

Task Team Members:

Rich Sprinzl
Jed Thomas (AM)
Heather Adams (OM)

JS 8/1/2019

Narrative (include time and location):

0800 Depart B1036 for Western Background Wells.
0815 Arrive @ BKGmw-016. Gauge/Inspect ~~them~~ 4/24/19. WASP NEST!
0825 Continue to Next MWs in Depot Area
0905 Enter Drop Zone to gauge 3 MWs
0955 Depart Drop Zone. Inform FM
1010 Gauge 4 Northern BKG MWs.
1112 Arrived @ CBlock. Gauge 5 MWs.
1200 Gauging completed @ CBlock. Head back to B1036.
1210 Return to B1036.
1255 Heather + Rich depart for Western BKG MWs (No Deer Hunters signed in)
1310 ARRIVE @ 1st MW west of Depot Area. Begin gauging EWG/BKG MWs.
1405 COMPLETED GAUGING IN WESTERN AREAS.
1420 EXIT MAIN GATE & BEGIN GAUGING RT. 5/OFFSITE MWS.
1600 COMPLETED OFFSITE MW GAUGING.
1610 REENTER MAIN GATE. UNLOAD AT B1036.
1630 OFFSITE.

RS 4/24/19

Daily Weather Condition: A.M. 40s Sunny

P.M. 60s Sunny

Recorded By: RS 4/24/19 (Signature) QC Checked by: 4/24/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/24/19 Page 1 of 1

Task Team Members:

Ryan Lawrence

LINDSEY MOYER RL/4/24/19

N/4/24/19

Narrative (include time and location):

0750 - DEPART 1036.

0800 - ARRIVE AT LL8 TO FINISH GAUGING

0845 - GAUGING COMPLETE AT LL8, LOCK GATE.

0850 - START GAUGING LL6. NO CHAIN OR LOCK ON GATE. NOTIFIED H. ADAMS.

0948 - EXIT LL6 ~~+ LOCK GA~~ N 4/24/19 CAN'T LOCK GATE - NO CHAIN OR LOCK.

0950 - GAUGING COMPLETE AT LL6.

1000 - START GAUGING AT LL5

1044 - GAUGING COMPLETE AT LL5, LOCK GATE.

1055 - START GAUGING AT LL10

1142 - GAUGING COMPLETE AT LL10, LOCK GATE

1158 - START GAUGING AT LL9, PICKED UP LL9MW-001, FWGMW-019 + FWGMW-022 PRIOR TO ENTERING LL9.

1300 - GAUGING COMPLETE AT LL9, LOCKED GATE.

1307 - RETURN TO 1036 FOR ADDITIONAL GAUGING LOCATIONS.

1327 - START GAUGING AT ATLAS SCRAP YARD.

1438 - GAUGING COMPLETE AT ATLAS SCRAP YARD.

1451 - GAUGE BKGMW-013. CAP IS STUCK WILL HAVE TO RETURN TO REMOVE + WILL NEED A WRENCH.

1513 - START GAUGING ~~LL4~~ RL 4/24/19 LL3.

1555 - DEPART LL3, LOCK GATE.

1601 - RETURN TO 1036 DEMOBILIZE.

Daily Weather Condition: A.M. 55°F CLEAR

P.M. 61°F MOSTLY SUNNY

Recorded By: [signature] 4/24/19 (Signature) QC Checked by: [signature] 4/24/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/24/19 Page 1 of 1

Task Team Members:

Charles Spurr

Jasmine Stefanicky

CS 4/24/19

Narrative (include time and location):

0800 Charles & Jasmine arrive at Mustard Burial Site (MBS) for gauging activities. Also gauge FWGmw-007

1010 Finished gauging MBS & depart for NACA Test Area (NTA).

1015 Arrive at NTA for gauging

1055 Gauge DA1tw-001 DTW: 12.91' BTOC

1315 Finish gauging NTA. Return to 1036 to resupply & have HES break.

1350 Arrive at Fuze & Booster Quarry (FBQ) for gauging

1655 Finish gauging at FBQ. Return to 1036

CS 4/24/19

Daily Weather Condition: A.M. 40°F; Partly Cloudy; calm

P.M. 62°F; Sunny; breezy to calm

Recorded By: Charles Spurr 4/24/19 (Signature) QC Checked by: [illegible] 4/24/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/25/19 Page 1 of 1

Task Team Members:

Charles Spurr

Jasmine Stefansky CS 4/25/19

Narrative (include time and location):

0820 Charles & Jasmine arrive at Load Line 1 area for gauging activities.

1000 Access road to LL1mw-067 has orange barricade at entrance. Walk on foot to well & discover several downed trees along the way.

1035 LL1mw-067 gauged & team returns to truck to continue. Load Line 1 Area.

1225 Finish gauging Load Line 1 & move to gauge FWG wells to the NE then travel to Erie Burning Grounds (EBG)

1310 Finish gauging FWGmw-010, 011, & 012.

1315 Arrive at EBG for gauging.

1505 Finish gauging at EBG & travel to Building 1200 (B12) for gauging. Also grab BKGmw-008

1555 Finish gauging at B12 & return to 1036

CS 4/25/19

Daily Weather Condition: A.M. 54°F; Cloudy; calm

P.M. 68°F; Partly Cloudy; breezy

Recorded By: [signature] 4/25/19 (Signature) QC Checked by: [signature] 04/25/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/25/19 Page 1 of 1

Task Team Members:

RYAN LAURICH

LINDSEY MOYER RL/4/25/19

RL/4/25/19

Narrative (include time and location):

0808 - DEPART 1036.

0826 - GAUGE SCFMW-001.

0840 - RETURN TO RKGMW-013 REMOVE PVC CAP + REPLACE w/ COMPRESSION CAP + GAUGE

DTW = 11.76

0853 - RETURN TO LL3 TO COMPLETE GAUGING.

1022 - GAUGING COMPLETE AT LL3, GATE LOCKED

1035 - START GAUGING LL4

1133 - GAUGING COMPLETE AT LL4, LOCK GATE.

1150 - START GAUGING LL12. OFFSITE WELLS.

1159 - SIGN IN AT LL12 GATE BOX.

1422 - SIGN OUT OF LL12. GAUGING AT LL12 COMPLETE

1443 - START GAUGING COBBS POND.

1521 - GAUGING COMPLETE AT COBBS POND, COULD NOT LOCATE CPMW-002.

1530 - START GAUGING LL2

1556 - RETURN TO 1036 + DEMOBILIZE.

RL 4/25/19

Daily Weather Condition: A.M. 52°F CLOUDY

P.M. 61°F LIGHT RAIN

Recorded By: RL 4/25/19 (Signature) QC Checked by: [signature] 4/25/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/29/19 Page 1 of 1

Task Team Members:
Charles Spurr
Jed Thomas

CS 4/29/19

Narrative (include time and location):

0750 Arrive at Load Line 2 gate (LL-2) for gauging activities.

0940 Finish gauging at LL-2 & move to Ramsdell Quarry Landfill to continue gauging (RQL)

0955 Arrive at RQL & sign-in.

1120 Sign out of RQL. Finished inside fence area.

1200 Truck stuck next to RQLmw-006.

1230 Able to get unstuck & drive back to Ramsdell Rd. Finish gauging RQLmw-015 & 016.

1300 Finish gauging all of RQL wells. Begin gauging remaining BKG, FWG, & CP wells.

1530 Finish gauging/inspecting remaining wells. Return to 1036 to process paperwork & repair pump for LL12mw-187.

CS 4/29/19

Daily Weather Condition: A.M. 34°F; Partly Cloudy; calm

P.M. 60°F; mostly Cloudy; calm to breezy

Recorded By: Charles Spurr 4/29/19 QC Checked by: Jed Thomas 4/29/19
(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 04/29/19 Page 1 of 1

Task Team Members:

Jackie Mitchell 04/29/19

04/29/19

Narrative (include time and location):

0855 Depart field office for GWS event.
0905 Arrive at DA2 and begin setup on DET-004.
0917 Begin low flow purge of DET-004
0953 DET-004 stable, send confirmation of stability text to A. Sprinzl. Recieve Stability Confimation.
1004 Collect sample DET-004-190401-GW for Pesticides/PCBs, SVOCs, VOCs, Cyanide, TAL Metals, LL PAHs
1503 Sampling complete. Hook back to YSI for post sampling parameter readings. Use well Cap Freeze Protection and begin packing supplies
1528 Return to field office and unload supplies and samples

04/29/19

Daily Weather Condition: A.M. 38°F, light wind & rain

P.M. 55°F, light wind, cloudy

Recorded By: (Signature) QC Checked by: Amanda Sprinzl 04/29/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

ate: (mm/dd/yy): 4/29/19 Page 1 of 1

Task Team Members:

Lindsey Mayer on 4/29/19

on 4/29/19

Narrative (include time and location):

0840 Depart field office
0850 R. Lavich helps L. Mayer set up on DA2MW-115
0928 Begin purge
1024 End purge, Text A. Sprinzel log.
1030 Collect samples DA2MW-115-190401-GW, DA2MW-115-190401-GWMSD, DA2MW-115-190402-GW, DA2MW-115-190403-GW
1055 Secure well, decon equipment
1120 Help R. Lavich with batteries for 4/29/19
1400 Arrive back at 1036
1410 Arrive at FWGMW-016
1426 Begin purge.
1519 End purge. A. Sprinzel gives approval to sample.
1520 Collect sample FWGMW-016-190401-GW
1540 Secure well, decon equipment.
1550 Arrive back at 1036 unload

on 4/29/19

Daily Weather Condition: A.M. 43°F cloudy

P.M. 61°F cloudy

ecorded By: on 4/29/19 (Signature) QC Checked by: Amanda Spring on 04/29/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/29/19 Page 1 of 1

Task Team Members:

RYAN LAUNAY

RL 4/29/19

RL 4/29/19

Narrative (include time and location):

0840 - DEPART 1036.

0850 - ARRIVE AT DAZ W/ JACKIE MITCHELL + LINDSEY MOSER. ALL SET UP ON SEPARATE WELLS. 0900 - COLLECT FWGTB-191001-TB + FWGTB-191009-TB FOR VOCS.

0958 - START PURGE AT DET-003.

1046 - DET-003 STABLE, SEND TEXT W/ PHOTO OF LOG TO A. SPANZL TO VERIFY STABILITY.

1052 - RECEIVED CONFIRMATION OF STABILITY.

1053 - COLLECT SAMPLES DET-003-190401-GW FOR VOCS, PHTHALATES, NITROAROMATICS, PHENOLS, LL PAHS, PCBS, PESTICIDES, EXPLOSIVES, CYANIDE, TAL METALS. DET-003-190401-GWMSD AND DET-003-190402-GW FOR VOCS, PCBS, PESTICIDES, EXPLOSIVES, CYANIDE, + TAL METALS. DET-003-190403-GW FOR VOCS, PCBS, PESTICIDES, EXPLOSIVES, CYANIDE, + TAL METALS.

1400 - LINDSEY DEPARTS FOR 1036.

1520 - JACKIE DEPARTS FOR 1036.

1526 - POST SAMPLE READING.

1540 - DEPART DAZ, LOCK GATE.

1545 - ARRIVE AT 1036, DEMOBILIZE.

RL 4/29/19

Daily Weather Condition: A.M. 50°F P. Cloudy

P.M. 57°F P. Cloudy

Recorded By: RL 4/29/19 (Signature) QC Checked by: [signature] 04/29/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/30/19 Page 1 of 2

Task Team Members:

Ryan Laurich

TL / 4/30/19 RL / 4/30/19

Narrative (include time and location):

0750 - DEPART 1036.

0800 - ARRIVE AT WINKLEPECK BURNING GROUNDS. w/ LINDSEY MOYER - WILL SET UP ON SEPERATE WELLS.

0825 - START PURGE ON WBGmw-021.

0941 - WBGmw-021 STABLE, SENT LOG VIA TEXT TO A. SPRINZL.

0944 - RECEIVED CONFIRMATION OF STABILITY

0945 - COLLECT WBGmw-021-190401-GW FOR EXPLOSIVES + TAL METALS.

1000 - COLLECT POST SAMPLE YSI DATA.

1028 - START PURGE AT WBGmw-020.

1045 - KEVIN + OHIO EPA REPS (2) ONSITE TO OBSERVE GWS ACTIVITIES.

1120 - KEVIN + OHIO EPA REPS OFFSITE.

1143 - WBGmw-020 STABLE, TEXT LOG TO A. SPRINZL TO CONFIRM.

1147 - STABILITY CONFIRMED.

1150 - SAMPLE WBGmw-020-190401-GW FOR EXPLOSIVES + TAL METALS.

1205 - TAKE YSI POST SAMPLE DATA.

1218 - DEPART WINKLEPECK BURN GROUNDS - LOCK GATE.

1230 - ARRIVE AT FUZE + BOOSTER QUARRY.

1335 - START LOW FLOW AT FBQmw-171

1418 - FBQmw-171 STABLE, TEXT LOG TO A. SPRINZL TO VERIFY

1419 - STABILITY VERIFIED.

1420 - SAMPLE FBQmw-171-190401-GW FOR CYANIDE, SULFATE, NITRATE, NITRITE, ALKALINITY AND SULFIDE.

Daily Weather Condition: A.M. 47°F CLOUDY

P.M. 52°F LIGHT RAIN

Recorded By: [signature] 4/30/19 (Signature) QC Checked by: [signature] 04/30/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/30/19 Page 2 of 2

Task Team Members:

R. Laurich

[illegible] 4/30/19 [illegible] 4/30/19

Narrative (include time and location):

1459 - COLLECT POST SAMPLE YSI DATA.

1545 - DEPART FUZE + BOOSTER QUARRY.

1600 - ARRIVE AT 1036 - DEMOBILIZE

[illegible] 4/30/19

Daily Weather Condition: A.M. 47°F CLOUDY

P.M. 52°F LIGHT RAIN

Recorded By: [illegible] 4/30/19 (Signature) QC Checked by: [illegible] 04/30/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 04/30/19 Page 1 of 1

Task Team Members:

Jackie Mitchell 04/30/19

04/30/19

Narrative (include time and location):

0903 Depart Building 1036 field office for GWS event.
0913 Arrive at NACA test Area to sample NTA-mw-120.
0937 Begin low flow purge of NTAmw-120.
1004 Stagnant water purged from well, begin recording stability parameters.
1042 Parameters stable. Send confirmation text to A. Spinzl
1045 Recieve confirmation of stability.
1048 Sample NTAmw-120-190401-GW for SVOC: Hexachlorocyclopentadine
1111 Take post sample parameter readings and begin demob. from NACA Test Area.
1140 Depart NACA Test Area.
1155 Arrive at FWGmw-007 and begin setting up sampling equipment.
1210 Begin low flow purge of FWGmw-007.
Stagnant water purged from well, begin recording stability parameters.
1331 Parameters stable. Send confirmation text to A. Spinzl.
1332 Recieve confirmation of stability.
1335 sample FWGmw-007-190401-GW for Explosives and TAL Metals.
1430 Sampling complete. Take post sampling parameter readings
1448 Depart FWGmw-007.
1510 Return to 1036 field office and begin demob. activities.

Daily Weather Condition: A.M. 50°F, light wind, cloudy

P.M. 56°F, light wind, cloudy

Recorded By: (Signature) QC Checked by: 4/30/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/30/19 Page 1 of 1

Task Team Members:

Lindsey Mayer 4/30/19

4/30/19

Narrative (include time and location):

0750 Depart 1036
0800 Arrive at WBGmw-006. Set up on well.
0818 Begin purge
0910 Collect sample WBGmw-006-190401-Gw, after parameters stabilized.
0945 Secure well, decon equipment.
0955 Set up on WBGMw-009
1003 Begin purge
1045 Kevin, along with Ohio EPA drive onsite.
1053 Collect sample. WBGmw-009-190401-Gw, after stabilization.
1120 Secure well, decon equipment.
1210 Arrive back at 1036, got more bottleware, drop off samples
1235 Arrive at FBQ-172
1300 Begin purge
1351 Collect sample FBQmw-172-190401-Gw, FBQmw-172-190402-Gw, FBQmw-172-190403-Gw.
1422 Secure well, decon equipment
1425 Set up on FBQmw-174
1432 Begin purge
1507 Collect sample FBQmw-174-190401-Gw
1531 Secure well decon equipment
1600 Arrive back 1036.

Daily Weather Condition: A.M. 48°F, cloudy

P.M. 52°F, cloudy/rain

Recorded By: [signature] 4/30/19 (Signature) QC Checked by: [signature] 4/30/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/30/19 Page 1 of 2

Task Team Members:

Charles Spurr

Jackie Mitchell CS 4/30/19

Narrative (include time and location):

0800 Depart 1036 to correct lock at Ramsdell Quarry Landfill & deploy repaired pump into LL12mw-187.

0820 Well lock (6000) removed from RQL gate. Gate is now only locked with RQL specific lock. Depart & travel to Load line 12.

0835 Deploy pump into LL12mw-187. Return to 1036 to prepare for GWS activities.

0900 Depart for NACA Test Area (NTA)

0915 Arrive at NTA & setup on wells. C. Spurr at NTA mw-119 & J. Mitchell at NTA mw-120.

0955 Begin low flow purge of NTAmw-119

1045 Sample NTAmw-119 (DUP, MSD, & Split) - for explosives

1130 EPA onsite Kevin & Liam along with Kevin Sedlak

1150 EPA offsite, Jackie M. travels to FWGmw-007

1155 Return to 1036 with samples from NTAmw-119 & 120

1225 Depart for FBQ

1235 Arrive at FBQ & setup at FBQmw-175

1250 Stop to help co-worker get unstuck

1315 Return to FBQmw-175 & begin low flow

1325 Notice that turbidity is very high (water is brown/cloudy) Notify Amanda Sprinzl. Also pump is set on bottom of well.

1350 Decision made to pull pump and adjust tubing length.

Daily Weather Condition: A.M. 53°F; Cloudy; calm

P.M. 57°F; Partly Cloudy; rain

Recorded By: Charles Spurr 4/30/19 (Signature) QC Checked by: Amanda Sprinzl 04/30/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 4/30/19 Page 2 of 2

Task Team Members:

Charles Spurr

CS 4/30/19

Narrative (include time and location):

1400 Return to 1036 to clean & rebuild pump for FBQmw-175

1445 Return to FBQ

1505 Pump is reset in FBQmw-175. TD of well: 23.06'
Pump intake at 22' BTOC

1530 Return to 1036 with samples from FBQmw-172 & FBQmw-171. Help unload trucks & clean up.

CS 4/30/19

Daily Weather Condition: A.M. CS 4/30/19

P.M. 55°F ; Sun & Clouds ; calm

Recorded By: [signature] 4/30/19 (Signature) QC Checked by: Amanda Spurgeon 04/30/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/01/19 Page 1 of 2

Task Team Members:

Jackie Mitchell on 05/01/19

05/101/19

Narrative (include time and location):

0815 Depart building 1036 field office for GWS event.
0820 Arrive at LL7 to show charles the wells.
0835 Arrive at FWGmw-023 and begin setup on well
0910 Begin low flow purge of FWGmw-023
0955 Stagnant water purged. Begin recording stability parameters.
1005 Parameters stable, send confirmation text to A. Sprinzl
1008 A. Sprinzl confirms stability
1009 Collect sample FWGmw-023-190401-GW for Nitroguanidine (6)(A) & Nitrocellulose (12)(A)
1041 Sampleng complete, take final parameter readings. Begin demob. from FWGmw-023.
1105 Depart FWGmw-023.
1110 Arrive at LL10mw-003 and begin setup on well.
1029 Begin low flow purge of LL10mw-003
1208 Stagnant water pured. Begin recording stability parameters.
1223 Parameters stable, send confirmation text to A. Sprinzl
1228 A. Sprinzl confirms stability
1230 Collect samples LL10-003-190403-GW, LL10mw-003-190401-GW, LL10mw-003-190402-GW for VOCs
1253 Sampling complete, take final parameter readings. Begin demob from LL10mw-003.
1320 Meet Jed at main entrance of LL10 to relinquish samples.

Daily Weather Condition: A.M. 64°F, light wind, partly cloudy

P.M. 80°F, moderate wind, partly cloudy

Recorded By: 05/01/19 (Signature) QC Checked by: 5/1/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/01/19 Page 2 of 2

Task Team Members:

Jackie Mitchell

05/01/19

05/01/19

Narrative (include time and location):

1330 Arrive at LL10mw-005 and begin setup on well.
1355 Begin low flow purge of LL10mw-005.
1429 Stagnant water purged. Begin taking stability parameters.
1454 Parameters stable. Send confirmation text to A. Sprinkel.
1459 Recieve confirmation from A. Sprinkel.
1505 Collect sample LL10mw-005-190401-GW for TAL Metals.
1516 Sampling complete. Record final parameter readings.
1517 Begin demob. from LL10.
1538 Depart LL10. Gate locked.
1547 Arrive at 1036 field office and begin final demobalization activities.

05/02/19

Daily Weather Condition: A.M. 64°F, light wind, partly cloudy

P.M. 80°F, moderate wind, sunny

Recorded By: 05/01/19 (Signature) QC Checked by: 5/1/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/01/19 Page 1 of 1

Task Team Members:

Lindsey Mayer 5/1/19

5/1/19

Narrative (include time and location):

0810 Depart 1036
0815 Arrive at LL12 and sign in at gate
0820 R. Lavrich helps L. Mayer carry equipment to LL12mw-183
0843 Begin purge on LL12mw-183
1017 Collect sample LL12mw-183-190401-GW.
1040 Secure well decon equipment
1115 Set up on LL12mw-242
1130 Begin purge
1405 Collect sample. LL2mw-242-190401-GW. After sampling, post readings. > 50NTU. Call A. Sprinzel, collect filtered.
1450 Secure well, decon equipment
1515 Sign R. Lavrich + L. Mayer out on gate 5/1/19 board
1535 Arrive back at 1036, unload vehicle

5/1/19

Daily Weather Condition: A.M. 60°F partly cloudy
P.M. 85°F Sunny

Recorded By: (Signature) 5/1/19 QC Checked by: (Signature) 05/01/19

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/1/19 Page 1 of 1

Task Team Members:

RYAN LAIRICH

RL 5/1/19

RL 5/1/19

Narrative (include time and location):

0812 - DEPART 1036.

0820 - ARRIVE AT LL12 + SIGN IN AT SOUTH GATE. CLOSED MOWER AND W/ME AT LL12, WILL SAMPLE SEPARATELY

0850 - START LOW FLOW AT ~~MW-24~~ LL12MW-247.

1009 - LL12MW-247 STABLE, TEXT LOG TO A. SPRUNZL TO CONFIRM

1013 - RECEIVE CONFIRMATION OF STABILITY. ALSO CHECKED W/ H. ADAMS - IF TURBIDITY > 10 NTU AFTER 1 HOUR OF PURGING SAMPLE, FILTER FOR METALS IF > 50NTU + COLLECTING METALS AT WELL.

1015 - COLLECT LL12MW-247-190401-GW FOR NITRATE + TAL METALS.

1055 - POST SAMPLE YSI DATA

1130 - START LOW FLOW AT LL12MW-185

1234 - LL12MW-185 STABLE, TEXT A. SPRUNZL LOG TO CONFIRM.

1236 - RECEIVE STABILITY CONFIRMATION.

1240 - SAMPLE ~~LL12MW-185-190401 FOR~~ still LL12MW-185 LL12MW-185-190401-GW FOR NITRATE

1325 - POST SAMPLE YSI DATA.

1550 - JED THOMAS PICKS UP SAMPLES.

1422 - START LOW FLOW AT LL12MW-245.

1455 - END PURGE DUE TO TIME CONSTRAINTS. TURBIDITY WAS NOT DECREASING, THE WATER LEVEL WAS DROPPING TOO FAST + THERE WOULD NOT BE ENOUGH TIME TO STABILIZE THE WELL + COLLECT SAMPLE VOLUME BY 1630.

1515 - STOP AT FWGMW-022 TO HELP CHARLES SPURR.

- RETURN TO 1036 - DEMOBILIZE.

Daily Weather Condition: A.M. 51°F SUNNY

P.M. 81°F SUNNY

Recorded By: RL 5/1/19 (Signature) QC Checked by: [signature] 05/01/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/1/19 Page 1 of 2

Task Team Members:

Charles Spurr cc 5/1/19

Narrative (include time and location):

0825 Arrive at Load Line 7 & walk wells to be sampled to assess access. Setup at LL7mw-001

0840 J. Mitchell calls to notify me that her water level is not long enough for FWGmw-023. Meet & trade WL's.

0905 Begin low flow purge of LL7mw-001. Note water is orange in color. Turbidity >1000.

1020] Sample LL7mw-001 for TAL metals & Cyanide

1025 Finish activities at LL7mw-001. Load & depart for LL7mw-006

1050 Arrive & setup at LL7mw-006

1100 Begin low flow purge of LL7mw-006

1205] Sample LL7mw-006 for explosives

1230 Finish activities at LL7mw-006. Depart for Load line 11

1240 Arrive and setup at LL11mw-005

1250 Begin low flow purge of LL11mw-005

1400] Sample LL11mw-005 for Cyanide

1430 Finish activities at LL1. Load & return to 1036 with samples.

1505 Arrive at FWGmw-019 & 022. Gauge and discover that water is >100' BTOC (max of WL). Call Jeff Thomas. Ryan Laurich will bring out 300' WL.

Daily Weather Condition: A.M. 62°F; Cloudy; calm

P.M. 78°F; Sunny; breezy to windy

Recorded By: Charles Spurr 5/1/19 (Signature) QC Checked by: [signature] 05/01/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/1/19 Page 2 of 2

Task Team Members:

Charles Spurr

Ryan Laurich CS 5/1/19

Narrative (include time and location):

1520 Ryan arrives w/ 300' WL. Gauge FWGmw-022

1525 Begin low flow purge of FWGmw-022

1535 With correct pump pressure, water is not coming through tubing. Call Amanda Sprinzl to discuss possible remedy.

1545 Figure out that deep pumps need more discharge time (ie. 20:40 CPM 1). Water begins to flow to surface but team determines that we will not have enough time to sample & decides to pack up + leave for the day.

1600 Team packed up + returns to 1036

CS 5/1/19

Daily Weather Condition: A.M. CS 5/1/19

P.M. 82° F; Sunny; windy

Recorded By: Charles Spurr 5/1/19 (Signature) QC Checked by: [signature] 05/1/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/02/19 Page 1 of 2

Task Team Members:

Jaelie Mitchell

05/02/19

05/02/19

Narrative (include time and location):

0820 Depart building 1036 field office for GWS event.
0845 Arrive at LL2mw-264 and begin setup on well
0854 Begin low flow purge of LL2mw-0164.
0913 Stagnant water purged, begin recording stability parameters
0958 Parameters Stable. Send confirmation text to A. Sprinzl.
1001 Recieve confirmation
1005 Collect sample LL2mw-264-~~04~~ 190401-GW for Cyanide. 05/02/19
1008 Sampling complete. Take final parameter readings and begin demob. from LL2mw-264.
1027 Arrive at LL2mw-267 and begin set up on well.
1042 Begin low flow purge of LL2mw-267.
1305 Parameters stable except turbidity. Purging for 2 hrs.
~~1305~~ call H. Adams to confirm sampling.
1320 Collect sample LL2mw-~~0~~267 190401-GW for TAL Metals and Explosives. 05/02/19
1333 Collect post sample parameter readings and begin demob. from LL2.
1430 Return to building 1036 to drop of samples and recieve more bottle ware
1435 Arrive at FWGmw-015 and begin setup on well.
1441 Begin low flow purge of FWGmw-015
1500 Call Heather. Decision to end purging made due to high

05/02/19

Daily Weather Condition: A.M. 59°F, light wind, overcast

P.M. 70°F, light wind, partly sunny

Recorded By: 05/02/19 (Signature) QC Checked by: 5/2/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/02/19 Page 2 of 2

Task Team Members:

Jackie Mitchell

05/02/19

05/02/19

Narrative (include time and location):

Turbidity. Begin demob. from FWGMW-015
1320 Return to 1036 field office for demobilization activities. Event complete for the week.

05/02/19

Daily Weather Condition: A.M. 05/02/19

P.M. 71°F, ND wind, sunny

Recorded By: 05/02/19 (Signature) QC Checked by: 5/2/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/2/19 Page 1 of 1

Task Team Members:

Charles Spurr

CS 5/2/19

Narrative (include time and location):

0825 Arrive at FWGmw-022 & 019. Setup on 022

0835 Begin low flow purge of FWGmw-022

0915] Sample FWGmw-022

0935 Finish activities at mw-022, pack & move to mw-019

0955 Begin low flow purge of FWGmw-019

1035] Sample FWGmw-019

1100 Complete activities at mw-019, load up, & depart to return to 1036

1120 Arrive at 1036 to drop samples & purge water. Receive new assignment

1135 Depart 1036 for SCFmw-004 & LL1mw-087

1150 Arrive & setup on LL1mw-087

1205 Begin low flow purge of LL1mw-087. Start at CPM2 29:1 16 PSI but drawdown too great. Decrease to CPM1 59:1 ~25 mL/min.

1320] Sample LL1mw-087

1350 Open SCFmw-004 packer to allow Artesian flow ~3/100' ATOC

1400 Take one shot parameters w/ YSI for SCFmw-004

1405] Sample SCFmw-004 & close well. Reseat packer

1425 Finish all activities at LL1mw-087. Load truck & return to 1036

CS 5/2/19

Daily Weather Condition: A.M. 60°F; Cloudy; calm

P.M. 72°F; partly cloudy; calm

Recorded By: [signature] 5/2/19 (Signature) QC Checked by: [signature] 05/02/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/02/19 Page 1 of 1

Task Team Members:

Lindsey Mayor 5/2/19

5/2/19

Narrative (include time and location):

0815 Depart 1036
0820 Sign in at LL12
0830 Arrive at well LL12mw-245
0846 Begin purge
0943 Send picture of well log to A.Sprinzel, water level is dropping. A.Sprinzel calls, she states to dry to lower to 10mL/min, well is still dropping, will purge well dry.
1020 End purge, well is dry.
1023 Decon equipment.
1037 Set up on LL12mw-187
1046 Begin purge
1148 Collect sample LL12mw-187-190401-GW (nitrate/TAL metals). After approval from A. Sprinzel.
1215 Secure well, decon equipment
1230 Collect sample LL12mw-245-190401-GW (TAL metals/nitrate/explosives)
1256 Secure well, decon equipment
1316 Sign out at gate/lock gate
1315 Arrive back at 1036 to get water/drop off samples.
1340 Set up on LL4mw-200
1349 Begin purge
1450 Collect sample LL4mw-200-190401-GW, after Approval from A. Sprinzel
1512 Secure well, decon equipment

Daily Weather Condition: A.M. 62°F overcast

P.M. 72°F partly cloudy

Recorded By: [signature] 5/2/19 (Signature) QC Checked by: [signature] 05/02/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/6/19 Page 1 of 1

Task Team Members:

Charles Spurr

CS 5/6/19

Narrative (include time and location):

0820 Arrive at Load Line 1. Travel to & setup at LL1mw-084

0835 Begin low flow purge of LL1mw-084

0925] Sample LL1mw-084

1020 Finish activities at LL1mw-084. Pack up + move to LL1mw-083

1100 Begin low flow purge of LL1mw-083

* well has poison ivy present around it. Precautions were taken to avoid any contact with myself or equipment.

1135] Sample LL1mw-083

1205 Finish activities at LL1mw-083. Pack up and prepare to move to LL1mw-081

1255 Begin low flow purge of LL1mw-081, Water is dark orange in color & has very high turbidity. Will not run water through flow cell of YSI until turbidity comes down.

1331 first reading taken through flow cell.

1505 Sample LL1mw-081 turb. not below 10 but 3 readings within 10% & purge has taken > 2 hours. Verify with Amanda Sprinzl.

1525 Finish activities at LL1mw-081. Pack up & return to 1036

Daily Weather Condition: A.M. 53°F; Sunny; calm to breezy

P.M. 76°F; Sunny; calm

Recorded By: [signature] 5/6/19 (Signature) QC Checked by: [signature] 5/6/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5-6-19 Page 1 of 1

Task Team Members:

G. Gromofsky

L. Moyer

H. Adams SS 5-6-19

Narrative (include time and location):

0824 Arrive at LL2-MW59.

0840 Begin low flow purge.

0904 Well stable. A Sprinzl confirms @ 1426

0905 Sample LL2-MW059 for explosives + TAL metals.

0921 Collect post sample reading, break down equipment.

0942 Depart well.

0956 Arrive at LL3-MW244

1010 Begin low flow purge.

1039 Parameters stable. A Sprinzl confirms at 1426.

1040 Sample LL3mw-244 for explosives and TAL metals

1044 Collect post sample reading and break down equipment.

1107 Depart well for ~~Bottling 1030~~ SS 5-6-19 Line 2 to get ~~Bottles~~ from L. Moyer.

1139 L. Moyer and G. Gromofsky arrive at Line 3.

1145 G. Gromofsky arrives at LL3mw-237

1200 Begin low flow purge.

1250 H. Adams arrives to drop off bottle for next well and collect samples from earlier today.

1353 Send purge form via text to verify stability with A. Sprinzl Need to show that turbidity reading (<10) is ligitimate. Clean out/empty flow cell and collect 4 more readings.

1415 Sample LL3mw-237 for explosives.

1439 Collect post sample reading and gather gear to return to 10306

Daily Weather Condition: A.M. 52°F, partly cloudy, calm

P.M. 65°F, sunny, calm

Recorded By: [signature] 5-6-19 (Signature) QC Checked by: [signature] 5/6/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/06/19 Page 1 of 1

Task Team Members:

Lindsey Mayer 5/6/19

5/6/19

Narrative (include time and location):

0801 Depart 1036
0817 Arrive at LL2mw-272
0836 Begin low flow purge.
1109 A. Spinzel gives permission to sample, well has reached stabilization.
1110 Collect sample LL2mw-272-190401-GW (cyanide).
1123 Secure well, decon equipment.
1130 meet up with Gabby, she takes bottle set for 113mw-237. , locks 112.
1135 enter 113.
1145 Set up on LL3mw-234.
1157 Begin purge. Due to elevated turbidity, purged an extra 750mL during stagnant water purge. ~~After sta~~ 5/6/19
1454 A. Spinzel gives approval to sample
1455 Collect sample LL3mw-234-190401-GW (cyanide).
1510 Secure well decon equipment.
1520 Lock LL3 gate
1525 Arrive back at 1036, unload

5/6/19

Daily Weather Condition: A.M. 60's Sunny

P.M. 70's Sunny

Recorded By: 5/6/19 (Signature) QC Checked by: 5-6-19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05-07-19 Page 1 of 1

Task Team Members:

Gabby Gromofsky

Charles Spurr SS 5-7-19

DS 5-7-19

Narrative (include time and location):

0819 Arrive at LL1mw-089

0837 Begin low flow purge.

0906 Well stable and verify with A. Sprinzl via text.

0920 Sample LL1mw-089. Primary sample ID: LL1mw-089-190401-GW | Duplicate sample ID: LL1mw-089-190402-GW (SS 5-7-19) | Split sample ID: LL1mw-089-190403-GW | MS/MSD ID: LL1mw-089-190401-GWMSD

1130 Collect post sample reading and break down equipment / purge water line.

1200 Arrive at Load Line 1 and leave samples at gate for H. Adams to pick up.

1215 Arrive at LL1mw-080

1222 Begin low flow purge.

1258 Stable. Verify with A. Sprinzl via text.

1315 Collect post sample reading and break down equipment.

1330 Depart Load Line 1 for LL1mw-064.

1342 Receive call from H. Adams to change plans. Proceed to FWGmw-012.

1415 Arrive at FWGmw-012. Charles Spurr is on FWGmw-011.

1433 Begin low flow purge.

1503 Well stable. Confirm with A. Sprinzl via text.

1515 Sample FWGmw-012 for explosives and TAL metals.

1520 Collect post sample reading and pack equipment.

1600 Charles and Gabby offsite for Building 1036.

Daily Weather Condition: A.M. 50°F cloudy calm

P.M. 56°F cloudy

Recorded By: [signature] 5-7-19 (Signature) QC Checked by: [signature] 5/8/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/7/19 Page 1 of 2

Task Team Members:

Charles Spurr

Jed Thomas CS 5/7/19

Narrative (include time and location):

0810 Arrive at area along George Rd. adjacent to suspected potable well.

0815 Jed dons a bee keeper suit and gathers equipment

0825 Jed approaches suspected area of well while charles remains in vehicle and keeps watch.

0830 Well is located & bees/hornets are not present. Well is staked & relative measurements are taken
- From south wooded area next to field walk 49 ft. North along white edge line of George Rd. Turn right (east) and walk 79 ft. into field
- Hole ~ 1.5 ft. deep x 1.5 ft. in diameter. Marked w/ a stake & pin flags (orange)

0845 Jed walks field around well to search for any signs of bees/hornets in the vicinity. Photo documentation.

0900 Return to 1036.

0920 Jed offsite. Charles mobs to Erie Burning Grounds (EBG) for well sampling activities.

0945 Arrive at EBG & Setup at EBGmw-125

1005 Begin low flow purge of EBGmw-125

1055 Sample EBGmw-125

1110 Finish all activities at EBGmw-125. Move and setup on EBGmw-131

Daily Weather Condition: A.M. 53°F ; Cloudy ; calm

P.M. CS 5/7/19

Recorded By: [signature] 5/7/19 (Signature) QC Checked by: [signature] 5/8/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/7/19 Page 2 of 2

Task Team Members:

Charles Spurr CS 5/7/19

Narrative (include time and location):

1130 Begin low flow purge of EBGmw-131
1205 Sample EBGmw-131
1215 Finish activities at EBGmw-131
1230 Meet H. Adams to transfer samples & then mob to FWGmw-011 & 012
1250 Arrive & setup at FWGmw-011
1315 Begin low flow purge of FWGmw-011
1520 Purging for > 2 hours. Turbidity ~15 NTU. Receive approval from A. Sprinzl to collect sample. Turbidity is >10 but 3 readings are within 10% & all other parameters are stable
1535 Finish activities for FWGmw-011. Pack equipment
1550 Depart for 1036

CS 5/7/19

Daily Weather Condition: A.M. CS 5/7/19

P.M. 63°F; mostly cloudy; breezy

Recorded By: Charles Spurr 5/7/19 (Signature) QC Checked by: [signature] 5/8/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/7/19 Page 1 of 1

Task Team Members:

RYAN LAURICH

RL/5/7/19 RL/5/7/19

Narrative (include time and location):

0812 - DEPART 1036 FOR FUZE + BOOSTER @ QUARRY.

0820 - ARRIVE AT FBQ.

1844 0839 - START LOW FLOW AT FBQmw-175.

1108 - FBQmw-175 STABLE, PURGED 2 HOURS POST REMOVAL OF STAGNANT WATER. TURBIDITY STABLE BUT >10 NTU. SENT LOG TO A. SPRINZL TO VERIFY

1112 - STABILITY VERIFIED.

1115 - SAMPLE FBQmw-175-190401-GW + FBQmw-175-190402-GW FOR SULFIDE, NITRATE, NITRITE, SULFATE, ALKALINITY, + HEX CHROME. FBQmw-175-190401-GWMSD FOR HEX CHROME. FBQmw-175-190403-GW FOR SULFIDE, NITRATE, NITRITE, SULFATE, ALKALINITY, + HEX CHROME.

1240 - POST SAMPLE YSI DATA.

1303 - START LOW FLOW ON FBQmw-176.

1430 - HEATHER ADAMS PICKS UP SAMPLES FROM FBQmw-175.

1521 - FBQmw-176 STABLE, TEXTED LOG TO A. SPRINZL TO CONFIRM.

1531 - STABILITY CONFIRMED EXCEPT FOR TURBIDITY

1532 - SAMPLE FBQmw-176-190401-GW FOR CSANIDE.

1537 - TAKE POST SAMPLE YSI DATA. * TURBIDITY WOULD NOT STABILIZE AFTER TWO HOURS OF PURGING BUT WAS <50 NTU.

- RETURN TO 1036 TO DEMOBILIZE.

RL 5/7/19

Daily Weather Condition: A.M. 55°F P. CLOUDY

P.M. 63°F P. CLOUDY

Recorded By: RL 5/7/19 (Signature) QC Checked by: [signature] 5/8/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/07/19 Page 1 of 1

Task Team Members:

Lindsey Mayer 5/7/19

5/8/19

Narrative (include time and location):

0808 Depart 1036, for groundwater sampling
0823 Arrive at LL1mw-086, set up.
0837 Begin low flow purge.
1152 End purge. A. Sprinzel gives permission to sample.
1153 Collect sample LL1mw-086-190401-GW, (Alkalinity, TAL metals, cyanide, filtered using 0.45 micron filter).
1209 Secure well, decon equipment.
1220 Set up on LL1mw-065 for low flow purge
1230 Begin purge.
1313 A. Sprinzel gives approval to sample, after parameters have reached stability
1314 Collect sample LL1mw-065-0190401-GW, (TAL metals, explosives)
1330 Secure well, decon equipment
1340 Arrive at LL2mw-064
1343 Begin purge, Call A. Sprinzel water keeps flowing after compressor turns off, she states to disconnect air line, water keeps flowing. She states it maybe partially artesian. L. Mayer tells her there are orange particulates, she suggests pumping at a higher rate than what it is flowing to remove particulates
1428 A Sprinzel gives approval to sample
1429 Collect sample LL2mw-064-190401-GW (TAL metals).
1437 Secure well, decon equipment
1450 Arrive at 1036, unload

Daily Weather Condition: A.M. 50's cloudy

P.M. 60's cloudy

Recorded By: L. Mayer 5/7/19 (Signature) QC Checked by: [signature] 5/8/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5-8-19 Page 1 of 2

Task Team Members:

Gabby Gronefsky
Charles Spurr
Lindsey Moyer
Jackie Mitchell
JM 5-8-19

Narrative (include time and location):

0815 Jackie, Gabby, Lindsey, and Charles arrive at sand creek for groundwater sampling. Set up on SCLmw-001 through SCLmw-003.

0851 Charles and Gabby begin low flow purge on SCLmw-002 and prep bottleware for sampling.

0919 well stable. Send sample log to A. Sprinzl to verify.

0926 A. Sprinzl verified stability.

0925 Sample SCLmw-002 for VOCs, SVOCs, explosives, LL PAHs, PCBs, pesticides, cyanide, sulfide, Nitrate, nitrite, sulfate, Alkalinity, nitroguanidine, nitrocellulose, perchlorate, TAL metals.

* Duplicate ID: SCLmw002-190402-GW
* Split ID: SCLmw-002-190403-GW
* Primary ID: SCLmw-002-190401-GW
* MS/MSD ID: SCLmw-002-190401-GWMSD

1045 collect post sample reading and pack up equipment.

1203 Gabby departs SCL for 1036.

1210 Arrive at 1036 and collect equipment for GWS at LLmw-088

1235 Arrive at LLmw-088.

1302 Begin low flow purge.

1358 Notify H. Adams of elevated turbidity (~40 JM 5-8-19 NTU).

1503 All parameters stable, but turbidity is >10 NTU and <50 NTU. ~Two hr purge complete

Daily Weather Condition: A.M. 58°F, cloudy, breezy

P.M. 60°F, partly cloudy, breezy

Recorded By: [signature] 5-8-19 (Signature) QC Checked by: [signature] 5-9-19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

ate: (mm/dd/yy): 5-8-19 Page 2 of 2

Task Team Members:

Gabby Gromafsky

5-8-19

5-8-19

Narrative (include time and location):

1505 Sample LH1mw-088-19010-GW. Attempted to verify vol 4. Sprint and did not receive verification (no responce).

1545 Depart well.

1550 Arrive at 036. for demobilization.

Daily Weather Condition: A.M.

P.M. 5-8-19

ecorded By: 5-9-19 QC Checked by: 5-9-19

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/8/19 Page 1 of 1

Task Team Members:

RYAN LAURILLA

JL 5/8/19

JL 5/8/19

Narrative (include time and location):

0800 - DEPART FROM 1036.
0826 - START LOW FLOW AT FWGmw-004.
0906 - FWGmw-004 STABLE, TEXT LOG TO H. ADAMS TO CONFIRM.
0911 - STABILITY CONFIRMED.
0912 - SAMPLE FWGmw-004 FOR TAL METALS + EXPLOSIVES.
0935 - POST SAMPLE YSI DATA.
0959 - START LOW FLOW ON FWGmw-015.
1040 - FWGmw-015 STABLE, TEXT LOG TO H. ADAMS TO CONFIRM.
1054 - STABILITY CONFIRMED TEXT TO H. ADAMS NOT RECEIVED.
1055 - SAMPLE FWGmw-015 FOR EXPLOSIVES + TAL METALS.
1202 - POST SAMPLE YSI DATA.
1230 - RETURN TO BLDG. 1036 DECON SAMPLES.
1314 - START LOW FLOW AT CBPmw-008.
1401 - CBPmw-008 STABLE, TEXT LOG TO H. ADAMS TO CONFIRM.
1410 - STABILITY CONFIRMED.
1411 - SAMPLE CBPmw-008-190401-GW FOR CYANIDE.
1433 - ~~POST SAMPLE YSI DATA.~~ CHARLES SPANN PICKS UP CBPmw-008 SAMPLE TO GET IT IN SHIPMENT W/ COURIER.
1436 - POST SAMPLE YSI DATA
1600 - GOT STUCK AT CBPmw-008, GARY FROM VISTA PULLED THE VEHICLE OUT AFTER H. ADAMS WAS NOTIFIED.
1610 - RETURN TO 1036 - DEMOBILIZE

Daily Weather Condition: A.M. 48°F CLOUDY

P.M. 71°F SUNNY

Recorded By: JL 5/8/19 (Signature) QC Checked by: 05/08/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/08/19 Page 1 of 1

Task Team Members:

Jackie Mitchell 05/08/19

Charles Spurr 05/08/19

Narrative (include time and location):

0808 Depart building 1036 for GWS event.
0815 Arrive at Sand creek AOC and begin setup on wells.
0850 Begin low flow purge of SCLmw-0001.
0945 Stagnant water purged. Begin collecting parameter readings.
1012 Parameters stable. Readings QC'd by C. Spurr.
1015 Collect sample SCLmw-0001-190401-GW for VOCs, SVOCs, LL PAHs, PCBs, Pesticides, Explosives, Cyanide, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, Nitroguanidine, Nitrocellulose, Perchlorate, TAL Metals & Phosphorus
1448 Sampling complete, collect final post sample parameter readings. Begin demob. from Sand Creek.
1510 Jackie and Lyndsey return to building 1036. Charles heads to help Ryan with truck.

05/08/19

Daily Weather Condition: A.M. 49°F, light wind, overcast

P.M. 63°F, light wind, partly cloudy

Recorded By: 05/08/19 (Signature) QC Checked by: 5/8/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/08/19 Page 1 of 1

Task Team Members:

Lindsey Mayer 5/8/19

5/8/19

Narrative (include time and location):

0800 Depart 1036, for Sand Creek groundwater sampling.
0820 Set up on well SCLmw-003
0838 Begin low flow purge. During stagnant water purge, water level dropped below the top of the pump.
1009 Charles confirms well is stable.
1010 Collect sample SCLmw-003-190401-GW (VOCs, SVOCs, LLPAH's PCBs, Pesticides, Explosives, Cyanide, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, Nitroguanidine, Nitrocellulose, Perchlorate, TAL metals + Phosphorus).
1435 Secure well, decon equipment, move equipment back to trucks
1500 Arrive back at 1036, unload

5/8/19

Daily Weather Condition: A.M. 50's cloudy/overcast/light wind

P.M. 70's Sunny

Recorded By: 05/08/19 QC Checked by: 5/8/19

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5-9-19 Page 1 of 2

Task Team Members:

Gabby Gromofsky
Ryan Lavrich
Jed Thomas
Lindsey Moyer
Charles Sporr 5-9-19

Narrative (include time and location):

0817 Arrive (Gabby + Ryan) at Ramsdell Quarry Landfill for groundwater sampling. Sign in at west gate.
0830 Jed Thomas arrives at RQL with gate key. Jed offsite.
~ Ryan + Gabby assess access issues with RQLmw-007.
0845 Gabby arrives at RQLmw-007 and Ryan proceeds to RQLmw-011.
0857 Begin low flow purge of RQLmw-007.
0922 Parameters stable. Verify with A. Sprinzl via text.
0937 Receive verification of stability from A. Sprinzl.
0940 Sample RQLmw-007-190401-GW for VOCs, phthalates, phenols, LL PAHs, PCBs, Pesticides, explosives and cyanide.
1025 Collect post sample reading and break down equipment.
~ Purge water line w/ QED freeze protection.
1042 Arrive at RQLmw-008.
1049 Begin low flow purge
1151 Parameters stable. Verify with A. Sprinzl via text.
1200 Receive confirmation of stabilization and sample RQLmw-008-190401-GW for VOCs, phthalates, phenols, LL PAHs, PCBs, pesticides, explosives and cyanide.
1233 Collect post sample reading, purge water line with QED freeze protection wrap up gear and equipment. Add Ryan's VOCs to cooler with trip blank.
1255 Lindsey onsite. Depart RQLmw-008 for RQLmw-013 - collect bottleware from Lindsey for RQLmw-012.

Daily Weather Condition: A.M. 63°F cloudy, windy

P.M. 76° F partly cloudy, windy

Recorded By: (Signature) 5-9-19 QC Checked by: (Signature) 5-9-19

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5-9-19 Page 2 of 2

Task Team Members:

Gabby Gromoffsky

Charles Spurr AS 5-9-19

AS 5-9-19

Narrative (include time and location):

1302 Arrive at RQLmw-012.

1318 Begin low flow purge.

1323 Charles Spurr onsite to pick up samples.

1328 Charles AS 5-9-19 departs RQL.

1405 Parameters stable. Verify with Amanda Sprinzl via text.

1416 Receive verification of stability from A.S.

1420 Sample RQLmw-012-190401-GW for cyanide, alkalinity, sulfate, nitrate, nitrite, and sulfide.

1431 Collect post sample reading, purge water line with QED freeze protection and break down equipment.

1449 Depart RQL for sample management and demobilization activities at Building 1036.

AS 5-9-19

Daily Weather Condition: A.M. 63°F cloudy windy

P.M. 76°F, partly cloudy, windy

Recorded By: [signature] 5-9-19 (Signature) QC Checked by: [signature] 5-9-19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/09/19 Page 1 of 2

Task Team Members:

Lindsey Mayer 5/9/19

5/9/19

Narrative (include time and location):

0801 Depart 1036

0810 Drive with Heather to make sure it is ok to set up to LL3mw-246, and she shows L.Mayer where to pull off into grass 5/9/19

0816 Arrive at LL3mw-246 to set up.

0827 Begin low flow purge.

0904 Stabilization parameters, granted from C. Spurr.

0905 Collect samples. LL3mw-246-190401-GW (Explosives, Perchlorate, TAL metals). LL3mw-246-190401-GWMSD (perchlorate) LL3mw-246-190402-GW (Explosives, perchlorate, TAL metals) and split LL3mw-246-190403-GW (Explosives, perchlorate, TAL metals).

0945 Secure well, decon equipment.

1003 Arrive at FWGmw-021, set up

1012 Begin low flow purge, waited longer during stagnant water purge, due to water was turbid.

1119 R.Laurich confirms parameters are stable.

1120 Collect samples FWGmw-021-190401-GW 5/9/19, FWGmw-021-190401-MSD, FWGmw-021-190402-GW, FWGmw-021-190403-GW (Explosives / TAL Metals).

1205 Secure well, decon equipment.

1215 Arrive back at 1036, drop off samples, pickup new bottleware

1240 Sign in at gate at Ramsdell Quarry

1250 Set up on RQLmw-013

1303 Begin purge.

1352 End purge. R.Laurich confirms stable.

Daily Weather Condition: A.M. 70's Sunny

P.M. 70's cloudy / windy

Recorded By: [signature] 5/9/19 (Signature) QC Checked by: [signature] 05/09/19 (Signature)

gn 05/09/19

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/09/19 Page 2 of 2

Task Team Members:

Lindsey Mayer 5/9/19

5/9/19

Narrative (include time and location):

1353 Collect sample RQLmw-013-190401-GW, (Sulfate, Alkalinity, Nitrate, Nitrite, Sulfide).
1405 Secure well, decon equipment
1415 Set up on CBP-009.
1425 Begin purge, Jed picks up bottleware.
1458 1500 Jed arrives at CBP-009 with bottleware.
1503 End purge, Jed approves stabilization.
1505 Collect sample CBPmw-009-190401-GW (cyanide).
1512 Secure well, decon equipment.
1535 Arrive back at 1036, unload.

5/9/19

Daily Weather Condition: A.M. 70's Sunny

P.M. 70's cloudy/windy

Recorded By: 5/9/19 (Signature) QC Checked by: 05/09/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/9/19 Page 1 of 1

Task Team Members:

Ryan Lanrich

Gabby Gromofsky re/5/9/19.

re/5/9/19

Narrative (include time and location):

0804 - DEPART 1036

0815 - ARRIVE AT RQL + SIGN IN AT GREEN BOX. GABBY + RYAN SPLIT UP TO SAMPLE WELLS.

0902 - START LOW FLOW AT RQLmw-011.

0940 - RQLmw-011 STABLE, TEXT LOG TO A. SPRINZL TO VERIFY.

0952 - STABILITY VERIFIED.

0953 - SAMPLE RQLmw-011-190401-GW, RQLmw-011-190401-GW MSD, RQLmw-011-190402-GW + RQLmw-011-190403-GW FOR SULFIDE, NITRITE NITRATE, SULFATE, + ALKALINITY.

1032 - POST SAMPLE ~~YSI~~ 5/9/19 YSI DATA.

1059 - START LOW FLOW AT RQLmw-009.

1234 - RQLmw-009 STABLE, TEXT LOG TO A. SPRINZL TO VERIFY.

1239 - STABILITY VERIFIED.

1240 - SAMPLE RQLmw-009-190401-GW FOR VOCs, PHTHALATES/PHENOLS, LL PAHs, PCBs, PESTICIDES, EXPLOSIVES, CYANIDE, + TAL METALS.

*1337 - POST SAMPLE YSI DATA. CHARLES PICKS UP SAMPLES FROM

~~1330 - CH~~ re 5/9/19 RQLmw-011 + RQLmw-009.

1355 - SIGN OUT OF RQL + LOCK GATE.

1447 - START LOW FLOW AT RQLmw-016.

1528 - RQLmw-016 STABLE, CHARLES SPURR IN FIELD VERIFIES LOG.

1530 - ~~POST SAMPLE YSI DATA.~~ SAMPLE RQLmw-016-190401-GW FOR CYANIDE.

1544 - POST SAMPLE YSI DATA.

1615 - RETURN TO 1036 + DEMOBILIZE.

Daily Weather Condition: A.M. 66°F SUNNY

P.M. 79°F CLOUDY

Recorded By: [signature] 5/9/19 (Signature) QC Checked by: [signature] 05/09/19 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/09/19 Page 1 of 2

Task Team Members:

Jackie Mitchell

JM 05/09/19

JM 05/09/19

Narrative (include time and location):

0800 Depart building 1036 for GWS event.
0820 Arrive at FWGmw-018 and begin setup on well.
0830 Begin low flow purge of FWGmw-018.
0912 Well stable. Send confirmation of stability text to A. Sprinzl.
0923 Stability confirmed.
0925 Collect sample FWGmw-018-190401-GW for VOCs, Cyanide & TAL Metals.
0948 Begin setup of FWGmw-020
1003 Begin low flow purge of FWGmw-020.
1035 ~1200 mls water purged. Pump stops producing water. Check equipment. Problem not identified. Call C. Spurr to recieve help.
1045 C Spurr onsite. Troubleshoot for repair. Remove pump to check for malfunction. Problem not identified. C. Spurr takes pump back to 1036 to repair or replace.
1214 Arrive at FWGmw-024 and setup on well.
1231 Begin low flow purge of FWGmw-024.
1333 Well stable. Send confirmation of stability text to A. Sprinzl.
1336 Stability confirmed.

Daily Weather Condition: A.M. 64°F, light wind, partly sunny

P.M. 76°F, light wind, cloudy

Recorded By: (Signature) 05/09/19 QC Checked by: (Signature) 5-9-19

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 05/09/19 Page 2 of 2

Task Team Members:

Jackie Mitchell jm 05/09/19

Charles Spurr jm 05/09/19

Narrative (include time and location):

1340 Collect sample FWGmw-024-190401-GW for Explosives and TAL Metals.

1347 Sampling complete, take post sample parameter readings and begin demob. from site.

1430 Charles Spurr sets Stainless bladder pump into FWGmw-020.

1450 Depart FWGmw-024.

1455 Arrive at building 1034 and begin demobilization activities.

jm 05/09/19

Daily Weather Condition: A.M. N/A

P.M. 76°F, light wind, cloudy

Recorded By: (Signature) 05/09/19 QC Checked by: (Signature) 5-9-19

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: Facility-wide Groundwater RVAAP-66 **PROJECT NO:** April 2019 Sampling Event

Date: (mm/dd/yy): 5/13/19 Page 1 of 1

Task Team Members:

Charles Spurr
Ryan Laurich

Narrative (include time and location):

0820 Arrive at FWGmw-020 & setup. Ground path to well is muddy. will have to move equipment to well by hand.

0900 Air fitting for controller/tubing interface incorrect unavailable. Notify Ryan Laurich to bring spare QED parts to connect air line.

0915 Ryan on site to deliver parts. Return & finish setup.

0935 Begin low flow purge of FWGmw-020

1015 Sample FWGmw-020.

1030 Finish activities at well. Begin packing equipment in truck & remove pump from well.

1100 All equipment is packed & well is secure. Return to 1036.

Daily Weather Condition: A.M. 48°F; Cloudy; calm

P.M.

Recorded By: [signature] 5/13/19 (Signature) QC Checked by: [signature] 5/20/19 (Signature)

D.2 Well Purge Forms

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RVAAP-01 RAMSDELL QUARRY LANDFILL

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** RQLmw-007

Date and Time: Start: 5-9-19 | 0857 Complete: 5-9-19 | 1027

Personnel: Gabby Gromofsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 6.16 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 15.9 ft. **PSI=** 15.9 /2 + 10 = 17.9

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 15.9 - DTW 6.16 = 9.74

2.) Volume of stagnant water in tubing

Difference of ID-DTW 9.74 x Tf 9.46 = 92.1

3.) Total Volume of stagnant water

Total volume = 622 + ~~714.1~~ DS 5-9-19 92.1 = 714.1

2x Total volume = 1,428 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5-9-19
Water Level Tape: SOLONIST (Heron)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	43635	N/A

Total Volume of Water Removed (Liters): 6.15 L Sample Method: Bladder Pump

Sample ID / Date / Time: RQLmw-007-19040I-GW | 5-9-19 | **QC Sample ID** N/A

Analysis VOCs, phthalates/phenols, LL PAHs, PCBs, Pesticides, explosives, cyanide

Field Observations/Site Conditions During Purging: water is slightly turbid and light brown while purging stagnant water; Became clear, colorless, odorless after stagnant water was purged.

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

DS 5-9-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-9-19 (Signature and Date)

QA Checked By: 5-9-19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** RQLmw-007

Initial DTW: 6.16

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-9-19	0858	11.0	0.899	6.63	26.83	3.44	244.2	275 ml	~~250~~ ~~125~~ 125	6.28	Initial reading through flow cell (1/20/40) water is slightly turbid, light brown, odorless
	0910	--	--	--	--	--	--	1,500 ml	125	6.30	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	0913	10.9	0.599	6.18	5.14	0.78	261.0	375 ml	125	6.30	Start recording stability parameters water is clear, colorless, odorless
	0916	11.0	0.597	6.17	3.22	0.58	261.9	450 ml	150	6.30	
	0919	10.9	0.595	6.17	5.33	0.56	261.8	450 ml	150	6.30	JLY 5-9-19
↓	0922	11.1	0.593	6.18	3.72	0.72	261.4	450 ml	150	6.30	Stable- Confirm w/ A. Sprinzl @0937 (2300 ml purged)

5-9-19	1025	12.1	0.775	6.71	6.79	1.26	235.0	350	~~35~~ 150	6.80	POST SAMPLE READINGS

Recorded By: 5-9-19 **QA Checked By:** 5-9-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: RQLmw-008

Date and Time: Start: 5-9-19 / 1049 Complete: 5-9-19 / 1240

Personnel: Gabby Gromofsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 6.51 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 15.3 ft. **PSI=** 15.3 /2 + 10 = 17.6

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 15.3 - DTW 6.51 = 8.79

2.) Volume of stagnant water in tubing

Difference of ID-DTW 8.79 x Tf 21.576 = 189.6

3.) Total Volume of stagnant water

Total volume = 622 + 189.6 = 811.6

2x Total volume = 1,623 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA02140	5-9-19
Water Level Tape: SOLONIST Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or MP-50	43635	N/A

Total Volume of Water Removed (Liters): 12.86 L Sample Method: Bladder Pump

Sample ID / Date / Time: RQLmw-008-190401-GW / 5-9-19 / 1200 **QC Sample ID** N/A

Analysis VOCs, phthalates, phenols, LL PAHs, PCBs, Pesticides, explosives, cyanide

Field Observations/Site Conditions During Purging: water is initially dark reddish orange, extremely turbid with biological growth, and odorless; Became clear, colorless, odorless;

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: 5-9-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: [signature] 5-9-19 (Signature and Date)

QA Checked By: [signature] 5-9-19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** RQLmw-008

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 6.51

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-9-19	1050	13.0	0.843	6.95	682.5	8.57	25.1	300 ml	300 ml	6.71	Initial reading through flow cell (1/20/40) water is extremely turbid, dark reddish orange, has biological growth
	1056	--	--	--	--	--	--	1,650 ml	275	7.02	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1101	11.5	0.949	6.67	46.61	0.30	-60.1	850 ml	170	6.85	Start recording stability parameters (1/5/55) water is reddish orange, slightly turbid
	1106	11.4	0.944	6.67	43.68	0.27	-62.1	850 ml	170	6.80	water is odorless
	1111	11.6	0.942	6.67	33.26	0.26	-63.3	850 ml	170	6.80	
	1116	11.9	0.933	6.68	18.56	0.23	-64.1	875 ml	175	6.80	MB 5-9-19
	1121	11.3	0.924	6.67	14.06	0.20	-64.1	850 ml	170	6.80	water has an orange tint, slightly cloudy
	1126	11.4	0.925	6.67	19.45	0.19	-63.9	875 ml	175	6.80	5-9-19
	1131	11.4	0.921	6.67	10.49	0.18	-65.3	850 ml	170	6.80	empty flow cell and refill (turbidity fluctuating around 15 NTU)
	1136	11.3	0.930	6.68	6.07	1.63	-59.8	850 ml	170	6.80	
	1141	11.2	0.933	6.67	8.37	0.24	-63.0	850 ml	170	6.80	5-9-19
	1146	11.1	0.943	6.71	4.99	0.18	-67.2	850 ml	170	6.80	MB
↓	1151	11.1	0.946	6.68	4.13	0.17	-68.8	850 ml	170	6.80	Stable - verify with A. Sprinzl via text @ 1200 (1L purged)
					MB	5-9-19					

5-9-19	1233	11.1	1.000	6.76	2.82	1.12	-65.5	510 ml	170	6.80	POST SAMPLE READINGS

Recorded By: 5-9-19 **QA Checked By:** 5-9-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** RQLmw-009

Date and Time: 5/9/19 Start: 1059 Complete: 1234

Personnel: R. Lavoie

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 4.94 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 15 ft. **PSI=** 15 /2 + 10 = 17.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 15 - DTW 4.94 = 10.06

2.) Volume of stagnant water in tubing

Difference of ID-DTW 10.06 x Tf 21.576 = 217

3.) Total Volume of stagnant water

Total volume = 622 + 217 = 839

2x Total volume = 1678

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRODSS or Horiba U-52	FA05179	5/9/19
Water Level Tape: SOLONIST HERON	2178-7	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1052 18836	N/A

Total Volume of Water Removed (Liters): 9.675 Sample Method: Bladder Pump

Sample ID / Date / Time: RQLmw-009-190461-GW 5/9/19 1240 **QC Sample ID** N/A

Analysis VOCs, PHTHALATES / PHENOLS, LL PAHs, PCBs, PESTICIDES, EXPLOSIVES, CYANIDE, TAL METALS.

Field Observations/Site Conditions During Purging: ORANGE, TURBID, NO ODOR, ~~FLOATING SKIN~~ - CLEARED UP END OF PURGE

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A TLL 5/9/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/9/19 (Signature and Date)

QA Checked By: 05/09/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** RQLmw-009

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 4.94

Date	Time (1103)	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	1102	~~17.8~~	~~0.197~~	~~6.23~~	~~4.1~~	~~8.24~~	342.8	375	75	~~5.12~~	Initial reading through flow cell CPM 1 57/3
	1123	14.3	0.311	6.47	58.1	6.02	--	1325	~65	~~6.77~~ 5.77	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1124	13.6	0.235	6.32	555.8	1.07	347.5	75	75	~~6.72~~ 5.73	Start recording stability parameters
	1129	13.5	0.228	6.30	481.1	1.01	341.6	500	100	5.78	ORANGE/TURBID/NO ODOR.
	1134	13.4	0.227	6.31	418.3	1.02	335.2	500	100	5.76	
	1139	13.2	0.227	6.32	376.0	1.00	291.8	500	100	5.78	
	1144	12.9	0.228	6.33	203.2	0.99	273.8	500	100	5.70	
	1149	13.0	0.230	6.33	156.0	0.96	242.0	500	100	5.70	
	1154	12.9	0.232	6.34	58.3	0.94	208.9	500	100	5.70	
	1159	13.1	0.234	6.34	38.1	0.91	181.6	500	100	5.70	
	1204	12.8	0.236	6.34	31.7	0.88	163.3	500	100	5.70	TURBIDITY + COLOR CLEARING UP
	1209	13.0	0.236	6.35	19.7	0.87	165.9	500	100	5.70	
	1214	13.0	0.237	6.35	11.7	0.85	154.3	500	100	5.70	
	1219	12.7	0.237	6.35	13.8	0.85	114.6	500	100	5.70	
							133.4				
5/9/19	1357	14.4	0.239	6.36	3.3	1.41	~~135.4~~ stable	400	100	5.70	POST SAMPLE READINGS

Recorded By: 5/9/19 **QA Checked By:** 05/09/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: RQ MW-009

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	1224	12.7	0.237	6.35	9.3	0.85	96.8	500	100	5.70	
↓	1229	12.8	0.237	6.35	8.8	0.83	85.5	500	100	5.70	
	1234	12.8	0.237	6.35	8.3	0.83	82.7	500	100	5.70	STABLE
↓	1239	—	—	—	—	—	—	500	100	5.70	STABILITY CONFIRMED

RL 5/9/19

Recorded By: RL 5/9/19

QA Checked By: 05/09/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** RQLmw-011

Date and Time: 5/9/19 Start: 0902 Complete: 0940

Personnel: R. Lavelly

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 21.25 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 31 ft. **PSI=** 31 /2 + 10 = 25.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) **Length of Tubing w/ stagnant water**

Intake Depth (ID) 31 - DTW 21.25 = 9.75

2.) **Volume of stagnant water in tubing**

Difference of ID-DTW 9.75 x Tf 21.576 = 210.37

3.) **Total Volume of stagnant water**

Total volume = 622 + 210.37 = 823.37

2x Total volume = 1664.73

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03179	5/9/19
Water Level Tape: SOLONIST LEROY	2178-T	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 18836	N/A

Total Volume of Water Removed (Liters): 5.35 Sample Method: Bladder Pump

Sample ID / Date / Time: RQLmw-011-190401 5/9/19 0953 **QC Sample ID** RQLmw-011-190402-GW RQLmw-011-190403-GW RQLmw-011-190407-GW MSD

Analysis SULFIDE, NITRATE, NITRITE, SULFATE ALKALINITY

Field Observations/Site Conditions During Purging: CLEAR / COLORLESS / ODORLESS. 5/9/19

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/9/19 (Signature and Date)

QA Checked By: 05/09/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** RQLmw-011

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements	Initial DTW: 21.25
3	3	3	1	3	3	Consecutive Readings to Sample	

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	0908	12.5	0.398	5.60	6.1	5.67	268.4	400	100	21.40	Initial reading through flow cell CPM ; 57/3
	0919	--	--	--	--	--	--	1250	~115	21.40	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	0920	12.1	0.242	4.34	2.5	4.71	344.6	100	100	21.40	Start recording stability parameters CLEAR/COLORLESS/ODORLESS
	0925	12.1	0.238	4.22	2.9	4.63	362.9	500	100	21.40	
	0930	12.2	0.237	4.14	3.5	4.53	375.9	500	100	21.40	
	0935	12.2	0.240	4.09	3.6	4.48	382.0	500	100	21.40	
	0940	12.2	0.244	4.07	~~3.0~~ within 3.0	4.36	387.1	500	100	21.40	STABLE
	0952	—	—	—	—	—	—	1200	100	21.40	STABILITY CONFIRMED
5/9/19	1052	14.80	0.344	4.42	2.4	4.48	402.0	400	100	21.40	POST SAMPLE READINGS

RQ 5/9/19

Recorded By: RQ 5/9/19 **QA Checked By:** 05/09/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** RQLmw - 012

Date and Time: Start: 5-9-19 / 1318 Complete: 5-9-19 / 1435

Personnel: Gabby Gromoffsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 21.08 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 29.5 ft. **PSI=** 29.5 /2 + 10 = 24.7

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 29.5 - DTW 21.08 = 8.42

2.) Volume of stagnant water in tubing

Difference of ID-DTW 8.42 x Tf 21.576 = 181

3.) Total Volume of stagnant water

Total volume = 622 + 181 = 803

2x Total volume = 1,607 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5-9-19
Water Level Tape: SOLONIST (Heron)	07-0573	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	43035	N/A

Total Volume of Water Removed (Liters): 12.025 L Sample Method: Bladder Pump

Sample ID / Date / Time: RQLmw-012-190401-GW/5-9-19/1420 **QC Sample ID** N/A

Analysis Cyanide, Sulfide, nitrate, nitrite, sulfate, alkalinity

Field Observations/Site Conditions During Purging: water is clear, colorless, odorless; poison ivy grows on and around well;

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

DD 5-9-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-9-19 (Signature and Date)

QA Checked By: 5-9-19 (Signature and Date)

leidos

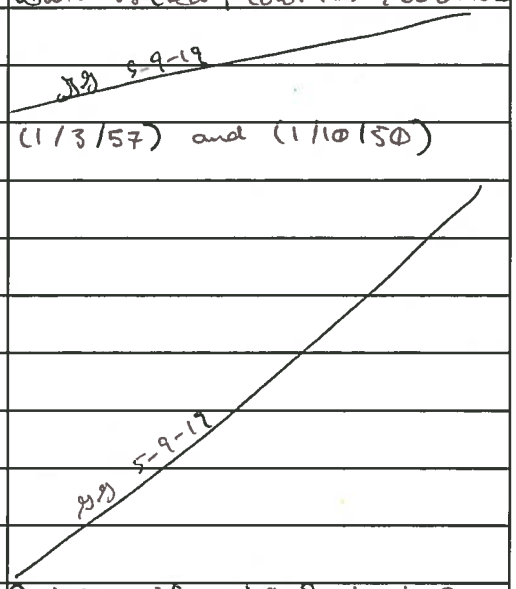
WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** RQLmw-012

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 21.08

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-9-19	1319	11.8	0.320	6.81	2.39	10.69	123.4	275 ml	300	21.08	Initial reading through flow cell (1/120/40) water is clear, colorless, odorless
	1329	--	--	--	--	--	--	1,850 ml	~~185~~ 375	21.11	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded 5 min pump discovered from battery for app
	1332	9.9	0.428	5.25	0.81	5.61	215.5	1,125 ml	375	21.11	Start recording stability parameters (1/10/50) water is clear, colorless, odorless
	1335	10.1	0.443	~~5.25~~ 5.29	0.80	5.35	219.1	1,100 ml	370	21.11	
	1338	10.3	0.439	5.29	0.89	5.30	221.0	1,125 ml	375	21.11	
	1341	10.8	0.441	5.30	0.66	5.37	207.3	650 ml	~220	21.11	(1/3/57) and (1/10/50)
	1344	11.4	0.439	5.29	0.72	5.82	212.0	450 ml	~~90~~ 150	21.11	
	1347	11.8	0.426	5.29	0.76	5.94	213.5	450 ml	~~90~~ 150	21.11	
	1350	12.0	0.369	5.22	0.76	6.50	219.2	450 ml	~~90~~ 150	21.11	
	1353	11.9	0.351	5.20	0.80	6.66	222.1	450 ml	150	21.11	
	1356	11.7	0.337	5.17	0.62	6.87	226.1	450 ml	150	21.11	
	1359	11.8	0.329	5.15	0.65	6.91	230.2	450 ml	150	21.11	
	1402	11.8	0.324	5.14	0.66	6.93	233.1	450 ml	150	21.11	
↓	1405	11.8	0.321	5.14	0.65	6.96	236.2	450 ml	150	21.11	Stable-verify w/ A Sprinzl @ 1416 (2 L purged)
5-9-19	1431	12.6	0.335	5.49	0.28	7.68	230.8	300 ml	150	21.11	POST SAMPLE READINGS



Recorded By: 5-9-19 **QA Checked By:** 5-9-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** RQLmw-013

Date and Time: 5/9/19 Start: 1303 Complete: 1352

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 23.59 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 33.5 ft. **PSI=** 33.5 /2 + 10 = 26.75

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 33.5 - DTW 23.59 = 9.91

2.) Volume of stagnant water in tubing

Difference of ID-DTW 9.91 x Tf 21.576 = 213.82

3.) Total Volume of stagnant water

Total volume = 622 + 213.82 = 835.82

2x Total volume = 1671.64

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/9/19
Water Level Tape: ~~SOLONIST~~ Heron (Qu 5/9/19)	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 5.2 Sample Method: Bladder Pump

Sample ID / Date / Time: RQLmw-013-190401-GW/5-9-19/1353 **QC Sample ID** N/A

Analysis Sulfide, Alkalinity, Sulfate, Nitrate, Nitrite

Field Observations/Site Conditions During Purging: 70's cloudy/windy, water is clear, colorless, odorless

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: [signature] 5/9/19 (Signature and Date)

QA Checked By: [signature] 05/09/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: RQLmw-013

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Stabilization Requirements	3	3	3	1	3	3
Consecutive Readings to Sample						

Initial DTW: 23.59

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	1307	13.4	0.431	3.57	3.39	7.62	331.5	300	75	23.89	Initial reading through flow cell CPM-1 D=2.0 R=58.0
	1324	--	--	-- 3.95	--	--	--	1700	100	23.91	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded CPM-1 R=3.0 D=5
	1325	12.4	0.409	~~8.74~~ dm 5/9/19	8.74	1.33	334.4	100	100	23.91	Start recording stability parameters
	1330	12.4	0.408	3.98	5.28	1.11	331.1	500	100	23.91	
	1335	12.5	0.405	3.98	1.99	0.91	329.3	500	100	23.91	
	1340	12.6	0.404	3.98	1.62	0.90	329.6	500	100	23.91	
	1345	12.7	0.403	3.98	2.00	0.83	332.3	500	100	23.91	
	1352	—	—	—	—	—	—	700	100	23.91	R. Lavich Approves stability
											5/9/19
5/9/19	1404	13.1	0.409	3.98	1.80	1.53	323.9	400	100	23.91	POST SAMPLE READINGS

Recorded By: 5/9/19

QA Checked By: 05/09/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** RQLmw-016

Date and Time: 5/9/19 Start: 1447 Complete: 1528

Personnel: R. LAURICH

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 36.93 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 40.7 ft. **PSI=** 40.7 /2 + 10 = 30.35

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 40.7 - DTW 36.93 = 3.77

2.) Volume of stagnant water in tubing

Difference of ID-DTW 3.77 x Tf 9.46 = 35.66

3.) Total Volume of stagnant water

Total volume = 622 + 35.66 = 657.66

2x Total volume = 1315

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FAO 3179	5/9/19
Water Level Tape: SOLONIST w/ 1/4 in. HERON	2178-T	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 18836	N/A

Total Volume of Water Removed (Liters): 2.525 Sample Method: Bladder Pump

Sample ID / Date / Time: RQLmw-016-190401-GW 5/9/19 **QC Sample ID** N/A

Analysis CYANIDE.

Field Observations/Site Conditions During Purging: CLEAR | COLORLESS | ODORLESS

RL 5/9/19

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: [signature] 5/9/19 (Signature and Date)

QA Checked By: [signature] 05/09/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: RQL mw-016

Initial DTW: 36.93

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	1455	17.2	2.507	5.99	5.5	1.99	130.8	375	75	37.05	Initial reading through flow cell CPM | 5/13
	1512	--	--	--	--	--	--	950	~56	37.30	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded CPM | 5/14
	1513	13.6	2.401	6.11	2.1	0.80	-25.2	50	50	37.28	Start recording stability parameters CPM | 5/13 CLEAR / COLORLESS / ODORLESS
	1518	14.0	2.397	6.11	2.0	0.77	-25.6	250	50	37.30	
	1523	14.2	2.402	6.11	1.9	0.76	-31.7	250	50	37.30	
	1528	14.2	2.407	6.11	2.1	0.75	-35.0	250	50	37.30	STABLE
	1529	—	—	—	—	—	—	50	50	37.30	STABILITY CONFIRMED
						Re					
							5/9/19				
							5/9/19				
5/9/19	1544	14.2	2.426	6.12	1.2	1.25	9.4	350	50	37.31	POST SAMPLE READINGS

Recorded By: 5/9/19

QA Checked By: 05/09/19

RVAAP-02 ERIE BURNING GROUNDS

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** EBGmw-125

Date and Time: Start: 5/7/19 1005 Complete: 5/7/19 1110

Personnel: Charles Spurr

Purge Method(s): Bailer ☑ Bladder Pump Other: ____

Depth To Water: 12.40 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 19 ft. **PSI=** 19 /2 + 10 = 19.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 19 - DTW 12.40 = 6.60

2.) Volume of stagnant water in tubing

Difference of ID-DTW 6.60 x Tf 9.46 = 62.4

3.) Total Volume of stagnant water

Total volume = 622 + 62.4 = 684.4

2x Total volume = 1369 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	5/7/19
Water Level Tape: SOLONIST	212380	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 7.05 Sample Method: Bladder Pump

Sample ID / Date / Time: EBGMW-125-190401-GW 5/7/19 1055 **QC Sample ID** N/A

Analysis Cyanide

Field Observations/Site Conditions During Purging: 54°F; cloudy; calm

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/7/19 (Signature and Date)

QA Checked By: [signature] 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** EBGmw-125

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Stabilization Requirements						
Consecutive Readings to Sample	3	3	3	1	3	3

Initial DTW: 12.40

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1009	10.3	0.444	7.04	15.8	1.49	219	600mL	150	12.40	Initial reading through flow cell CPM 2/4/26 ~20 PSI
-	-	--	--	--	--	--	--	-	-	-	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/7/19	1015	9.7	0.415	6.75	13.2	0.42	215	1.5(L)	150	12.40	Start recording stability parameters CPM 2/4/26 20 PSI
	1020	9.5	0.412	6.74	8.4	0.12	125	0.75	150	12.40	
	1025	9.4	0.413	6.76	8.2	0.04	65	0.75	150	12.40	
	1030	9.5	0.414	6.79	4.2	0.00	35	0.75	150	12.40	
	1035	9.5	0.414	6.80	3.5	0.00	17	0.75	150	12.40	
	1040	9.5	0.415	6.82	3.1	0.00	3.1	0.75	150	12.40	
	1045	9.5	0.417	6.84	2.8	0.00	-4.2	0.75	150	12.40	
	1050	9.5	0.417	6.84	2.7	0.00	-9.6	0.75	150	12.40	
								CS 5/7/19			
5/7/19	1057	9.8	0.420	6.87	4.1	0.05	-17	300mL	150	12.40	POST SAMPLE READINGS

Recorded By: [signature] 5/7/19 **QA Checked By:** [signature] 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** EBGmw-131

Date and Time: Start: 5/7/19 1130 Complete: 5/7/19 1215

Personnel: Charles Spurr

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 8.65 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 65.5 ft. **PSI=** 65.5 /2 + 10 = 43

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 65.5 - DTW 8.65 = 56.85

2.) Volume of stagnant water in tubing

Difference of ID-DTW 56.85 x Tf 21.576 = 1227

3.) Total Volume of stagnant water

Total volume = 622 + 1227 = 1849

2x Total volume = 3698 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	5/7/19
Water Level Tape: SOLONIST	212380	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 6.2 Sample Method: Bladder Pump

Sample ID / Date / Time: EBGMW-131-190401-GW 5/7/19 1205 **QC Sample ID** N/A

Analysis Cyanide

Field Observations/Site Conditions During Purging: 57° F; Cloudy; breezy

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/7/19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** EBGmw-131

Initial DTW: 8.65'

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1134	10.7	0.615	7.24	14.8	3.18	77	800 mL	200	8.68	Initial reading through flow cell CPM2/4/26 ~43 PSI
–	–	--	--	--	--	--	--	–	–	–	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/7/19	1149	10.3	0.593	7.24	3.7	0.10	-31	3.8(L)	200	8.68	Start recording stability parameters CPM2/4/26 ~43 PSI
↓	1154	10.3	0.593	7.24	3.2	0.08	-34	1.0(L)	200	8.68	↓ ↓
↓	1159	10.3	0.594	7.24	2.8	0.03	-36	1.0	200	8.68	↓ ↓
							CS	5/7/19			
5/7/19	1207	10.4	0.594	7.25	3.6	0.13	-37	400 mL	200	8.68	POST SAMPLE READINGS

Recorded By: [signature] 5/7/19 **QA Checked By:** [signature] 5/8/19

RVAAP-03 OPEN DEMOLITION AREA #2

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** DA2 MW - 115

Date and Time: Start: 4/29/19 0928 Complete: 1029

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 5.93 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 41.5 ft. **PSI=** 41.5 /2 + 10 = 30.75

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 41.5 - DTW 5.93 = 35.57

2.) Volume of stagnant water in tubing

Difference of ID-DTW 35.57 x Tf 21.576 = 767.46

3.) Total Volume of stagnant water

Total volume = 622 + 767.46 = 1389.46

2x Total volume = 2778.91

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	4/29/19
Water Level Tape: ~~SOLONIST~~ 2m 4/29/19 Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): ~~4.805~~ 2m 4/29/19 4.925 Sample Method: Bladder Pump

Sample ID / Date / Time: DA2mw-115-190401-GW/4/29/19/1030 **QC Sample ID** DA2MW-115-190401-GWMSD/DA2mw-115-190402-GW DA2mw-15-190403-GW

Analysis TAL metals

Field Observations/Site Conditions During Purging: 43.1°, cloudy, water is clear, colorless, odorless.

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: L. Mayer 4/29/19 (Signature and Date)

QA Checked By: Amanda Springl @4/29/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** DA2MW-115

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 5.93

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/29/19	0934	7.8	1.350	7.44	2.99	7.71	199.0	200 ~~80~~ mL	40	6.00	Initial reading through flow cell 52.0 CPM-1 / D-30 / R-~~56~~ Ramped up to CPM-1 D-40 R-56
	1008	--	--	--	--	--	--	2850	75	6.00	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1009	8.9	1.289	7.20	0.79	2.06	-28.9	75	75	6.00	Start recording stability parameters
	1014	9.0	1.290	7.20	0.55	1.81	-33.6	375	75	6.00	
	1019	9.1	1.290	7.20	0.51	1.76	-37.5	375	75	6.00	
	1024	9.1	1.291	7.21	0.44	1.83	-40.9	375	75	6.00	Send picture
	1029	—	—	—	—	—	—	375	75	6.00	~~1024~~ Approval from A. Sprinzl to sample
											4/29/19
4/29/19	1052	93	1.293	7.25	0.46	1.39	-26.9	300	75	6.00	POST SAMPLE READINGS

Recorded By: [signature] 4/29/19 **QA Checked By:** Amanda Sprinzl 04/29/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** DET-003

Date and Time: Start: 4/29/19 0958 Complete: 4/29/19 1526

Personnel: RYAN LAUNCH

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: ~~9.96~~ 8.96 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 12.4 ft. **PSI=** 12.4 /2 + 10 = 16.2

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) **Length of Tubing w/ stagnant water**

Intake Depth (ID) 12.4 - DTW 8.96 = ~~3.44~~ 3.44 in stagnant

2.) **Volume of stagnant water in tubing**

Difference of ID-DTW ~~3.44~~ 3.44 in stagnant x Tf 9.46 = ~~33.08~~ 32.54 ml

3.) **Total Volume of stagnant water**

Total volume = 622 + ~~33.08~~ 32.54 = ~~645.08~~ 654.54 ml

2x Total volume = ~~1290.16~~ 1309.08 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA0J179	4/29/19
Water Level Tape: ~~SOLONIST~~ 4/29/19 SOLONIST 212580 ~~ft~~ stagnant	212580	N/A
Other: MP-10 with QED Well Wizard or MP-50	1052	N/A

Total Volume of Water Removed (Liters): 3.090 Sample Method: Bladder Pump

Sample ID / Date / Time: DET-003-190401-GW 4/29/19 1053 **QC Sample ID** DET-003-190401-GWMSD + DET-003-190402-GW

Analysis VOCs, PHTHALATES, NITROAROMATICS, PHENOLS, LL PAHS, PCBS, PESTICIDES, EXPLOSIVES, DET-003-190403-GW CYANIDE, TAL METALS

Field Observations/Site Conditions During Purging: WATER STARTED ORANGE, CLOUDY, NO ODOR - WATER CLEARED UP DURING PURGE

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: ~~N/A~~ stagnant

NA

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 4/29/19 (Signature and Date)

QA Checked By: 04/29/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** DET-003

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 8.96

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/29/19	1006	7.9	0.766	7.27	192.6	5.14	53.01	50 mL	50	9.00	Initial reading through flow cell ORANGE, NO ODOR CPM: 57/5
	1031	--	--	--	--	--	--	1300	~52	8.96	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded WATER CLEARING UP
	1036	8.1	0.723	7.21	6.3	1.01	-15.6	350	70	8.98	Start recording stability parameters
	1041	8.2	0.723	7.21	4.9	0.97	-18.9	350	70	9.00	
	1046	8.2	0.723	7.21	2.6	0.94	-26.1	350	70	9.00	STABLE
	1052	—	—	—	—	—	—	420	70	9.00	~~Sample~~ RECORDED FOR CONFIRMATION ON STABILIZATION Re 4/29/19
4/29/19	1526	9.4	0.737	7.42	1.8	1.85	-41.1	270	~70	9.05	POST SAMPLE READINGS

CPM: 55/4 UP

Re 4/29/19

Recorded By: 4/29/19 **QA Checked By:** 04/29/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** DET-004

Date and Time 04/29/19 Start: 0917 Complete: 1502

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 9.84 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: ~~+2~~ 11.9 ft. **PSI=** 11.9 /2 + 10 = ~16

gm 04/29/19

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 11.9 - DTW 9.84 = 2.06

2.) Volume of stagnant water in tubing

Difference of ID-DTW 2.06 x 9.46 Tf = 19.49

3.) Total Volume of stagnant water

Total volume = 622 + 19.49 = 641.49

2x Total volume =

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	04/29/19
Water Level Tape: SOLONIST	Pine 2178-T	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): 1.875 L Sample Method: Bladder Pump

Sample ID / Date / Time: DET-004-190401-GW/04/29/19/1004 **QC Sample ID** —

Analysis Pesticides/PCBs, SVOCs, VOCs, Explosives, ULPAHs, Cyanide, TAL Metals

Field Observations/Site Conditions During Purging: 40°F, light wind, cloudy. Well pad surrounded by med. length grass, pad covered, paint flaking off baffists and stickup

Sampling Procedure Followed (YES) / NO If no, why was deviation necessary:

gm 04/29/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 04/29/19 (Signature and Date)

QA Checked By: Amanda Spring 04/29/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** DET-004

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 9.84

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
04/29/19	0924	7.5	0.988	6.61	2.54	5.12	228.2	300	25	9.98	Initial reading through flow cell 1/2.0/58.0
	0937	--	--	--	--	--	--	650	20	Top of Pump	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	0938	7.5	0.792	6.51	1.95	3.20	223.9	50	20		Start recording stability parameters 1/1.0/59.0
	0943	7.4	0.786	6.52	2.15	3.00	224.9	100	20		
	0948	7.4	0.784	6.52	1.76	2.94	224.9	100	20		
	0953	7.3	0.784	6.52	1.74	2.87	225.7	100	20		225 ml purged while awaiting Stability Confirmation
04/29/19	1502	11.5	0.781	5.59	1.08	2.91	201.8	350	20	Top of Pump	POST SAMPLE READINGS

JMR 04/29/19

Recorded By: JMR 04/29/19 **QA Checked By:** Amanda Springl 04/29/19

RVAAP-05 WINKLEPECK BURNING GROUNDS

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** WBGMW-006

Date and Time: Start: 4/30/19 0818 Complete: 0969

Personnel: Lindsey Moser

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 5.69 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 16 ft. **PSI=** 16 /2 + 10 = 18

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 16 - DTW 5.69 = 10.31

2.) Volume of stagnant water in tubing

Difference of ID-DTW 10.31 x Tf 21.576 = 222.45

3.) Total Volume of stagnant water

Total volume = 622 + 222.45 = 844.45

2x Total volume = 1688.9

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	4/30/19
Water Level Tape: ~~SOLONIST~~ Heron (DM 4/30/19)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 2.85 Sample Method: Bladder Pump

Sample ID / Date / Time: WBGMW-006-190401-GW/4-30-19/0910 **QC Sample ID** N/A

Analysis Explosives, TAL Metals

Field Observations/Site Conditions During Purging: 48°F, cloudy, water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: DM 4/30/19 4/30/19 (Signature and Date)

QA Checked By: 4/30/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** WBGmw-006

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements	Initial DTW: 5.69
3	3	3	1	3	3	Consecutive Readings to Sample	

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/19	0824	9.0	1.421	7.31	0.81	3.19	199.4	300mL	50	5.74	Initial reading through flow cell CPM-1 D-3.0 R-57.0
	0852	--	--	--	--	--	--	1400	50	5.76	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	0853	8.9	1.419	7.27	5.27	0.74	218.3	50	50	5.76	Start recording stability parameters
	0858	9.0	1.421	7.28	5.28	0.74	218.4	250	50	5.78	
	0903	9.0	1.419	7.28	7.79	0.67	218.5	250	50	5.81	
	0909	-	-	-	-	-	-	300	50	5.81	A. Sprinzel gives Approval to sample
											4/30/19

4/30/19	0940	9.0	1.427	7.31	0.79	0.77	218.9	300	50	5.84	POST SAMPLE READINGS

Recorded By: 4/30/19 **QA Checked By:** 4/30/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** WBGmw-009

Date and Time: Start: 4/30/19 1003 Complete: 1052

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 11.89 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 20.05 ft. **PSI=** 20.05 /2 + 10 = 20.025

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 20.05 - DTW 11.89 = 8.16

2.) Volume of stagnant water in tubing

Difference of ID-DTW 8.16 x Tf 21.576 = 176.06

3.) Total Volume of stagnant water

Total volume = 622 + 176.06 = 798.06

2x Total volume = 1596.12

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	4/30/19
Water Level Tape: SOLINST Heron (2nd 4/30/19)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 2.95 Sample Method: Bladder Pump

Sample ID / Date / Time: WBGmw-009-190401-GW/4-30-19/1053 **QC Sample ID** N/A

Analysis Explosives / Tal metals

Field Observations/Site Conditions During Purging: 48°F, cloudy water is clear, colorless, odorless.

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 4/30/19 (Signature and Date)

QA Checked By: 4/30/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** WBGMW-009

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 11.89

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/19	1008	9.4	0.909	6.43	1.12	3.59	212.1	250mL	QM 4/30/19 20 50	12.48	Initial reading through flow cell CPM-1 D-2 R-58
	1035	--	--	--	--	--	--	1350	50	12.89	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1036	9.8	0.851	6.29	1.01	0.87	194.9	50	50	12.90	Start recording stability parameters
	1041	9.8	0.851	6.28	0.91	0.85	199.1	250	50	12.90	
	1046	10.1	0.851	6.28	1.21	0.78	201.4	250	50	12.92	
	1052	—	—	—	—	—	—	300	50	12.92	A. Spinzal gives approval to sample
							QM				
											4/30/19

4/30/19	1114	10.2	0.863	6.35	0.41	1.20	198.2	250	50	13.05	POST SAMPLE READINGS

Recorded By: [signature] 4/30/19 **QA Checked By:** [signature] 4/30/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** WBGmw-020

Date and Time: Start: 4/30/19 1028 Complete: 4/30/19 1145

Personnel: R. Lavigne

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 11.60 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 34 ft. **PSI=** 34 /2 + 10 = 27

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 34 - DTW 11.60 = 22.40

2.) Volume of stagnant water in tubing

Difference of ID-DTW 22.40 x Tf 21.576 = 483.30

3.) Total Volume of stagnant water

Total volume = 622 + 483.30 = 1105.30

2x Total volume = 2210.60

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03179	4/30/19
Water Level Tape: SOLONIST	212380	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032	N/A

Total Volume of Water Removed (Liters): 5.745 Sample Method: Bladder Pump

Sample ID / Date / Time: WBGmw-020-190401-GW 4/30/19 1150 **QC Sample ID** N/A

Analysis EXPLOSIVES + TAL METALS.

Field Observations/Site Conditions During Purging: ORANGE TINT, CLOUDY, NO ODOR - CLEARED UP DURING PURGE.

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

PL/4/30/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 4/30/19 (Signature and Date)

QA Checked By: 04/30/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: WBGmw-020

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 11.60

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/18	1033	10.2	~~2.73~~ 0.273 RL 4/30/19	7.48	7.4	2.16	234.2	375	~75	11.68	Initial reading through flow cell CPM, 57/3
	1102	--	--	--	--	--	--	1850	~65	11.71	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded CPM, 58/2
	1103	10.4	0.271	7.18	282.9	0.89	-25.2	50	50	11.70	Start recording stability parameters CPM, 57/3 ORANGE TINT CLOUDY, NO ODOR
	1108	10.5	0.270	7.18	128.5	0.87	-27.9	300	60	11.71	
	1113	10.5	0.271	7.18	46.6	0.88	-32.4	400	80	11.71	
	1118	10.4	0.271	7.19	19.8	0.87	-37.0	400	80	11.71	CLOUDINESS + TINT CLEARING UP.
	1123	10.4	0.270	7.19	15.9	0.89	-37.1	400	80	11.73	
	1128	10.5	0.270	7.19	14.0	0.89	-36.4	350	~~60~~ 70 RL 4/30/19	11.72	MARINE BATTERY LOOSING POWER ALTERING FLOW RATE W/O CHANGING PUMP SETTINGS.
	1133	10.5	0.270	7.19	12.0	0.89	-36.1	300	60	11.72	
	1138	10.6	0.270	7.19	8.0	0.89	-36.7	350	~~60~~ 70 RL 4/30/19	11.72	
	1143	10.6	0.270	7.19	6.0	0.90	-37.1	350	~~60~~ 70	11.72	STABLE
	1147	—	—	—	—	—	—	300	~75	11.72	STABILITY CONFIRMED
						RL 4/30/19					
4/30/19	1205	10.7	0.273	7.30	5.1	2.01	~~102.~~ 93.6 RL 4/30/19	~~3.4~~ 420 RL 4/30/19	~60	11.72	POST SAMPLE READINGS

Recorded By: [signature] 4/30/19

QA Checked By: [signature] 04/30/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** WBGmw-021

Date and Time: Start: 4/30/19 0825 Complete: 4/30/19 0941

Personnel: R. LAURICH

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 8.21 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 38 ft. **PSI=** 38 /2 + 10 = 29

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 38 - DTW 8.21 = 29.79

2.) Volume of stagnant water in tubing

Difference of ID-DTW 29.79 x Tf 3/8 21.576 = 642.75

3.) Total Volume of stagnant water

Total volume = 622 + 642.75 = 1264.75

2x Total volume = 2529.50

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FN03179	4/30/19
Water Level Tape: SOLONIST	212380	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032	N/A

Total Volume of Water Removed (Liters): 10.80 Sample Method: Bladder Pump

Sample ID / Date / Time: WBGmw-021-190401-GW 4/30/19 0945 **QC Sample ID** N/A

Analysis TAL METALS + EXPLOSIVES.

Field Observations/Site Conditions During Purging: ~~CLEAR, COLORLESS, ODORLESS~~ SLIGHT ORANGE TINT, CLOUDY, ODORLESS COLOR + CLOUDINESS CLEANED THROUGH PURGE. TL 4/30/19

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 4/30/19 (Signature and Date)

QA Checked By: 04/30/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** WBGMW-021

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements	Initial DTW: 8.21
3	3	3	1	3	3	Consecutive Readings to Sample	

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/19	0850	9.2	0.583	7.46	2.4	2.57	215.2	375 mL	75	8.26	Initial reading through flow cell CPM 1 5/3
	0850	--	--	--	--	--	--	2600	~130	8.25	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded CPM 1 55/5
	0851	9.7	0.516	7.34	67.3	0.89	143.6	130	~130	8.25	Start recording stability parameters ORANGE TINT, CLOUDY, ODORLESS.
	0856	9.7	0.516	7.34	38.3	0.87	141.8	650	130	8.25	
	0901	9.7	0.516	7.34	24.9	0.85	128.6	700	140	8.25	
	0906	9.7	0.516	7.34	19.5	0.84	118.5	700	140	8.25	COLOR + CLOUDINESS CLEARING UP
	0911	9.8	0.517	7.35	17.3	0.84	116.3	700	140	8.25	
	0916	9.8	0.518	7.35	14.8	0.82	112.4	700	140	8.25	
	0921	9.8	0.519	7.35	14.7	0.82	111.6	700	140	8.25	
	0926	9.8	0.521	7.35	11.8	0.82	105.6	700	140	8.25	
	0931	9.8	0.522	7.35	10.5	0.81	103.2	700	140	8.25	
	0936	9.8	0.522	7.36	~~8~~ 8.5	0.81	101.3	700	140	8.25	
	0941	9.9	0.522	7.36	8.5	0.80	100.1	700	140	8.25	STABLE
	0944	—	—	—	—	—	—	420	140	—	STABILITY CONFIRMED
	1000	10.0	0.525	7.41	6.7	1.47	202.7	420	140	8.25	POST SAMPLE READINGS

Recorded By: 4/30/19 **QA Checked By:** 5/1/30/19

RVAAP-08 LOAD LINE 1

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL1mw-064

Date and Time: 5/7/19 Start: 1343 Complete: 1428

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 0.37 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 13 ft. **PSI=** 13 /2 + 10 = 16.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 13 - DTW 0.37 = 12.63

2.) Volume of stagnant water in tubing

Difference of ID-DTW 12.63 x Tf 21.576 = 272.50

3.) Total Volume of stagnant water

Total volume = 622 + 272.50 = 894.50

2x Total volume = 1789.00

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5/7/19
Water Level Tape: ~~SOLONIST~~ Heron (AM 5/7/19)	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	43635	N/A

Total Volume of Water Removed (Liters): 21.1 Sample Method: Bladder Pump

Sample ID / Date / Time: LL1mw-064-190401-GW/5-7-19/ 1429 **QC Sample ID** N/A

Analysis TAL metals

Field Observations/Site Conditions During Purging: 60s overcast / during (AM 5/7/19) starting purge water kept flowing even when compressor would turn off, call A. Sprinzel, she stated well maybe partially artesian, turn off compressor and see if it flows, keeps flowing. She stated could turn pump on to get orange particulates out of water

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/7/19 (Signature and Date)

QA Checked By: [signature] 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-064

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 0.37

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1348	11.1	0.444	7.76	124.43	0.70	-61.2	1,750mL	350	~~0.61~~ 0.51	Initial reading through flow cell
	1412	--	--	--	--	--	--	1,000	500	0.63	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1413	11.0	0.445	7.65	13.12	0.04	-130.8	1750	350	0.51	Start recording stability parameters
	1418	11.2	0.446	7.65	1.89	0.05	-133.2	1750	350	0.47	
	1423	11.2	0.446	7.65	0.92	0.05	-134.4	1750	350	0.47	water is clear, colorless, odorless.
	1428	—	—	—	—	—	—	1750	350	0.45	A. Sprinzel gives approval to sample

5/7/19 1348 — 5-7-19 At sea front pace, water kept flowing when pump shut off

CPM-14, R-10, D-5, to set camera, particulates out

5/7/19	1435	10.9	0.446	7.61	3. ~~0.59~~ 0.59 5MS 5/7/19	0.78	-93.5	350	350	~~0.45~~ 0.45	POST SAMPLE READINGS 5/7/19

Recorded By: [signature] 5/7/19

QA Checked By: [signature] 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LLmw-065

Date and Time: 5/7/19 Start: ~~1235~~ 2m 5/7/19 1230 Complete: 1313

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 9.15 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 20 ft. **PSI=** 20 /2 + 10 = 20

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 20 - DTW 9.15 = 10.85

2.) Volume of stagnant water in tubing

Difference of ID-DTW 10.85 x Tf 21.576 = 234.09

3.) Total Volume of stagnant water

Total volume = 622 + 234.09 = 856.09

2x Total volume = 1712.20

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5/7/19
Water Level Tape: ~~SOLONIST~~ 2m 5/7/19 Heron	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	43635	N/A

Total Volume of Water Removed (Liters): 3.525 Sample Method: Bladder Pump

Sample ID / Date / Time: LLMW-065-190401-GW | 5-7-19 | 1314 **QC Sample ID** N/A

Analysis TAL Metals / Explosives

Field Observations/Site Conditions During Purging: 50's cloudy/overcast water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/7/19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1MW-065

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 9.15

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1235	11.2	0.696	7.76	2.32	3.31	164.7	375mL	75	9.16	Initial reading through flow cell CPM-1 D=3.0 R=57.0
	1259	--	--	--	--	--	--	1800	75	9.16	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1300	10.5	0.720	7.32	1.67	0.65	209.9	75	75	9.16	Start recording stability parameters
	1305	10.4	0.716	7.31	1.03	0.59	213.8	375	75	9.16	
	1310	10.4	0.713	7.30	1.09	0.55	216.9	375	75	9.16	
	1313	—	—	—	—	—	—	225	75	9.16	A. Spinzel gives approval to sample
											5/7/19
5/7/19	1329	11.1	0.711	7.47	1.86	1.64	203.4	300	75	9.16	POST SAMPLE READINGS

Recorded By: 2. Mg 5/7/19

QA Checked By: 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL1mw-080

Date and Time: Start: 5-7-19 / 1222 Complete: DS 5-7-19 ~~5-6~~ 5-7-19 / 1315

Personnel: Gabby Gronofsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 10.55 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 20.2 ft. **PSI=** 20.2 /2 + 10 = 20.1

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 20.2 - DTW 10.55 = 9.65

2.) Volume of stagnant water in tubing

Difference of ID-DTW 9.65 x Tf 9.46 = 91.2

3.) Total Volume of stagnant water

Total volume = 622 + 91.2 = 713.3

2x Total volume = 1,426 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5-7-19
Water Level Tape: SOLONIST (Heron)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	1930	N/A

Total Volume of Water Removed (Liters): 5.95 L Sample Method: Bladder Pump

Sample ID / Date / Time: LL1mw-080-190401-GW / 5-7-19 / 1305 **QC Sample ID** N/A

Analysis Explosives

Field Observations/Site Conditions During Purging: water is clear, colorless odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A 5-7-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-7-19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-080

Initial DTW: 10.55

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-7-19	1223	10.0	0.655	6.84	4.4	9.41	330.8	275 ml	~140	10.93	Initial reading through flow cell (1/15/45) water is clear, colorless, odorless
	1233	--	--	--	--	--	--	1,600 ml	160	11.13	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1238	9.7	0.312	6.73	1.6	8.78	338.3	775 ml	155	~~11.13~~ 11.15 DD 5-7-19	Start recording stability parameters
	1243	9.6	0.311	6.73	1.7	8.80	341.2	775 ml	155	11.19	(1/15/45)
	1248	9.9	0.305	6.72	2.3	8.72	345.4	DD 5-7-19 825 ml	145	11.23	(1/10/50)
	1253	10.2	0.301	6.72	2.4	8.69	345.6	500 ml	100	11.25	(1/5/55)
↓	1258	10.3	0.297	6.72	3.5	8.69	345.4	500 ml	100	11.20	Stable - verify w/ A. Sprinzl @ 1303 (500 ml purged)

DD 5-7-19

5-7-19	1315	10.9	0.294	6.70	3.8	8.85	347.7	300 ml	100	11.20	POST SAMPLE READINGS

Recorded By: [signature] 5-6-19 (5-7-19)

QA Checked By: [signature] 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL1mw-081

Date and Time: Start: 5/6/19 1255 Complete: 5/6/19 1525

Personnel: Charles Spurr

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 29.55 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 38.71 ft. **PSI=** 38.7 /2 + 10 = 29.4

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 38.71 - DTW 29.55 = 9.16

2.) Volume of stagnant water in tubing

Difference of ID-DTW 9.16 x Tf 9.46 = 86.7

3.) Total Volume of stagnant water

Total volume = 622 + 86.7 = 708.7

2x Total volume = 1417.4 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/6/19
Water Level Tape: SOLONIST	250795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 14.3 Sample Method: Bladder Pump

Sample ID / Date / Time: LL1mw-081-190401-GW 5/6/19 1505 **QC Sample ID** N/A

Analysis Explosives & Cyanide

Field Observations/Site Conditions During Purging: 75°F ; Sunny ; breezy

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/6/19 (Signature and Date)

QA Checked By: [signature] 5/6/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-081

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 29.55

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/6/19	1331	12.2	1.090	6.14	96.4	1.38	88.5	~4.5L	150	30.62	Initial reading through flow cell turb. decreased CPM2/4/26 29 PSI
—	—	--	--	--	--	--	--	—	—	—	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/6/19	1341	11.2	1.078	6.49	103.7	0.84	34.3	~6.0L	150	30.65	Start recording stability parameters CPM2/3/26 29 PSI
	1346	11.0	1.086	6.55	90.88	0.73	23.0	0.5	100	30.65	
	1351	11.0	1.095	6.58	42.71	0.89	25.2	0.5	100	30.65	empty flow cell
	1356	11.2	1.097	6.57	39.9	0.72	18.9	0.5	100	30.65	
	1401	11.0	1.104	6.59	39.1	0.61	14.0	0.5	100	30.65	
	1406	11.0	1.111	6.60	36.7	0.87	21.5	0.5	100	30.65	
	1411	11.1	1.106	6.60	35.4	0.64	14.8	0.5	100	30.65	
	1416	10.9	1.118	6.59	33.2	0.56	9.8	0.5	100	30.65	
	1421	11.2	1.118	6.61	35.8	0.82	16.3	0.5	100	30.65	empty flow cell
	1426	11.3	1.120	6.61	34.9	0.54	9.9	0.5	100	30.65	
	1431	11.5	1.122	6.62	34.3	0.47	4.3	0.5	100	30.65	
	1436	11.6	1.125	6.61	35.1	0.44	1.9	0.5	100	30.65	

Initial water is dark orange in color very turbid Not run through flow cell purge at CPM2 4/26 29 PSI 150 mL/mi

						CS 5/6/19					POST SAMPLE READINGS

Recorded By: [signature] 5/6/19

QA Checked By: [signature] 5/6/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-081

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/6/19	1441	11.5	1.126	6.61	27.7	0.44	0.2	0.5	100	30.65	CPM 2/3/27 29 PSI
	1446	11.3	1.127	6.62	24.6	0.42	-0.5	0.5	100	30.65	
	1451	11.5	1.126	6.61	19.7	0.41	-2.1	0.5	100	30.65	
	1456	11.4	1.126	6.62	17.9	0.40	-2.6	0.5	100	30.65	
	1501	11.5	1.128	6.63	17.5	0.39	-5.5	0.5	100	30.65	
								CS 5/6/19			
5/6/19	1521	13.4	1.160	6.77	16.9	1.21	40.2	300 mL	100	30.65	Post Sample Reading

Recorded By: [signature] 5/6/19

QA Checked By: [signature] 5/6/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL1 mw - 083

Date and Time: Start: 5/6/19 1100 Complete: 5/6/19 1205

Personnel: Charles Spurr

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 34.33 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 40 ft. **PSI=** 40 /2 + 10 = 30

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 40 - DTW 34.33 = 5.67

2.) Volume of stagnant water in tubing

Difference of ID-DTW 5.67 x Tf 21.576 = 122

3.) Total Volume of stagnant water

Total volume = 622 + 122 = 744

2x Total volume = 1488

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/6/19
Water Level Tape: SOLONIST	250795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 3.3 Sample Method: Bladder Pump

Sample ID / Date / Time: LL1MW-083-190401-GW 5/6/19 1135 **QC Sample ID** N/A

Analysis Explosives, Sulfide, Nitrate/Nitrite/Sulfate, & Alkalinity

Field Observations/Site Conditions During Purging: 66°F ; Sunny ; breezy

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/6/19 (Signature and Date)

QA Checked By: [signature] 5/6/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL1mw-083

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Initial DTW: 34.33

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/6/19	1105	12.1	0.866	4.56	10.51	6.21	275	500mL	100	34.50	Initial reading through flow cell CPM2 12/28 30 PSI
-	-	--	--	--	--	--	--	-	-	-	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/6/19	1115	11.5	0.811	4.39	19.22	6.00	338	1.5(L)	100	34.50	Start recording stability parameters CPM2 12/28 30 PSI
	1120	11.5	0.810	4.43	16.52	5.92	341	0.5	100	34.50	
	1125	11.9	0.809	4.43	10.91	5.99	351	0.5	100	34.50	
	1130	11.9	0.807	4.44	6.08	5.97	357	0.5	100	34.50	
							CS	5/6/19			
5/6/19	1157	13.0	0.820	4.48	1.89	6.49	338	300mL	100	34.50	POST SAMPLE READINGS

Recorded By: [signature] 5/6/19 **QA Checked By:** [signature] 5/6/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL1mw - 084

Date and Time: Start: 5/6/19 0835 Complete: 5/6/19 1020

Personnel: Charles Spurr

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 27.30 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 37 ft. **PSI=** 37 /2 + 10 = 28.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 37 - DTW 27.30 = 9.7

2.) Volume of stagnant water in tubing

Difference of ID-DTW 9.7 x Tf 21.576 = 209

3.) Total Volume of stagnant water

Total volume = 622 + 209 = 831

2x Total volume = 1662 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	CS 5/6/19 ~~250795~~ FA03313	5/6/19
Water Level Tape: SOLONIST	250795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 2.5

Sample Method: Bladder Pump

Sample ID / Date / Time: LL1MW-084-190401-GW 5/6/19 0925 **QC Sample ID**

Analysis Explosives, TAL metals, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity

Field Observations/Site Conditions During Purging: 53°F ; Sunny ; calm

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/6/19 (Signature and Date)

QA Checked By: [signature] 5/6/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw - 084

Initial DTW: 27.30

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/6/19	0843	10.5	1.158	6.21	0.61	7.52	213	400mL	50	28.11	Initial reading through flow cell CPM2/1/29 ~29 PSI
–	–	--	--	--	--	--	--	–	–	–	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/6/19	0910	11.1	0.860	5.51	0.53	5.07	233	1.7(L)	50	28.15	Start recording stability parameters CPM2/1/29 ~29 PSI
↓	0915	11.3	0.864	5.57	0.64	4.97	218	0.25	50	28.15	↓ ↓
↓	0920	11.4	0.867	5.57	0.68	4.94	223	0.25	50	28.15	↓ ↓
5/6/19	1011	13.8	0.901	5.83	0.45	5.68	221	300 mL	50	28.16	POST SAMPLE READINGS

cs 5/6/19

Recorded By: [signature] 5/6/19

QA Checked By: [signature] 5/6/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL1mw-086

Date and Time: 5/7/19 Start: 0837 Complete: 1152

Personnel: Lindsey Mosher

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 5.48 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 77 ft. **PSI=** 77 /2 + 10 = 48.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 77 - DTW 5.48 = 71.52

2.) Volume of stagnant water in tubing

Difference of ID-DTW 71.52 x Tf 21.576 = 1543.12

3.) Total Volume of stagnant water

Total volume = 622 + 1543.12 = 2165.12

2x Total volume = 4330.23

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5/7/19
Water Level Tape: ~~SOLONIST~~ 5/7/19 Heron	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	43635	N/A

Total Volume of Water Removed (Liters): 27.3 Sample Method: Bladder Pump

Sample ID / Date / Time: LL1mw-086-190401-GW/5-7-19/1153 **QC Sample ID** N/A

Analysis Alkalinity/TAL metals/cyanide/Filtered metals

Field Observations/Site Conditions During Purging: 50's, cloudy, water is cloudy, odorless, ~~colorless~~ 5/7/19 brownish-like-tint

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/7/19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LLJMW-086

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 5.48

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	0843	10.4	1,660	12.01	548.90	4.50	195.2	900mL	150	5.60	Initial reading through flow cell CPM-1 D-6.0 R-54.0
	0913	--	--	--	--	--	--	4400	150	5.60	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	0914	10.2	1.860	12.34	85.57	1.51	-1.6	150	150	5.60	Start recording stability parameters
	0919	10.2	1.379	12.14	96.51	1.15	4.1	750	150	5.60	water appears to have whitish-tint. like-
	0924	10.2	1.235	12.07	87.66	1.08	7.4	750	150	5.60	
	0929	10.2	1.077	11.97	98.55	1.33	10.2	750	150	5.60	
	0934	10.2	1.006	11.93	76.53	1.27	11.9	750	150	5.60	
	0939	10.2	0.921	11.86	73.47	1.29	14.1	750	150	5.58	
	0944	10.2	0.791	11.68	63.19	1.15	19.2	750	150	5.58	
	0949	10.3	0.662	11.35	45.70	0.99	28.7	750	150	5.58	
	0954	10.3	0.583	10.96	45.41	0.82	43.1	750	150	5.58	
	0959	10.3	0.548	10.62	43.76	0.76	54.0	750	150	5.58	
	1004	10.5	0.534	10.44	51.38	0.74	66.9	750	150	5.58	5/7/19
↓	1009	10.5	0.527	10.20	60.29	0.68	73.7	750	150	5.58	clean out flow cell w/ D.I water
5/7/19	1207	10.7	0.543	9.46	267.68	0.82	95.8	300	150	5.57	POST SAMPLE READINGS

Recorded By: 5/7/19

QA Checked By: 5/8/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-086

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1014	10.6	0.531	10.34	77.02	0.70	82.8	750mL	150	5.56	
	1019	10.5	0.530	10.25	87.51	0.67	83.9	750	150	5.56	5/7/19
	1024	10.5	0.518	9.87	93.68	0.39	90.9	750	150	5.56	
	1029	10.4	0.519	9.91	99.18	0.37	94.6	750	150	5.56	Clean out flow cell w/DI water
	1034	10.5	0.518	9.95	95.63	0.76	91.9	750	150	5.55	5/7/19
	1039	10.5	0.519	9.82	140.03	0.68	97.9	750	150	5.55	Lower purge rate after reading CPM-1 D-4.0 R=56.00
	1044	10.7	0.520	9.50	151.92	0.78	102.7	500	100	5.53	
	1049	10.9	0.523	9.29	182.14	0.29	110.1	500	100	5.53	
	1054	10.8	0.530	9.25	146.22	0.54	114.5	500	100	5.53	
	1059	11.1	0.515	9.59	109.17	0.64	115.4	500	100	5.52	
	1104	11.1	0.511	9.86	99.24	0.80	112.6	500	100	5.52	
	1109	11.1	0.509	10.00	89.27	0.85	109.7	500	100	5.52	
	1114	11.0	0.510	9.79	79.75	0.89	110.0	500	100	5.52	5/7/19
	1119	11.1	0.514	10.15	81.67	1.06	107.4	500	100	5.52	Increase to 150mL/min after reading CPM-1 D-6.0 R=54.0
	1124	10.6	0.532	10.49	77.86	1.08	102.5	750	150	5.56	
	1129	10.7	0.535	10.49	90.87	0.89	93.4	750	150	5.56	5/7/19

Recorded By: 5/7/19

QA Checked By: 5/8/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-086

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1134	10.6	0.522	10.10	87.03	0.68	94.4	750mL	150	5.56	
	1139	10.5	0.535	10.47	71.84	0.70	91.7	750	150	5.56	
	1144	10.6	0.544	10.52	73.73	0.72	86.4	750	150	5.56	
	1149	10.5	0.541	10.44	87.06	0.58	83.8	750	150	5.57	
	1152	—	—	—	—	—	—	450	150	5.57	A. Spinzol gives permission to sample @ elevated turbidity

5/7/19

5/7/19

Recorded By: 5/7/19

QA Checked By: 5/8/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL1 mw - 087

Date and Time: Start: 5/2/19 1205 Complete: 5/2/19 1425

Personnel: Charles Spurr

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 4.25 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 12 ft. **PSI=** 12 /2 + 10 = 16

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 12 - DTW 4.25 = 7.75

2.) Volume of stagnant water in tubing

Difference of ID-DTW 7.75 x Tf 21.576 = 167

3.) Total Volume of stagnant water

Total volume = 622 + 167 = 789

2x Total volume = 1578 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5/2/19
Water Level Tape: SOLONIST	250795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 2.15 Sample Method: Bladder Pump

Sample ID / Date / Time: LL1 MW-087-190401-GW 5/2/19 1320 **QC Sample ID** N/A

Analysis Explosives & TAL metals

Field Observations/Site Conditions During Purging: 68°F; mostly cloudy; calm

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/2/19 (Signature and Date)

QA Checked By: 05/02/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-087

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 4.25' started w/ CPM 2/2/2 @ 16 psi. Drew down too fast ~250 mL/m

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/2/19	1218	16.2	0.680	7.13	11.0	2.79	216	325 mL	25	4.58	Initial reading through flow cell CPM 1/1/59 16 PSI
-	-	--	--	--	--	--	--	-	-	-	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/2/19	1309	17.4	0.669	7.09	8.8	1.98	247	1.6(L)	25	4.58	Start recording stability parameters CPM 1/1/59 16 PSI
↓	1314	17.3	0.667	7.08	6.8	1.94	248	0.125	25	4.58	
↓	1319	17.3	0.666	7.08	7.2	1.91	249	0.125	25	4.58	
							CS	5/2/19			
5/2/19	1422	14.4	0.695	7.12	5.3	2.73	263	300mL	25	4.59	POST SAMPLE READINGS

Recorded By: [signature] 5/2/19

QA Checked By: [signature] 05/02/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LLmw-088

Date and Time: 5-8-19 Start: 1302 Complete: 1530

Personnel: Gabby Gromofsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 4.52 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 22 ft. **PSI=** 22 /2 + 10 = 21

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 22 - DTW 4.52 = 17.48

2.) Volume of stagnant water in tubing

Difference of ID-DTW 17.48 x Tf 21.576 = 377.1

3.) Total Volume of stagnant water

Total volume = 622 + 377.1 = 999.1

2x Total volume = 1998 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5-8-19
Water Level Tape: (SOLONIST) or Heron	290795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308 / 18421	N/A

Total Volume of Water Removed (Liters): 25.2 L Sample Method: Bladder Pump

Sample ID / Date / Time: LLmw-088-190401-GW / 5-8-19 / 1505 **QC Sample ID** N/A

Analysis Explosives, alkalinity, TAL metals

Field Observations/Site Conditions During Purging: water initially slightly turbid and brownish; water cloudy/grey after stagnant water was removed; NTU is greater than 10 at time of sample collection - purge for 2hrs + no filter needed (NTU <50)

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

DP 5-8-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-8-19 (Signature and Date)

QA Checked By: 5-9-19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL1mw-088

Initial DTW: 4.52

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-8-19	1302	10.3	0.865	7.63	48.47	3.16	118.5	350 ml	350	5.10	Initial reading through flow cell (1/20/40) water is light brown, slightly turbid
	1308	--	--	--	--	--	--	2,000 ml	~330	5.80	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded (2/4/26)
	1313	10.1	0.864	7.51	8.99	0.96	-46.5	975 ml	195	5.63	Start recording stability parameters ~~(2/3/27)~~ D3 5-7-19 (2/2/28) water is clear, colorless, odorless
	1318	10.2	0.863	7.52	14.52	0.49	-59.8	1025 ml	205	5.61	lower PSI to 19 to slow purge (2/3/27)
	1323	10.3	0.863	7.53	33.77	0.43	-65.7	975 ml	195	5.60	water is cloudy and greyish
	1328	10.4	0.864	7.53	47.11	0.42	-68.8	1025 ml	205	5.59	
	1333	10.4	0.864	7.53	41.45	0.41	-72.1	1075 ml	215	5.59	
	1338	10.4	0.863	7.53	48.40	0.41	-72.6	1075 ml	215	5.59	
	1343	10.4	0.863	7.53	34.76	0.41	-74.2	975 ml	195	5.59	
	1348			D @ 5-8-19				975 ml	195	5.58	Empty and spray out flow cell to attempt to decrease turbidity
	1353	10.5	0.863	7.53	35.82	0.49	-73.4	975 ml	195	5.57	
	1358	10.5	0.864	7.53	31.64	0.48	-75.1	950	190	5.57	
	1403	10.5	0.864	7.53	32.88	0.42	-75.8	900	180	5.55	
	1408	10.6	0.864	7.53	33.27	0.41	-77.6	925	D @ 5-8-19 185	5.48	

5-8-19	1527	11.2	0.868	7.52	18.25	0.58	-82.0	750	180	5.52	POST SAMPLE READINGS

Recorded By: 5-8-19 **QA Checked By:** 5-9-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL1mw-088

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-8-19	1413	10.5 ~~1415~~ MJS 5-8-19	0.864	7.53	24.41	0.40	-79.0	950 ml	190	5.55	
	1418	10.6	0.864	7.53	25.74	0.40	-79.8	950 ml	190	5.55	
	1423	10.6	0.865	7.53	23.49	0.40	-80.3	950 ml	190	5.55	
	1428	10.7	0.865	7.55	25.33	0.41	-81.7	925 ml	185	5.54	
	1433	10.7	0.865	7.53	24.84	0.40	-82.0	925 ml	185	5.54	
	1438	10.7	0.865	7.53	23.41	0.39	-82.3	900 ml	180	5.53	
	1443	10.8	0.865	7.53	22.80	0.40	-82.5	900 ml	180	5.53	
	1448	10.8	0.865	7.53	21.26	0.42	-82.9	925 ml	185	5.53	
	1453	10.8	0.865	7.53	22.92	0.49	-83.0	925 ml	185	5.52	
	1458	10.8	0.868	7.53	26.61	~~0.51~~ 0.51 ~~0.51~~ MJS 5-8-19	-83.0	950 ml	190	5.52	
↓	1503	10.8	0.866	7.53	19.25	0.50	-83.9	950 ml	190	5.52	Stable w/elevated turbidity - 2 hr purge reached - confirm stability w/ A. Sprinzl

MJS 5-8-19

MJS 5-8-19

Recorded By: 5-8-19

QA Checked By: 5-9-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL1mw-089

Date and Time: Start: 5-7-19 | 0837 Complete: 5-7-19 | 1130

Personnel: Gabby Gromofsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 25.64 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 38 ft. **PSI=** 38 /2 + 10 = 29

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 38 - DTW 25.64 = 12.36

2.) Volume of stagnant water in tubing

Difference of ID-DTW 12.36 x Tf 9.46 = 116.9

3.) Total Volume of stagnant water

Total volume = 622 + 116.9 = 738.9

2x Total volume = 1,477 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5-7-19
Water Level Tape: SOLONIST (Heron)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	1930	N/A

Total Volume of Water Removed (Liters): 4.45 L Sample Method: Bladder Pump

Sample ID / Date / Time: LL1mw-089-190401-GW | 5-7-19 | 0920 **QC Sample ID** LL1mw-089-190401-GWMSD | LL1mw-089-190402-GW (Duplicate) | LL1mw-089-190403-GW (Split Sample)

Analysis Explosives, Nitroguanidine, Nitrocellulose

Field Observations/Site Conditions During Purging: 52°F cloudy calm; water is clear, colorless, odorless;

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A 5-7-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-7-19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL1mw-0089

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Initial DTW: 25.64

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-7-19	0839	10.1	0.233	5.60	1.6	6.96	240.1	275 ml	~140	25.75	Initial reading through flow cell (1 / 20 / 40) water is clear, colorless, odorless
	0851	--	--	--	--	--	--	1,500 ml	125	25.65	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	0856	9.9	0.103	4.75	1.2	1.21	317.5	800 ml	160	25.67	Start recording stability parameters water clear, colorless, odorless
	5-7-19 0901	9.9	0.102	4.75	1.3	1.20	321.6	800 ml	160	25.67	5-7-19
↓	0906	9.9	0.101	4.75	1.9	1.17	5-7-19 331.2	800 ml	160	25.68	(1 / 24 / 36) Stable - Verified by A. Sprinzl @ 0916 (11000 ml purged)
					5-7-19						
5-7-19	1130	11.8	0.106	5.42	1.5	2.68	188.6	275	~140	25.60	POST SAMPLE READINGS

Recorded By: 5-7-19 **QA Checked By:** 5/8/19

RVAAP-09 LOAD LINE 2

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL2-MW059

Date and Time: Start: 5-6-19 | 0840 Complete: 5-6-19 | 0925

Personnel: G. Gromofsky

Purge Method(s): Bailer ☑ Bladder Pump Other: N/A

Depth To Water: 14.08 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 20' ft. **PSI=** 20 /2 + 10 = 20

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 20 - DTW 14.08 = 5.92

2.) Volume of stagnant water in tubing

Difference of ID-DTW 5.92 x Tf 9.46 = 56.0

3.) Total Volume of stagnant water

Total volume = 622 + 56.0 = 678.0

2x Total volume = 1356 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5-6-19
Water Level Tape: SOLONIST (Heron WLM)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	1930	N/A

Total Volume of Water Removed (Liters): 5.455 Liters Sample Method: Bladder Pump

Sample ID / Date / Time: LL2MW-059-190401-GW | 5-6-19 | 0905 **QC Sample ID** N/A

Analysis Explosives, metals

Field Observations/Site Conditions During Purging: 58°F, sunny, calm; water is clear, colorless, odorless;

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary: N/A 5-6-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: [signature] 5-6-19 (Signature and Date)

QA Checked By: [signature] 5/6/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL2-MW059

Initial DTW: 14.08

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-6-19	0844	10.1	0.306	6.05	4.6	3.19	238.8	420	140	14.34	Initial reading through flow cell (1/20/40) water is clear, colorless, odorless
↓	0849	--	--	--	--	--	--	1,125	225	14.49	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded (1/10/50)
↓	0854	9.3	0.274	5.98	4.9	0.94	252.6	625	125	14.52	Start recording stability parameters (1/10/50) water is clear, colorless, odorless
↓	0859	9.5	0.273	5.97	7.0	0.93	254.0	725	145	14.54	(1/8/52)
↓	0904	9.6	0.272	5.97	8.7	0.92	254.2	660	130	14.56	~~(1/8/52)~~ JA 5-6-19 (1/7/53) Parameters stable - Sample
				JA	5-6-19						

5-6-19	0921	10.6	0.274	6.01	2.6	1.72	280.1	400	100	14.58	POST SAMPLE READINGS

Recorded By: 5-6-19 **QA Checked By:** 5/6/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL2mw-264

Date and Time: 05/02/19 Start: 0854 Complete: 1008

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 4.71 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 18.22 ft. **PSI=** 18.22 /2 + 10 = 19.11

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 18.22 - DTW 4.71 = 13.51

2.) Volume of stagnant water in tubing

Difference of ID-DTW 13.51 x Tf 21.756 = 293.92

3.) Total Volume of stagnant water

Total volume = 622 + 293.92 = 915.92

2x Total volume = 1831.85

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	05/02/19
Water Level Tape: SOLONIST 200ft.	Pine 07-0578	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): 10.4 L Sample Method: Bladder Pump

Sample ID / Date / Time: LL2mw-264-190401-GW/05/02/19/1005 **QC Sample ID** N/A

Analysis Cyanide

Field Observations/Site Conditions During Purging: Stagnant water cloudy/orange tint - clears up after purge 59°F, cloudy, light wind. Well pad clear, surrounded by mowed grass

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary:

05/02/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: 05/02/19 (Signature and Date)

QA Checked By: 5/2/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL2 mw-264

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements	Initial DTW: 4.71
3	3	3	1	3	3	Consecutive Readings to Sample	

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/02/19	0857	10.6	0.517	7.14	10.02	8.39	228.5	400	150	4.89	Initial reading through flow cell 1CPM/57.0/3.0
	0908	--	--	--	--	--	--	1600	150	4.89	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	0913	10.0	0.430	6.96	70.34	1.09	24.8	750	150	4.89	Start recording stability parameters Water is cloudy with
	0918	10.0	0.430	6.96	58.60	0.90	16.5	750	150	4.89	an orange tint - water begins to clear after
	0923	10.0	0.431	6.97	51.29	0.78	13.1	750	150	4.89	Stagnant water purged.
	0928	10.0	0.432	6.99	49.02	0.72	9.0	750	150	4.89	
	0933	9.9	0.433	6.99	45.89	0.59	5.2	750	150	4.89	
	0938	9.8	0.433	7.00	46.20	0.60	3.4	750	150	4.89	
	0943	10.0	0.433	7.00	47.71	0.54	0.9	750	150	4.89	
	0948	10.0	0.432	7.01	47.75	0.45	-0.2	750	150	4.92	Empty YSI flow cell to see if turbidity clears up
	0953	10.0	0.434	7.01	4.90	0.65	4.2	750	150	4.91	
	0958	10.1	0.434	7.01	5.42	0.53	-4.1	750	150	4.90	stable. Send confirmation text.
	1001	--	--	--	--	--	--	450	150	4.89	Amount purge while awaiting stability confirmation
								05/02/19			

05/02/19	1008	9.9	0.437	7.04	6.45	1.40	10.1	450	150	4.89	POST SAMPLE READINGS

Recorded By: 05/02/19 **QA Checked By:** 5/2/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL2mw-267

Date and Time: 05/02/19 Start: 1042 Complete: 1333

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 7.60 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 18.5 ft. **PSI=** 18.5 /2 + 10 = 19.25

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 18.5 - DTW 7.60 = 10.9

2.) Volume of stagnant water in tubing

Difference of ID-DTW 10.9 x Tf 21.576 = 235.18

3.) Total Volume of stagnant water

Total volume = 622 + 235.18 = 857.18

2x Total volume = 1714.36

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03964	05/02/19
Water Level Tape: SOLONIST 200 ft.	Pine 0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): 19.7 L Sample Method: Bladder Pump

Sample ID / Date / Time: LL2mw-267-190401-GW/05/02/19/1320 **QC Sample ID** N/A

Analysis Explosives (6)(A), TAL Metals (7)(C),

Field Observations/Site Conditions During Purging: Stagnant water orange in a turbid. Turbidity remained >10 and less than 50. Sampled after 2 hours of purging.

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

05/02/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 05/02/19 (Signature and Date)

QA Checked By: 2.Mann 5/2/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL2mw-267

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 7.60

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/02/19	1048	11.7	0.301	6.41	3188.67	6.65	103.1	3000	75	7.87	Initial reading through flow cell Stagnant water 1 CPM/2.0/58.0 orange and turbid
	1118	--	--	--	--	--	--	40000	125	7.91	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1123	10.4	0.279	6.32	2440.1	0.08	66.8	625	125	7.90	Start recording stability parameters Water slightly 1CPM/3.0/57.0 orange/turbid
	1128	10.5	0.283	6.33	112.49	0.01	61.7	625	125	7.90	Empty flow cell to try to clear turbidity
	1133	10.4	0.286	6.38	107.82	0.94	63.6	625	125	7.90	water begins to clear
	1138	10.4	0.290	6.36	48.91	0.14	54.9	625	125	7.90	
	1143	10.6	0.293	6.36	36.59	0.03	52.0	625	125	7.90	
	1148	10.7	0.296	6.37	29.27	-0.02	49.4	625	125	7.90	
	1153	10.5	0.301	6.41	97.88	0.78	31.6	625	125	7.90	
	1158	10.6	0.304	6.39	44.62	0.12	48.5	625	125	7.90	
	1203	10.7	0.307	6.40	45.02	0.04	44.5	625	125	7.90	
	1208	10.8	0.309	6.40	32.46	0.00	42.7	625	125	7.90	
	1213	10.9	0.311	6.41	32.64	0.02	41.9	625	125	7.90	
	1218	10.6	0.312	6.41	34.93	-0.06	41.1	625	125	7.90	
05/02/19	1333	11.5	0.328	6.47	24.89	1.55	48.6	400	125	7.90	POST SAMPLE READINGS

Recorded By: 05/02/19 **QA Checked By:** 5/2/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL2mw-267

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/02/19	1223	10.6	0.312	6.41	42.42	-0.08	40.7	625	125	7.90	1 CPM/3.0/57.0
	1228	10.5	0.313	6.41	39.15	-0.08	40.1	625	125	7.90	
	1233	10.6	0.314	6.42	33.98	-0.08	39.2	625	125	7.90	
	1238	11.1	0.315	6.44	36.01	-0.09	37.3	625	125	7.89	
	1243 ~~1243~~	11.1	0.316	6.43	34.39	-0.09	37.5	625	125	7.89	
	1248	11.1	0.317	6.43	37.05	-0.10	36.6	625	125	7.89	
	1253	10.9	0.318	6.43	39.97	-0.11	35.8	625	125	7.89	
	1258	10.9	0.319	6.43	42.68	-0.12	35.4	625	125	7.89	
	1303	10.9	0.319	6.43	39.06	-0.12	35.3	625	125	7.89	
	1308	10.9	0.319	6.43	38.62	-0.12	35.4	625	125	7.89	
	1313	11.2	0.320	6.44	33.61	-0.12	34.3	625	125	7.89	
	1318	11.0	0.320	6.44	39.60	-0.12	41.0	625	125	7.89	

Qa 05/02/19

Qa 05/02/19

Recorded By: 05/02/19

QA Checked By: 5/2/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL2mw-272

Date and Time: 5/6/19 Start: 0836 Complete: 1109

Personnel: ☐ Lindsey ☑ Mayer ☐

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 6.91 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 26.3 ft. **PSI=** 26.3 /2 + 10 = 23.15

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 26.3 - DTW 6.91 = 19.39

2.) Volume of stagnant water in tubing

Difference of ID-DTW 19.39 x Tf 21.576 = 418.36

3.) Total Volume of stagnant water

Total volume = 622 + 418.36 = 1040.36

2x Total volume = 2080.72

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5/6/19
Water Level Tape: ~~SOLONIST~~ 2m 5/6/19 Heron	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	43635	N/A

Total Volume of Water Removed (Liters): 7.95 Sample Method: Bladder Pump

Sample ID / Date / Time: LL2mw-272-190401-GW/5-6-19/1110 **QC Sample ID** N/A

Analysis Cyanide

Field Observations/Site Conditions During Purging: 52°F, Sunny, water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/6/19 (Signature and Date)

QA Checked By: [signature] 5-6-19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL2mw-272

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements	Initial DTW: 6.91
3	3	3	1	3	3	Consecutive Readings to Sample	

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/6/19	0842	11.1	0.552	7.25	16.82	8.53	197.8	300mL	50	7.00	Initial reading through flow cell CPM-1 D-3.0 R=57.0
	0924	--	--	--	--	--	--	2100	50	7.10	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded water became orgis
	0925	11.0	0.410	6.70	63.44	1.00	11.2	50	50	7.10	Start recording stability parameters at 0848
	0930	10.9	0.411	6.70	60.31	0.81	12.1	250	50	7.10	2x 5/6/19
	0935	10.9	0.411	6.69	40.77	0.69	11.1	250	50	7.10	
	0940	11.0	0.409	6.75	176.39	0.70	4.3	250	50	7.10	water became orange in color orange particulates
	0945	11.0	0.409	6.70	132.75	0.75	12.7	250	50	7.10	clean out flow cell w/DI water
	0950	10.6	0.394	6.68	94.92	1.26	9.1	250	50	7.10	
	0955	11.3	0.408	6.70	86.33	0.61	2.1	250	50	7.10	2x 5/6/19
	1000	11.3	0.409	6.71	85.12	0.60	0.3	250	50	7.10	
	1005	11.4	0.408	6.71	191.74	0.76	3.9	250	50	7.10	water has orange particulates in orangish color
	1010	11.5	0.409	6.71	154.24	0.82	2.8	250	50	7.10	
	1015	11.6	0.412	6.71	75.73	0.85	3.4	250	50	7.10	2x 5/6/19
	1020	11.6	0.411	6.73	52.49	0.77	0.2	250	50	7.10	
5/6/19	1121	13.8	0.417	6.91	7.93	3.12	-6.0	300	50	7.11	POST SAMPLE READINGS

Recorded By: 5/6/19

QA Checked By: 5-6-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL2mw-272

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/6/19	1025	11.6	0.411	6.73	31.40	0.74	-1.9	250mL	50	7.12	
	1030	11.7	0.409	6.72	20.94	0.71	-4.3	250	50	7.12	
	1035	11.7	0.410	6.73	15.18	0.72	-6.0	250	50	7.12	
	1040	11.7	0.410	6.73	13.73	0.74	-6.8	250	50	7.12	
	1045	11.8	0.410	6.73	10.31	0.72	-7.9	250	50	7.11	
	1050	12.0	0.410	6.73	15.67	0.73	-8.7	250	50	7.11	
	1055	12.1	0.410	6.73	11.06	0.73	-8.9	250	50	7.11	
	1100	12.0	0.411	6.74	10.38	0.74	-9.4	250	50	7.11	
	1105	12.1	0.412	6.74	8.91	0.74	-9.2	250	50	7.11	5/6/19
	1109	—	—	—	—	—	—	200	50	7.11	A. Sprinzel gives ok to sample

Recorded By: 5/6/19

QA Checked By: 5-6-19

RVAAP-10 LOAD LINE 3

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL3mw-234

Date and Time: 05/06/19 Start: 1157 Complete: 1454

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 7.90 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 20.71 ft. **PSI=** 20.71 /2 + 10 = 20.35

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 20.71 - DTW 7.90 = 12.81

2.) Volume of stagnant water in tubing

Difference of ID-DTW 12.81 x Tf 9.46 = 121.18

3.) Total Volume of stagnant water

Total volume = 622 + 121.18 = 743.18

2x Total volume = 1486.37

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5/6/19
Water Level Tape: ~~SOLONIST~~ 2m 5/6/19 Heron	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	43635	N/A

Total Volume of Water Removed (Liters): 8.9 Sample Method: Bladder Pump

Sample ID / Date / Time: LL3MW-234-190401-GW/5-6-19/1455 **QC Sample ID** N/A

Analysis Cyanide

Field Observations/Site Conditions During Purging: 70°F Sunny water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 05/06/19 (Signature and Date)

QA Checked By: [signature] 5-6-19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL3mw-234

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 7.90

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/6/19	1203	14.5	0.461	7.20	230.07	4.97	44.9	300ml	50	8.25	Initial reading through flow cell CPM-1 D=3.0 R=57.0
	1248	--	--	--	--	--	--	2250	50	8.48	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1249	14.4	0.455	6.89	118.54	0.44	56.4	50	50	8.48	flowrate increased, waited longer to start recording ready Start recording stability parameters
	1254	14.4	0.462	6.88	91.65	0.38	43.8	250	50	8.48	
	1259	14.2	0.464	6.88	78.29	0.37	42.4	250	50	8.47	ditto 5/5/19
	1304	14.2	0.461	6.89	70.45	0.35	38.3	250	50	8.47	clean out flow cell w/D.I. water
	1309	13.9	0.447	6.88	66.84	1.37	41.4	250	50	8.47	
	1314	13.7	0.467	6.89	56.55	0.97	30.5	250	50	8.47	
	1319	13.7	0.466	6.90	47.31	0.60	25.4	250	50	8.47	
	1324	13.6	0.467	6.91	42.64	0.55	25.3	250	50	8.47	
	1329	13.2	0.466	6.91	38.17	0.42	22.8	250	50	8.47	ditto
	1334	13.0	0.467	6.91	36.28	0.44	22.5	250	50	8.47	
	1339	13.3	0.466	6.91	37.77	0.50	20.3	250	50	8.47	
↓	1344	13.0	0.472	6.92	33.07	0.43	21.2	250	50	8.47	5/6/19
5/6/19	1508	13.8	0.464	6.98	13.57	1.52	14.4	300	50	8.47	POST SAMPLE READINGS

Recorded By: [signature] 05/06/19 **QA Checked By:** [signature] 5-6-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL3mw-234

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/06/19	1349	13.2	0.472	6.97	29.31	0.45	20.2	250	50	8.47	
	1354	13.5	0.458	6.91	27.73	0.50	18.3	250	50	8.47	
	1359	13.2	0.468	6.91	24.51	0.49	17.6	250	50	8.47	
	1404	13.5	0.466	6.91	21.04	0.42	16.3	250	50	8.47	
	1409	13.3	0.467	6.91	19.43	0.40	14.7	250	50	8.47	
	1414	13.2	0.464	6.91	18.98	0.41	15.8	250	50	8.47	
	1419	13.2	0.460	6.92	22.89	0.52	14.2	250	50	8.47	
	1424	13.0	0.464	6.92	17.52	0.46	13.3	250	50	8.47	
	1429	13.0	0.461	6.91	18.56	0.42	13.5	250	50	8.47	
	1434	13.3	0.464	6.91	16.64	0.40	13.6	250	50	8.47	
	1439	13.8	0.464	6.92	15.80	043	12.6	250	50	8.47	
1444	1444 2ME 5/6/19	13.8	0.466	6.92	13.68	0.40	11.4	250	50	8.47	
	1449	14.0	0.466	6.92	13.77	0.40	11.0	250	50	8.47	5/6/19
↓	1454	—	—	—	—	—	—	—	50	8.47	A Spinzel gives approval to sample
											5/6/19

Recorded By: 05/06/19

QA Checked By: 5-6-19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL3mw-237

Date and Time: Start: 5-6-19 | ~~1458~~ DS 5-6-19 1200

Complete: 5-6-19 | 1440

Personnel: G. Gromofsky

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: N/A ☐

Depth To Water: 13.43 ft. from measuring point

Well Diameter: 2 inches

PSI = Intake Depth/2 + 10

Intake Depth: 25.55 ft.

PSI= ~~22.7~~ DS 5-6-19 25.55/2 + 10 = 22.8

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 25.55 - DTW 13.43 = 12.12

2.) Volume of stagnant water in tubing

Difference of ID-DTW 12.12 x Tf 9.46 = 114.7

3.) Total Volume of stagnant water

Total volume = 622 + ~~736~~ DS 5-6-19 114.7 = 736.7

2x Total volume = 1,473 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5-6-19
Water Level Tape: SOLONIST or (Heron)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	1930	N/A

Total Volume of Water Removed (Liters): 10.375 L

Sample Method: Bladder Pump

Sample ID / Date / Time: LL3mw-237-190401-GW | 5-6-19 | 1415

QC Sample ID N/A

Analysis Explosives

Field Observations/Site Conditions During Purging: 64°F, sunny, calm; water appears clear, colorless, odorless initially becoming slightly cloudy;

Sampling Procedure Followed: (YES) / NO

If no, why was deviation necessary: DS 5-6-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-6-19 (Signature and Date)

QA Checked By: 5/6/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL3mw-237

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 13.43

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-6-19	1204	16.4	0.356	6.69	5.7	7.87	271.6	350 ml	90 ml/min	14.05	Initial reading through flow cell (1/20/40) water is clear, colorless, odorless
	1216	--	--	--	--	--	--	1,400ml	115 ml/min	14.90	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1221	10.7	0.330	6.69	23.2	5.90	303.4	575 ml	115 ml/min	14.90	Start recording stability parameters (1/6/54) water is clear, colorless, odorless
	1226	11.1	0.330	6.68	32.5	5.69	308.0	525ml	105ml/min	14.90	(1/6/54)
	1231	11.1	0.330	6.68	46.3	5.66	310.6	475 ml	95 ml/min	14.90	(1/4/56) lower purge rate to decrease turbidity to attempt
	1236	12.1	0.330	6.67	51.0	5.46	315.2	375ml	75ml/min	14.80	DUP 5-6-19
	1241	11.8	0.330	6.66	94.9	5.43	320.9	375 ml	75ml/min	14.68	water is slightly cloudy
	1246	12.0	0.329	6.66	65.7	5.31	322.5	375 ml	75 ml/min	14.68	
	1251	11.8	0.330	6.64	42.5	5.15	DUP 5-6-19 ~~324~~ 324.1	375ml	75ml/min	14.68	
	1256	11.8	0.330	6.64	104.5	4.98	327.7	375ml	75ml/min	14.67	
	1301	12.0	0.328	6.63	10.6	4.78	329.0	375ml	75ml/min	14.67	
	1306	12.0	0.331	6.62	29.7	4.66	331.0	575ml	75 ml/min	14.63	
	1311	11.8	0.328	6.61	87.3	4.49	334.6	375 ml	75 ml/min	14.62	
	1316	11.8	0.328	6.61	102.1	4.42	337.2	375 ml	75 ml/min	14.60	

		DUP 5-6-19					see p. 3				POST SAMPLE READINGS

Recorded By: [signature] 5-6-19 **QA Checked By:** [signature] 5/6/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL3mw-237

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-6-19	1321	11.7	0.327	6.61	128.5	4.38	338.6	375 ml	75 ml/min	14.60	(1/4/56)
	1326	11.4	0.328	6.60	13.8	4.28	340.6	375 ml	75 ml/min	14.60	
	1331	11.3	0.327	6.60	39.6	4.24	341.4	375 ml	75 ml/min	14.60	
	1336	11.2	0.327	6.59	23.2	4.13	343.5	375 ml	75 ml/min	14.59	
	1341	11.5	0.327	6.58	105.4	4.04	344.7	375 ml	75 ml/min	14.60	
	1346	11.2	0.325	6.57	115.1	4.00	346.5	375 ml	75 ml/min	14.60	
	1351	11.4	0.328	6.57	2.0	4.02	346.6	375 ml	75 ml/min	14.60	
	1356	Empty flow cell to verify 20 NTU reading									Verify Stability w/ A.Sprinzl - need to show that NTU is <10
	1405	11.9	0.330	6.53	1.8	5.98	348.2	375 ml	75 ml/min	14.60	Refill flow cell - NTU is <10 ~~and~~ 5-6-19
	~~1410~~ 1408	11.8	0.328	6.55	3.8	4.04	347.9	225 ml	75 ml/min	14.60	
	1411	11.5	0.327	6.55	6.6	3.95	344.5	225 ml	75 ml/min	14.60	
	1414	11.5	0.326	6.56	7.7	3.96	344.0	225 ml	75 ml/min	14.60	Stable
5-6-19	1439	12.6	0.329	6.56	2.8	4.44	350.8	375 ml	75 ml/min	14.60	*Post Sample reading

Recorded By: 5-6-19 **QA Checked By:** 5/6/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL3mw-244

Date and Time: Start: 5-6-19 | 1010 Complete: 5-6-19 | 1045

Personnel: G. Gromofsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 7.04 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 42 ft. **PSI=** 42 /2 + 10 = 31

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 42 - DTW 7.04 = 34.96

2.) Volume of stagnant water in tubing

Difference of ID-DTW 34.96 x Tf 21.576 =

3.) Total Volume of stagnant water

Total volume = 2 (622 + 754.3) = 2,752.6

2x Total volume = 2,752.6 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5-6-19
Water Level Tape: SOLONIST or (Heron)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	1930	N/A

Total Volume of Water Removed (Liters): 11.13 L Sample Method: Bladder Pump

Sample ID / Date / Time: LL3mw-244-190401-GW | 5-6-19 | 1040 **QC Sample ID** N/A

Analysis Explosives, metals

Field Observations/Site Conditions During Purging: 59° F, sunny, breezy; water is clear, colorless, odorless;

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-6-19 (Signature and Date)

QA Checked By: 5/6/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL3mw-244

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 7.04

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-6-19	1012	11.2	0.223	6.08	1.4	5.43	243.3	400 ml	200	7.13	Initial reading through flow cell (1/17/43) water is clear, colorless, odorless
	1019	--	--	--	--	--	--	2,800ml	400	7.09	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1024	9.9	0.216	6.08	2.8	4.26	264.4	1,800ml	360	7.09	Start recording stability parameters (1/17/43) water is clear, colorless, odorless
	1029	9.9	0.216	6.09	2.5	4.25	273.3	1,800 ml	360	7.09	
	1034	9.8	0.215	6.09	1.8	4.26	284.7	1,800ml	360	7.09	DS 5-6-19
↓	1039	9.9	0.215	6.08	1.8	4.26	291.1	1,800ml	360	7.09	Parameters stable - Sample

DS 5-6-19

5-6-19	1044	10.1	0.215	6.15	1.7	5.86	308.5	730ml	360	7.09	POST SAMPLE READINGS

Recorded By: 5-6-19 **QA Checked By:** 5/6/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL3mw-246

Date and Time: 5/9/19 Start: 0827 Complete: 0904

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 17.75 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 40 ft. **PSI=** 40 /2 + 10 = 30

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 40 - DTW 17.75 = 22.25

2.) Volume of stagnant water in tubing

Difference of ID-DTW 22.25 x Tf 21.576 = 480.07

3.) Total Volume of stagnant water

Total volume = 622 + 480.07 = 1102.07

2x Total volume = 2,204.14

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/9/19
Water Level Tape: ~~SOLONIST~~ Heron	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 7.6 Sample Method: Bladder Pump

Sample ID / Date / Time: LL3mw-246-190401-GW / 5-9-19 / 0905 **QC Sample ID** LL3mw-246-190401-GWMS0, LL3mw-246-190402-GW LL3mw-246-190403-GW

Analysis Explosives, Perchlorate, TAL metals

Field Observations/Site Conditions During Purging: 70's Sunny water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A 5/9/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/9/19 (Signature and Date)

QA Checked By: [signature] 05/09/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL3mw-246

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 17.75

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	0831	11.7	0.251	6.90	1.79	6.94	129.5	400mL	100	17.86	Initial reading through flow cell CPM=1 D=3.0 R=57.0
	0843	--	--	--	--	--	--	2400	200	17.97	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded CPM=1 D=5.0 R=55.0
	0844	10.6	0.227	5.90	4.07	4.16	239.3	200	200	17.97	Start recording stability parameters
	0849	10.8	0.226	5.89	1.59	4.30	225.2	1000	200	17.97	
	0854	10.8	0.226	5.90	1.39	4.19	225.1	1000	200	17.97	
	0859	10.6	0.227	5.90	1.52	4.16	226.6	1000	200	17.97	5/9/19
	0904	—	—	—	—	—	—	1000	200	17.97	charles confirm stability
5/9/19	0940	11.5	0.227	6.05	1.07	4.39	217.0	600	200	18.00	POST SAMPLE READINGS

Recorded By: _____

QA Checked By: 05/09/19

RVAAP-11 LOAD LINE 4

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL4mw-200

Date and Time: 5/2/19 Start: 1349 Complete: 1449

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 17.98 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 23.91 ft. **PSI=** 23.91 /2 + 10 = 21.95

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 23.91 - DTW 17.98 = 5.93

2.) Volume of stagnant water in tubing

Difference of ID-DTW 5.93 x Tf 9.46 = 56.10

3.) Total Volume of stagnant water

Total volume = 622 + 56.10 = 678.10

2x Total volume = 1356.20

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5/2/19
Water Level Tape: ~~SOLONIST~~ QM 5/2/19 Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	~~420~~ QM 5/2/19 42406	N/A

Total Volume of Water Removed (Liters): 2.4 Sample Method: Bladder Pump

Sample ID / Date / Time: LL4 mw-200-190401-GW/5-2-19/1450 **QC Sample ID** N/A

Analysis Cyanide

Field Observations/Site Conditions During Purging: 72°F Partly cloudy water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/2/19 (Signature and Date)

QA Checked By: [signature] 05/02/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL4MW-206

Initial DTW: 17.98

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/2/19	1400	14.3	1.160	7.22	20.06	8.15	221.9	440mL	40	18.00	Initial reading through flow cell CPM-1 D-3 R-57.0
1424	~~1422~~ 1434	--	--	--	--	--	--	960	40	18.00	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1425	12.9	1.329	6.97	6.10	7.41	232.7	40	40	18.00	Start recording stability parameters
	1430	12.8	1.325	6.96	1.72	6.96	194.6	200	40	18.00	
	1435	12.8	1.319	6.95	1.91	7.46	203.4	200	40	18.00	
	1440	12.7	1.327	6.95	2.37	7.39	207.7	200	40	18.00	
	1445	12.6	1.320	6.95	2.80	7.44	210.7	200	40	18.00	
	1449	—	—	—	—	—	—	160	40	18.00	A. Sprinzel gives approval to sample
											5/2/19
5/2/19	1505	12.5	1.310	6.95	4.67	7.52	192.5	—	40	18.00	POST SAMPLE READINGS

Recorded By: 5/2/19 **QA Checked By:** 05/02/19

RVAAP-12 LOAD LINE 12

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL12mw-183

Date and Time: Start: 5/1/19 0843 Complete: ~~10/16/19~~ 5/1/19 1016

Personnel: Lindsey Mayer

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 11.96 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 30.65 ft. **PSI=** 30.65 /2 + 10 = 25.33

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 30.65 - DTW 11.96 = 18.69

2.) Volume of stagnant water in tubing

Difference of ID-DTW 18.69 x Tf 21.576 = 403.25

3.) Total Volume of stagnant water

Total volume = 622 + 403.25 = 1025.25

2x Total volume = 2050.51

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA0214O	5/1/19
Water Level Tape: ~~SOLONIST~~ 5/1/19 Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 3.6 Sample Method: Bladder Pump

Sample ID / Date / Time: LL12mw-183-FA0401-GW/5-1-19/1017 **QC Sample ID** N/A

Analysis cyanide

Field Observations/Site Conditions During Purging: 62°F, partly cloudy, water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/1/19 (Signature and Date)

QA Checked By: [signature] 05/20/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL12mw-183

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 11.96

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	0847	10.9	0.993	7.59	8.81	5.21	215.7	200mL	50	12.51	Initial reading through flow cell CPM-1 D-2.0 R-58.0
	0925	--	--	--	--	--	--	1900	50	13.31	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded * During stagnant water purge water had orange tint
	0926	11.0	0.991	7.08	40.02	1.56	-22.7	25	25	13.31	Start recording stability parameters CPM-1 D-1.0 R-59.0
	0931	11.9	1.010	7.09	33.67	1.53	-25.3	125	25	13.31	
	0936	12.3	1.000	7.09	29.57	1.62	-28.2	125	25	13.31	
	0941	12.6	1.000	7.09	29.31	1.53	-28.3	125	25	13.30	
	0946	12.5	1.040	7.10	26.52	1.20	-35.4	125	25	13.31	
	0951	12.7	1.039	7.10	29.85	1.25	-33.1	125	25	13.31	After reading cleaned out flow cell with DI water.
	0956	11.5	0.987	7.11	10.05	1.79	-29.0	125	25	13.31	
	1001	12.5	0.982	7.10	9.13	1.62	-30.8	125	25	13.33	
	1006	12.7	0.980	7.11	9.00	1.58	-33.3	125	25	13.33	
	1011	13.0	0.974	7.12	8.96	1.54	-34.6	125	25	13.35	
	1016	-	-	-	-	-	-	125	25	13.35	A-Sprinzel gives approval to sample

5/1/19	1035	14.4	1.070	7.18	3.14	2.93	-43.7	225	25	13.39	POST SAMPLE READINGS

Recorded By: 5/1/19

QA Checked By: 05/01/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: CL12mw-185

Date and Time: 5/1/19 Start: ~~1127~~ 1130 Complete: ~~1235~~ 1234

Personnel: R. Lanrich

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 7.10 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 17.94 ft. **PSI=** 17.94 /2 + 10 = 18.97

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 17.94 - DTW 7.10 = 10.84

2.) Volume of stagnant water in tubing

Difference of ID-DTW 10.84 x Tf 21.576 = 233.88

3.) Total Volume of stagnant water

Total volume = 622 + 233.88 = 855.88

2x Total volume = 1711.76

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03179	5/1/19
Water Level Tape: SOLONIST	34827	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 / 18836	N/A

Total Volume of Water Removed (Liters): 2.605 Sample Method: Bladder Pump

Sample ID / Date / Time: CL12mw-185-190401-GW 5/1/19 1240 **QC Sample ID** N/A

Analysis NITRATE.

Field Observations/Site Conditions During Purging: CLEAR / COLORLESS / ODORLESS

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: [signature] 5/1/19 (Signature and Date)

QA Checked By: [signature] 05/01/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL12mw-185

Initial DTW: 7.10

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	1134	14.4	5.624	6.45	3.6	5.25	254.1	350	50	7.70	Initial reading through flow cell CPM 1 58/2
	1208	--	--	--	--	--	--	1370	~40	9.10	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded CPM 1 59/1
	1209	21.3	5.555	6.44	23.8	1.52	288.7	~25	~25	8.10	Start recording stability parameters CLEAR / COLORLESS / ODORLESS
	1214	21.7	5.546	6.42	8.5	1.55	290.0	100	20	8.12	
	1219	21.8	5.591	6.43	4.6	2.04	292.5	100	20	8.13	
	1224	21.6	5.581	6.44	3.9	2.11	295.8	100	20	8.14	
	1229	21.2	5.568	6.45	4.2	2.13	300.4	100	20	8.14	
	~~13~~ 1234	21.2	5.571	6.45	4.4	2.12	301.0	100	20	8.14	STABLE
	1236	—	—	—	—	—	—	40	20	—	STABILITY CONFIRMED

5/1/19

5/1/19	1325	21.6	5.695	6.44	10.5	3.65	297.7	320	20	8.30	POST SAMPLE READINGS

Recorded By: [signature] 5/1/19

QA Checked By: [signature] 05/01/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL12mw-187

Date and Time: 5/2/19 Start: 1046 Complete: 1147

Personnel: Lindsey Mayer

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 9.30 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 24.5 ft. **PSI=** 24.5 /2 + 10 = 22.25

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 24.5 - DTW 9.30 = 15.2

2.) Volume of stagnant water in tubing

Difference of ID-DTW 15.2 x Tf 21.576 = 327.96

3.) Total Volume of stagnant water

Total volume = 622 + 327.96 = 949.96

2x Total volume = 1899.91

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA62140	5/2/19
Water Level Tape: ~~SOLONIST~~ 2m 5/2/19 Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	4240C	N/A

Total Volume of Water Removed (Liters): 3.350 Sample Method: Bladder Pump

Sample ID / Date / Time: LL12mw-187-190401-GW/5-2-19/1148 **QC Sample ID** N/A

Analysis Nitrate, metals

Field Observations/Site Conditions During Purging: 63°F overcast water is clear, colorless, odorless.

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / (NO) No discharge sample tube in well!

Recorded By: [signature] 5/2/19 (Signature and Date)

QA Checked By: [signature] 05/02/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL12mw-187

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements	Initial DTW: 9.30
3	3	3	1	3	3	Consecutive Readings to Sample	

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/2/19	1056	15.1	15.475	6.60	2.09	6.14	253.0	500mL	50	9.50	Initial reading through flow cell CPM-1 R-57 D-3
	1124	--	--	--	--	--	--	1400	50	9.55	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1125	13.2	15.838	6.42	2.58	1.17	227.8	50	50	9.55	Start recording stability parameters
	1130	13.2	15.802	6.41	1.62	1.11	234.5	250	50	9.55	
	1135	13.3	15.835	6.41	7.33	0.96	239.3	250	50	9.55	
	1140	13.2	15.890	6.40	8.05	1.04	241.6	250	50	9.55	5/2/19
	1147	—	—	—	—	—	—	~~300~~ 350	50	9.55	A. Spinzel gives permission to sample
								am 5/1/19			
											5/2/19
5/2/19	1210	13.8	16.230	6.51	2.91	1.29	225.3	300	50	9.55	POST SAMPLE READINGS

Recorded By: 2. Myn 5/2/19 **QA Checked By:** 05/02/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL12mw - 242

Date and Time: Start: 5/1/19 1130 Complete: ~~15~~ 2m 5/1/19 1404

Personnel: Lindsey Moyer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 8.55 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 23.5 ft. **PSI=** 23.5 /2 + 10 = 21.75

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 23.5 - DTW 8.55 = 14.95

2.) Volume of stagnant water in tubing

Difference of ID-DTW 14.95 x Tf 21.576 = 322.56

3.) Total Volume of stagnant water

Total volume = 622 + 322.56 = 944.56

2x Total volume = 1566.56

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA02140	5/1/19
Water Level Tape: ~~SOLONIST~~ 2m 5/1/19 Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or MP-50	42406	N/A

Total Volume of Water Removed (Liters): 8.15 Sample Method: Bladder Pump

Sample ID / Date / Time: LL12mw-242-190401-GW/5-1-19/1405 **QC Sample ID** N/A

Analysis Nitrate, TAL metals, Filtered metals sample

Field Observations/Site Conditions During Purging: 85°F Sunny, water is slightly cloudy, colorless, odorless call A. Sprinzel, post readings, ~~high~~ 2m 5/1/19 >50NTU, collect filtered sample

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: [signature] 5/1/19 (Signature and Date)

QA Checked By: [signature] 05/01/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL12MW-242

Initial DTW: 8.55

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	1140	18.6	0.885	7.51	71.44	7.06	156.3	500mL	50	8.63	Initial reading through flow cell CPM-1 D-5.0 R-55.0
	1202	--	--	--	--	--	--	1100	50	8.70	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1203	13.7	0.888	7.28	110.70	3.70	76.4	50	50	8.70	Start recording stability parameters
	1208	13.6	0.892	7.29	56.61	3.01	39.0	250	50	8.71	5-1-19
	1213	13.6	0.888	7.27	57.11	2.08	8.8	250	50	8.71	After reading clean, out flow cell w/ DDI water.
	1218	13.5	0.889	7.26	55 55.56 am 5/1/19	1.17	-10.3	250	50	8.71	
	1223	13.8	0.888	7.25	61.32	0.90	-17.7	250	50	8.73	
	1228	13.8	0.888	7.25	89.70	0.76	-26.3	250	50	8.73	2nd 5-1-19
1233	~~1233~~ am 5/1/19 1232	13.8	0.892	7.27	56.83	0.70	-31.6	250	50	8.73	After readings clean, out flow cell w/ DI water
	1238	13.9	0.891	7.25	44.31	1.01	-30.9	250	50	8.73	
	1243	13.6	0.889	7.25	44.72	0.68	-34.1	250	50	8.73	
	1248	14.0	0.885	7.25	26.56	0.55	-39.4	250	50	8.73	
	1253	13.8	0.885	7.25	31.89	0.53	-40.8	250	50	8.73	3rd 5-1-19
	1258	13.8	0.884	7.25	30.15	0.52	-42.1	250	50	8.73	

5/1/19	1425	16.2	0.889	7.39	78.15	2.19	-43.1	250	50	8.75	POST SAMPLE READINGS

Recorded By: 2 May 5/1/19

QA Checked By: 05/01/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL12MW-242

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	1303	14.0	0.882	7.24	34.06	0.52	-39.4	250	50	8.73	
	1308	14.1	0.886	7.24	31.57	0.42	-39.2	250	50	8.73	
	1313	14.9	0.881	7.25	30.88	0.41	-42.6	250	50	8.73	
	1318	14.4	0.889	7.25	26.55	0.40	-45.1	250	50	8.73	
	1323	14.2	0.882	7.26	20.37	0.41	-48.4	250	50	8.73	
	1328	13.6	0.888	7.26	25.66	0.44	-48.0	250	50	8.73	
	1333	13.8	0.885	7.25	19.07	0.47	-47.8	250	50	8.74	
	1338	13.7	0.884	7.25	19.90	0.40	-48.8	250	50	8.74	
	1343	13.7	0.886	7.27	9.89	0.42	-49.1	250	50	8.74	*After reading turbidity went back up.
	1348	13.9	0.888	7.26	27.25	0.46	-48.2	250	50	8.74	
	1353	13.9	0.889	7.26	27.51	0.46	-45.9	250	50	8.74	
	1358	14.0	0.889	7.27	31.42	0.45	-47.0	250	50	8.74	
	1403	14.0	0.892	7.27	29.01	0.42	-47.3	250	50	8.74	
	1404	-	-	-	-	-	-	50	50	8.74	Approval to sample after two hours

5/1/19

5/1/19

5/1/19

Recorded By: 5/1/19

QA Checked By: 05/01/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL12 mw - 245

Date and Time: ~~19~~ 5/1/19 **Start:** 1422 **Complete:** NO SAMPLE ABORTED PURGE DUE TO TIME CONSTRAINTS

Personnel: R Lauruch

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 8.10 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 22.06 ft. **PSI=** 22.06 /2 + 10 = 21.03

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 22.06 - DTW 8.10 = 13.96

2.) Volume of stagnant water in tubing

Difference of ID-DTW 13.96 x Tf 21.56 = 301.20

3.) Total Volume of stagnant water

Total volume = 622 + 301.20 = 923.20

2x Total volume = 1846.40

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03179	5/1/19
Water Level Tape: SOLONIST	34827	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 / 18836	N/A

Total Volume of Water Removed (Liters): 1.870 Sample Method: Bladder Pump

Sample ID / Date / Time: LL12mw-245-190401-GW 5/1/19 * NO SAMPLE. **QC Sample ID**

Analysis EXPLOSIVES, NITRATE, TAL METALS.

Field Observations/Site Conditions During Purging: ENDED PURGE DUE TO TIME LIMITATIONS TURBIDITY WAS HIGH, & FLOW RATE TOO LOW TO FILL BOTTLEWARE BEFORE DEADLINE TO BE OFFSITE.

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: NA

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/1/19 (Signature and Date)

QA Checked By: 05/01/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: CL12mw-245

Initial DTW: 8.10

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	1455	13.5	1.475	6.94	49.4	4.35	258.7	375mL	~75	9.24	Initial reading through flow cell CPM 1 57/3
	1449	--	--	--	--	--	--	1475	~92	10.45	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1450	13.3	1.454	6.92	61.1	2.84	280.2	~20	~20	10.65	Start recording stability parameters CPM 1 59/1
↓	1455										ENDED PURGE DUE TO
											TIME LIMITATIONS
											TURBIDITY + LOW FLOW
					TW						RATE.
					5/1/19						

											POST SAMPLE READINGS

Recorded By: 5/1/19

QA Checked By: 05/01/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL12mw-245

Date and Time: 5/2/19 Start: 0846 Complete: 1620

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 8.12 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 22.06 ft. **PSI=** 22.06 /2 + 10 = 21.03

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 22.06 - DTW 8.12 = 13.94

2.) Volume of stagnant water in tubing

Difference of ID-DTW 13.94 x Tf 21.576 = 300.77

3.) Total Volume of stagnant water

Total volume = 622 + 300.77 = 922.77

2x Total volume = 1845.54

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA0240	5/2/19
Water Level Tape: ~~SOLONIST~~ Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or MP-50	42406	N/A

Total Volume of Water Removed (Liters): ~19 Sample Method: Bladder Pump

Sample ID / Date / Time: LL12mw-245-190401-GW/5/2/19/ 1230 **QC Sample ID** N/A

Analysis TAL metals, Explosives, Nitrate

Field Observations/Site Conditions During Purging: 63°F overcast. water level dropped, pumped well dry. water clear, colorless, odorless

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: [signature] 5/2/19 (Signature and Date)

QA Checked By: [signature] 05/02/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL12mw-245

Initial DTW: 8.12

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/2/19	0851	12.4	1.521	6.98	4.32	5.24	237.6	250mL	50	8.72	Initial reading through flow cell CPM-1 R-58 D-2.0
	0923	--	--	--	--	--	--	1600	50	10.91	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	0925	12.2	1.401	6.95	16.16	1.88	216.1	50	25	10.93	Start recording stability parameters CPM-1 R-59 D-1.0
	0930	13.1	1.404	6.94	14.11	1.93	214.0	125	25	11.05	
	0935	13.3	1.405	6.95	12.15	1.87	212.3	125	25	11.10	
	0940	13.7	1.405	6.96	7.24	1.88	207.4	125	25	11.15	5/2/19
	0945	14.0	1.401	6.96	4.01	1.90	20.22	125	25	11.25	After reading reduced PSI-15, to get 50mL/min
	0950	14.2	1.401	6.97	5.07	1.91	199.4	50	10	11.30	
	0955	14.4	1.401	7.02	8.75	1.92	169.3	50	10	11.35	5/2/19
	1000	14.5	1.401	6.97	9.44	1.93	174.2	50	10	11.41	water level dropping at lowest rate, will purge well dry and sample after recharge
	1020	—	—	—	—	—	—	—	—	Below pump	Sucking Air Approx. Removed 4 gallons
											5/2/19
5/2/19	1253	14.5	1.599	7.37	2.60	3.14	62.4	—	—	20.09	POST SAMPLE READINGS

Recorded By: 2. Mgn 5/2/19 **QA Checked By:** 05/02/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL12mw-247

Date and Time: 5/1/19 Start: 0850 Complete: 1009

Personnel: R. LaRICH

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 4.75 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 18 ft. **PSI=** 18 /2 + 10 = 19

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 18 - DTW 4.75 = 13.25

2.) Volume of stagnant water in tubing

Difference of ID-DTW 13.25 x Tf 21.576 = 285.88

3.) Total Volume of stagnant water

Total volume = 622 + 285.88 = 907.88

2x Total volume = 1815.76

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03179	5/1/19
Water Level Tape: SOLONIST	34827	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 / 18836	N/A

Total Volume of Water Removed (Liters): 3.265 Sample Method: Bladder Pump

Sample ID / Date / Time: LL12mw-247-190401-GW 5/1/19 1015 **QC Sample ID** NA

Analysis NITRATE + TAL METALS

Field Observations/Site Conditions During Purging: CLOUDY / SLIGHT ORANGE TINT / NO ODOR - CLEARED UP DURING PURGE. TURBIDITY WOULD NOT DROP >10 NTU STABLE AROUND 17 NTU. AFTER 1 HOUR OF PURGING.

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: NA

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/1/19 (Signature and Date)

QA Checked By: 05/01/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL12 MW-247

Initial DTW: 4.75

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	0854	10.3	1.063	7.13	41.7	4.55	252.4	~375 mL	~75	5.18	Initial reading through flow cell CPM: 57/3
	0928	--	--	--	--	--	--	1450	~43	5.32	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded CPM: 58/2
	0929	12.7	1.006	7.03	44.4	1.28	220.9	~40	~40	5.31	Start recording stability parameters CPM: 57/1 Cloudy / ORANGE TINT, ODORLESS
	0934	13.0	1.006	7.04	47.0	1.19	209.2	150	30	5.32	
	0939	13.1	1.006	7.03	56.9	1.15	202.9	125	25	5.32	
	0944	12.1	1.010	7.05	20.7	2.63	219.9	200	40	5.42	CPM: 58/2 EMPTIED Flow Cell
	0949	12.1	1.009	7.05	18.0	2.32	215.6	125	25	5.42	CPM: 59/1 TINT + CLOUDINESS decreased up
	0954	12.6	1.007	7.05	16.6	1.57	191.1	100	20	5.42	
	0959	13.1	1.007	7.05	17.8	1.26	174.4	125	25	5.42	
	1004	13.4	~~1.008~~ 1.008	7.06	17.2	1.16	161.6	125	25	5.42	
	1009	13.6	1.008	7.06	17.0	1.12	156.6	125	25	5.42	STABLE
	1013	—	—	—	—	—	—	—	—	—	STABILITY CONFIRMED.

5/1/19	1053	16.7	1.056	7.11	21.2	2.84	201.4	325	~25	5.42	POST SAMPLE READINGS

Recorded By: 5/1/19 **QA Checked By:** 05/01/19

RVAAP-16 FUZE AND BOOSTER QUARRY LANDFILL/PONDS

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FBQmw-171

Date and Time: Start: 4/30/19 1355 Complete: 4/30/19 1418

Personnel: R. Gurich

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 16.18 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 29 ft. **PSI=** 29 /2 + 10 = 24.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 29 - DTW 16.18 = 12.82

2.) Volume of stagnant water in tubing

Difference of ID-DTW 12.82 x Tf 9.46 = 121.27

3.) Total Volume of stagnant water

Total volume = 622 + 121.27 = 743.27

2x Total volume = 1486.55

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA05179	4/30/19
Water Level Tape: SOLONIST	212580	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1052	N/A

Total Volume of Water Removed (Liters): 2.75 Sample Method: Bladder Pump

Sample ID / Date / Time: FBQmw-171-190401-GW 4/30/19 1420 **QC Sample ID** N/A

Analysis CYANIDE, SULFIDE, NITRATE, NITRITE, SULFATE, + ALKALINITY

Field Observations/Site Conditions During Purging: CLEAR / COLORLESS / ODORLESS

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A RL/4/30/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: RL 4/30/19 (Signature and Date)

QA Checked By: [signature] 04/30/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FBQmw-171

Initial DTW: 16.18

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/19	1342	10.2	0.150	5.83	1.2	8.61	256.9	350	~~~80~~ 70	16.28	Initial reading through flow cell CPM 57/3
	1402	--	--	--	--	--	--	1150	~58-60	16.30	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	1403	9.9	0.146	5.76	1.9	7.43	354.4	~50	~50	16.30	Start recording stability parameters CPM 58/2 CLEAR/COLORLESS/ODORLESS
	1408	9.8	0.145	5.76	2.2	7.39	346.1	300	60	16.29	
	1413	9.7	0.143	5.76	1.8	7.37	352.1	250	50	16.30	
	1418	9.7	0.144	5.76	2.1	7.35	357.7	250	50	16.30	STABLE
	1419	—	—	—	—	—	—	50	50	—	STABILITY CONTINUED

Re 4/30/19

Rec 4/30/19

4/30/19	~~1359~~ 1459	9.7	0.143	5.79	0.5	7.83	358.2	350	50	16.21	POST SAMPLE READINGS

Recorded By: 4/30/19

QA Checked By: 04/30/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FBQmw-172

Date and Time: Start: 4/30/19 1300 Complete: 1350

Personnel: Lindsey Myers

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 23.41 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 34 ft. **PSI=** 34 /2 + 10 = 27

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 34 - DTW 23.41 = 10.59

2.) Volume of stagnant water in tubing

Difference of ID-DTW 10.59 x Tf 9.46 = 100.18

3.) Total Volume of stagnant water

Total volume = 622 + 100.18 = 722.18

2x Total volume = 1444.36

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA02140	
Water Level Tape: SOLONIST Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or MP-50	42406	N/A

Total Volume of Water Removed (Liters): 2.75 Sample Method: Bladder Pump

Sample ID / Date / Time: FBQmw-172-190401-GW 4/30/19 1351 **QC Sample ID** FBQmw-172-190402-GW/FBQmw-172-190403-GW

Analysis Cyanide

Field Observations/Site Conditions During Purging: 52°F, clouds water is clear, colorless, odorless.

*check conductivity with D.I water reading 0.0005.

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 4/30/19 (Signature and Date)

QA Checked By: 4/30/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FBQMW-172

Initial DTW: 23.41

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/19	1304	10.6	2.083	6.71	48.82	7.96	205.9	200mL	50	23.51	Initial reading through flow cell CPM-1 R-57 D-30
	1330	--	--	--	--	--	--	1300	50	23.53	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1332	10.0	2.207	6.65	3.48	5.64	169.8	100	50	23.53	Start recording stability parameters
	1337	9.9	2.219	6.63	2.95	5.56	196.9	250	50	23.53	
	1342	9.9	2.224	6.63	2.74	5.54	202.6	250	50	23.53	
	1347	9.8	2.226	6.63	2.38	5.53	205.7	250	50	23.54	
	1350	—	—	—	—	—	—	150	50	23.54	A. Sprinzel gives approval to sample.
4/30/19	1420	10.0	2.215	6.57	1.74	5.97	209.2	250	50	23.57	POST SAMPLE READINGS

Recorded By: [signature] 4/30/19 **QA Checked By:** [signature] 4/30/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FBQ MW-174

Date and Time: Start: 4/30/19 1432 Complete: 1506

Personnel: Lindsey Mayer

Purge Method(s): Bailer ☑ Bladder Pump Other:

Depth To Water: 14.81 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 19.69 ft. **PSI=** 19.69 /2 + 10 = 19.85

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 19.69 - DTW 14.81 = 4.88

2.) Volume of stagnant water in tubing

Difference of ID-DTW 4.88 x Tf 21.576 = 105.29

3.) Total Volume of stagnant water

Total volume = 622 + 105.29 = 727.29

2x Total volume = 1349.29

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	4/30/19
Water Level Tape: ~~SOLONIST~~ Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 3.075 Sample Method: Bladder Pump

Sample ID / Date / Time: FBQ MW-174-190401-GW/4/30/19/1507 **QC Sample ID** N/A

Analysis ~~Explos~~ Explosives, Alkalinity, Sulfate, nitrate, nitrite, Sulfide

Field Observations/Site Conditions During Purging: 64°F, cloudy, rain. water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / (NO) no well cap freeze sample tube

Recorded By: L. Mayer 4/30/19 (Signature and Date)

QA Checked By: [signature] 4/30/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FBQmw-174

Initial DTW: 14.81

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/19	1438	9.2	0.178	5.53	1.53	10.69	202.7	450mL	75	14.89	Initial reading through flow cell CPM-1 R=57 D=3.0
	1451	--	--	--	--	--	--	975	75	14.84	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1453	8.8	0.160	5.18	1.84	10.37	239.6	375	75	14.89	Start recording stability parameters
	1458	8.7	0.159	5.17	1.67	10.29	246.5	375	75	14.89	
	1503	8.7	0.159	5.15	1.24	10.28	254.2	375	75	14.89	
	1506	—	—	—	—	—	—	225	75	14.89	A. Spinzel gives permission to sample
											4/30/19

4/30/19	1530	9.4	0.160	5.19	3.27	10.22	243.5	300	75	14.93	POST SAMPLE READINGS

Recorded By: 4/30/19

QA Checked By: 4/30/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 RL 5/7/19

Well ID Number: FBQmw-175

Date and Time: 5/7/19 Start: ~~0859~~ 0844 Complete: 1108

Personnel: R. LAURICH

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 16.04 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 23 ft. **PSI=** 23 /2 + 10 = 21.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 23 - DTW 16.04 = 6.96

2.) Volume of stagnant water in tubing

Difference of ID-DTW 6.96 x Tf 9.46 = 65.84

3.) Total Volume of stagnant water

Total volume = 622 + 65.84 = 687.84

2x Total volume = 1375.68

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03313	5/7/19
Water Level Tape: ~~SOLONIST~~ RL 5/7/19 HERON	2178-T	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 / 18836	N/A

Total Volume of Water Removed (Liters): 7.385

Sample Method: Bladder Pump FBQmw-175-190403-GW

Sample ID / Date / Time: FBQmw-175-190401-GW 5/7/19 1115 **QC Sample ID** FBQmw-175-190401-GWMSD, FBQmw-175-190402-GW

Analysis SAMPLE + DUPE - SULFIDE, NITRATE, NITRITE, SULFATE, ALKALINITY, HEX CHROME. MSD - HEX CHROME. SPLIT - SULFIDE, NITRATE, NITRITE, SULFATE, ALKALINITY, HEX CHROME

Field Observations/Site Conditions During Purging: SLIGHTLY CLOUDY, COLORLESS, ODORLESS PURGED FOR 2 HRS. TURBIDITY WOULD NOT DROP < 10 NTU. RL 5/7/19

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: RL 5/7/19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FISQmw-175

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 16.04

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	0851	10.2	0.175	6.79	155.74	10.31	212.5	350	50	16.20	Initial reading through flow cell CPM 1 56/4
	0907	--	--	--	--	--	--	1050	~70	16.30	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	0908	9.6	0.102	5.61	37.50	10.21	201.4	~60	~60	16.31	Start recording stability parameters CPM 1 57/3
	0913	9.8	0.101	5.54	34.93	10.18	202.8	325	65	16.32	SLIGHTLY CLOUDY / COLORLESS / ODORLESS
	0918	9.9	0.101	5.53	37.81	10.17	203.7	325	65	16.35	CPM 1 58/2
	0923	10.2	0.101	5.54	38.96	10.18	207.5	~~1250~~ multiple	~~25~~ 50	16.33	
	0928	10.3	0.101	5.56	40.95	10.18	208.3	~~1250~~ multiple	~~25~~ 50	16.33	
	0933	10.4	0.101	5.55	35.04	10.18	212.2	175	35	16.33	
	0938	10.4	0.101	~~5.59~~ 5.59	33.17	10.18	205.5	150	30	16.33	
	0943	10.4	0.101	5.58	30.12	10.14	209.9	150	30	16.33	
	0948	10.1	0.101	5.58	30.28	10.22	217.0	250	50	16.35	CPM 1 57/3
	0953	10.0	0.101	5.58	25.36	10.21	223.0	250	50	16.37	
	0958	10.0	0.102	5.58	24.74	10.21	227.9	250	50	16.38	
	1003	10.1	0.102	5.59	25.12	10.22	230.1	200	40	16.40	
5/7/19	1240	12.8	0.106	5.75	15.17	10.15	248.2	350	50	16.55	POST SAMPLE READINGS

Recorded By: [signature] 5/7/19

QA Checked By: [signature] 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FBQ mw-175

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1008	10.0	0.102	5.59	22.22	10.22	235.1	300	60	16.40	
	1013	10.1	0.102	5.60	21.87	10.23	218.1	200	40	16.41	
	1018	10.1	0.102	5.59	20.22	10.24	227.0	250	50	16.42	CPM: 58/2
	1023	10.1	0.102	5.61	21.59	10.24	233.4	200	40	16.43	
	1028	10.3	0.102	5.61	20.13	10.24	237.2	125	25	16.45	
	1032	10.3	0.102	5.62	19.77	10.25	239.9	175	35	16.47	
	1037	10.3	0.102	5.60	19.58	10.27	242.9	175	35	16.47	
	1042	10.7	0.102	5.62	18.41	10.26	216.5	175	35	16.43	
	1047	10.6	0.103	5.60	18.53	10.23	228.6	200	40	16.44	CPM: 57/3
	1053	10.6	0.103	5.61	17.63	10.26	237.3	250	50	16.47	
	1058	10.5	0.103	5.62	17.06	10.26	241.4	250	50	16.47	
	1103	10.4	0.103	5.61	17.03	10.26	246.1	250	50	16.47	
	1108	10.6	0.103	5.61	16.77	10.28	247.7	250	50	16.47	STABLE - TURBIDITY WOULD NOT DROP ≤10 NTU AFTER 2 HRS PURGING
	1112	—	—	—	—	—	—	200	50	16.47	STABILITY CONFIRMED.
						TOC					
						5/7/19					

Recorded By: 5/7/19

QA Checked By: 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FBQmw-176

Date and Time: 5/7/19 Start: 1303 Complete: 1523

Personnel: R. LAURICH

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 7.08 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 20.19 ft. **PSI=** 20.19 /2 + 10 = 20

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 20.19 - DTW 7.08 = 13.11

2.) Volume of stagnant water in tubing

Difference of ID-DTW 13.11 x Tf 9.46 = 124.02

3.) Total Volume of stagnant water

Total volume = 622 + 124.02 = 746

2x Total volume = 1492

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRODSS or Horiba U-52	FA03313	5/7/19
Water Level Tape: SOLONIST HERON	2178-T	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1052 / 18856	N/A

Total Volume of Water Removed (Liters): 23.55 Sample Method: Bladder Pump

Sample ID / Date / Time: FBQmw-176-190401-GW 5/7/19 **QC Sample ID** N/A

Analysis CYANIDE

Field Observations/Site Conditions During Purging: START - TURBID / ORANGE TINT / ODOR(ES)
TURBIDITY WOULD NOT STABILIZE AFTER 2 HOURS OF PURGING BUT WAS < 50 NTU

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/7/19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FBQmw-176

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 7.08

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1309	10.0	0.125	6.11	396.57	3.55	89.5	375	75	7.08	ODORLESS Initial reading through flow cell TURBID / ORANGE TINT CPM 1 5/4 in std
	1322	--	--	--	--	--	--	1125		7.08	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded CPM 1 55/5
	1323	9.3	0.140	6.23	257.15	0.62	36.9	100	100	7.08	Start recording stability parameters CPM 1 54/6
	1328	9.2	0.140	6.24	176.13	0.60	33.9	600	120	7.10	↓
	1333	9.0	0.140	6.26	158.67	0.47	30.0	600	120	7.10	CPM 2 27/3
	1338	8.8	0.141	6.25	165.08	0.43	28.9	775	155	7.10	CPM 2 26/4
	1343	8.7	0.141	6.25	112.73	0.39	27.6	800	160	7.10	↓
	1348	8.7	0.141	6.26	107.72	0.38	26.2	800	160	7.10	↓
	1353	8.6	0.141	6.26	104.06	0.36	25.3	1000	200	7.10	CPM 2 25/5
	1358	8.7	0.141	6.26	110.85	0.36	24.2	900	180	7.15	CPM 2 26/4
	1403	8.7	0.142	6.25	63.48	0.37	23.9	850	170	7.15	* SHOOK FLOW CELL *
	1408	8.7	0.142	6.26	63.15	0.36	23.2	900	180	7.15	
	1413	8.7	0.142	6.23	33.73	0.35	23.2	850	170	7.15	* SHOOK FLOW CELL *
↓	1418	8.7	0.142	6.25	44.72	0.41	22.0	850	170	7.10	
5/7/19	1537	9.3	0.143	6.31	55.53	Ø 2.41 std	34.8	470	170	7.10	POST SAMPLE READINGS

Recorded By: 5/7/19

QA Checked By: 5/8/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FBQmw-176

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1423	8.7	0.142	6.24	27.93	0.36	21.8	850	170	7.10	
	1428	8.7	0.142	6.26	26.80	0.34	21.2	900	180	7.10	CS 5/8/19
	1433	8.8	0.142	6.25	25.12	0.35	20.7	900	180	7.10	
	1438	9.0	0.143	6.26	21.77	0.34	20.1	850	170	7.10	
	1443	8.9	0.143	6.26	23.46	0.33	~~19.5~~ 19.5	850	170	7.10	
	1448	8.9	0.143	6.25	16.53	0.34	19.5	850	170	7.10	~~ORANGE~~ CLOUDINESS + TINT CLEARING UP
	1453	8.9	0.143	6.25	14.35	0.34	19.2	850	170	7.10	
	1458	8.9	0.143	6.25	13.24	0.33	18.8	900	180	7.10	
	1503	8.9	0.143	6.26	12.47	0.33	18.4	850	170	7.10	S 5/8/19
	1508	8.8	0.143	6.25	13.30	0.34	18.2	850	170	7.10	
	1513	8.8	0.143	6.26	10.55	0.34	18.1	850	170	7.10	
	1518	8.8	0.143	6.26	9.97	0.33	17.8	850	170	7.10	TURBIDITY WOULD NOT STABILIZE
	1523	8.8	0.143	6.25	39.35	0.41	18.0	850	170	7.10	~~STABLE 2 HRS TO GET NTU <10~~
	1531	—	—	—	—	—	—	1360	170	7.10	STABILITY CONFIRMED RL 5/7/19
							RL				
								5/7/19			

Recorded By: RL 5/7/19

QA Checked By: [illegible] 5/8/19

RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** SCLmw-001

Date and Time: 05/08/19 Start: 0850 Complete: 1448

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: Below Top of pump ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 7.0 ft. **PSI=** 7.0 /2 + 10 = 13.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 7.0 - DTW Top of pump = N/A

2.) Volume of stagnant water in tubing

Difference of ID-DTW N/A x Tf 21.576 = N/A

3.) Total Volume of stagnant water

Total volume = 622 + 0 = 622

2x Total volume = 1244.0

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA039160	05/08/19
Water Level Tape: SOLONIST 2000 ft.	Pine 07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): 2.275 L Sample Method: Bladder Pump

Sample ID / Date / Time: SCLmw-001-190401-GW/05/08/19/1015 **QC Sample ID** N/A

Analysis VOCs, SVOCs, LL PAHs, PCBs, Pesticides, Explosives, Cyanide, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, Nitroguanidine, Nitrocellulose, Perchlorate, TAL Metals + Phosphorus

Field Observations/Site Conditions During Purging: Water is clear, colorless with no odor well pad clear. surrounded by straw & minimal grass & brush

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary:

05/08/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: 05/08/19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** SCLmw-0001

Initial DTW: Below Top of Pump

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	
Stabilization Requirements	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/08/19	0904	11.1	1.122	7.30	9.34	6.28	-4.0	3000	25	Top of pump	Initial reading through flow cell 1 CPM/1.0/59.0
	0945	--	--	--	--	--	--	950	25		Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
	0947	11.0	1.048	7.27	7.24	1.87	-32.5	50	25		Start recording stability parameters
	0952	10.9	1.048	7.27	5.56	1.74	-32.3	125	25		water is clear, colorless, with no odor
	0957	10.8	1.048	7.27	5.03	1.63	-32.6	125	25		
	1002	10.9	1.048	7.27	5.57	1.41	-33.4	125	25		
	1007	10.9	1.048	7.27	5.52	1.32	-33.8	125	25		
	1012	11.0	1.048	7.26	5.66	1.25	-35.0	125	25		
	1014	--	--	--	--	--	--	50	25		Quantity purged while awaiting stability confirmation

JM 05/08/19

05/08/19	~~1504~~ 1448	15.9	1.073	7.22	13.19	1.17	-59.6	300	25	Top of pump	POST SAMPLE READINGS

Recorded By: JM 05/08/19 05/08/19 **QA Checked By:** 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** SCLmw-002

Date and Time: Start: 5/8/19 | 0851 Complete: 5/8/19 | 1048

Personnel: Gabby Gromalski + Charles Spurr

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: Below top of pump ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 60 ft. **PSI=** 60 /2 + 10 = 13

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water ~~N/A~~ 5-8-19

Intake Depth (ID) 60 - DTW ~~N/A~~ 0 = 0

2.) Volume of stagnant water in tubing

Difference of ID-DTW ~~60~~ 0 x Tf ~~21.576~~ = 0

3.) Total Volume of stagnant water

Total volume = 622 + 0 = 622

2x Total volume = 1,244 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5-8-2019
Water Level Tape: (SOLONIST)	250795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50 ~~N/A~~ 5-8-19	3308 + 18421	N/A

Total Volume of Water Removed (Liters): 10.225 L Sample Method: Bladder Pump

Sample ID / Date / Time: SCLmw-002-190401-GW | 5-8-19 | 0925 **QC Sample ID** SCLmw-002-190401-GWMSD (Duplicate) | SCLmw-002-19402-GW | SCLmw-002-1 (Split) 3-GW

Analysis VOCs, SVOCs, LLPAHs, PCBs, Pesticides, explosives, cyanide, Sulfide, Nitrate, Nitrite, Sulfate, Alkalinity, Nitroguanidine, Nitrocellulose, Perchlorate, TAL metals

Field Observations/Site Conditions During Purging: water is initially cloudy and orangeish; water became clear, colorless, odorless; 0.45 um and 0.2 um filter used on perchlorate sample

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

~~N/A~~ 5-8-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5-8-19 (Signature and Date)

QA Checked By: [signature] 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** SCLmw0002

Initial DTW: Below top of pump

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-8-19	0852	10.4	1.458	7.22	39.8	6.20	230.4	275 ml	275	TOP OF PUMP	Initial reading through flow cell (1/20/40) water is slightly orange, cloudy, odorless
	0859	--	--	--	--	--	--	1,350 ml	~190		Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded (2/10/40)
	0904	8.8	1.112	6.82	16.65	0.53	-15.3	1,000 ml	200		Start recording stability parameters (3/10/30) water is clear, slightly orange
	0909	8.8	1.104	6.83	10.08	0.46	-33.6	1200 ml	240		(6/3.6/6.4)
	0914	8.7	1.100	6.83	8.89	0.42	-39.5	1,600 ml	320		5-8-19
↓	0919	8.7	1.100	6.83	6.50	0.39	-43.2	1,600 ml	320	↓	Stable- A Sprint confirmed at 0926 (2240ml purged)
5-8-19	1045	9.1	1.084	6.95	1.22	1.90	~~-45.8~~ -10 -43.2 5-8-19	960 ml	320	Top of Pump	POST SAMPLE READINGS

Recorded By: 5-8-19 **QA Checked By:** 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** SCLmw-003

Date and Time: 5/8/19 Start: 0838 Complete: 1009

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 16.75 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 21.5 ft. **PSI=** 21.5 /2 + 10 = 20.75

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 21.5 - DTW 16.75 = 4.75

2.) Volume of stagnant water in tubing

Difference of ID-DTW 4.75 x Tf 21.576 = 102.49

3.) Total Volume of stagnant water

Total volume = 622 + 102.49 = 724.49

2x Total volume = 1448.97

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	5/8/19
Water Level Tape: ~~SOLONIST~~ 5/8/19 Heron	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 2.575 Sample Method: Bladder Pump

Sample ID / Date / Time: SCLmw-003-190401-GW/5-8-19/ **QC Sample ID**

Analysis VOC, SVOCs, LL PAH, PCBs, Pesticides, explosives, cyanide, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, Nitroguanidine, Nitrocellulose, Perchlorate

Field Observations/Site Conditions During Purging: 50°F overcast/cloudy, water is clear colorless, TAL metals, phosphorus odorless.

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/8/19 (Signature and Date)

QA Checked By: [signature] 5/8/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** SCLmw-003

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Stabilization Requirements	3	3	3	1	3	3
Consecutive Readings to Sample						

Initial DTW: 16.75

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/8/19	0850	9.9	1.335	7.09	3.14	9.87	262.3	300mL	25	17.17	Initial reading through flow cell CPM-1 D-1.0 R-590
	0948	--	--	--	--	--	--	1450	25	Below top of pump	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded water below top of pump, during stagnant water p
	0949	10.9	1.526	6.86	2.02	2.38	168.3	25	25		Start recording stability parameters
	0954	10.9	1.517	6.88	3.53	2.67	157.2	125	25		
	0959	11.0	1.512	6.88	2.09	2.89	147.2	125	25		CS 5/8/19
	1004	11.1	1.514	6.88	2.25	2.66	138.1	125	25		
	1009	—	—	—	—	—	—	125	25		Charles confirms stable
											DM
											5/8/19
5/8/19	1433	14.5	1.357	7.20	4.60	2.19	-27.4	300	25	Below top of pump	POST SAMPLE READINGS

Recorded By: [signature] 5/8/19 **QA Checked By:** [signature] 5/8/19

RVAAP-38 NACA TEST AREA

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** NTA mw - 119

Date and Time: Start: 4/30/19 0955 Complete: 4/30/19 1130

Personnel: Charles Spurr

Purge Method(s): Bailer ☐ Bladder Pump ☑ Other: ☐

Depth To Water: 11.19 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 98 ft. **PSI=** 98 /2 + 10 = 59

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 98 - DTW 11.19 = 86.81

2.) Volume of stagnant water in tubing

Difference of ID-DTW 86.81 x Tf 21.576 = 1873

3.) Total Volume of stagnant water

Total volume = 622 + 1873 = 2495

2x Total volume = 4,990

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	4/30/19
Water Level Tape: ~~SOLONIST~~ Heron (cs 4/30/19)	07-0572	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 10.9 Sample Method: Bladder Pump

Sample ID / Date / Time: NTAMW-119-190401-GW 4/30/19 1045 **QC Sample ID** NTAMW-119-190401-GWMSD

Analysis LL-PAH, Explosives, TAL metals +Duplicate & Split for explosives only

Field Observations/Site Conditions During Purging: 57°F; Cloudy; Calm

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 4/30/19 (Signature and Date)

QA Checked By: [signature] 4/30/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** NTA mw-119

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 11.19

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/30/19	1000	10.1	2.53	7.88	8.52	2.19	233	900 mL	300	11.20	Initial reading through flow cell CPM2 24:6 ~60 PSI
-	-	--	--	--	--	--	--	-	-	-	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1020	9.7	1.89	7.19	13.8	0.50	-66.8	5 (L)	250	11.20	Start recording stability parameters CPM2 25:5
	1025	9.8	1.89	7.20	10.76	0.50	-73.3	1.25	250	11.20	
	1030	9.7	1.89	7.22	9.12	0.51	-77.6	1.25	250	11.20	
	1035	9.8	1.89	7.22	8.14	0.50	-80.1	1.25	250	11.20	
	1040	9.8	1.89	7.22	6.26	0.51	-82.5	1.25	250	11.20	
							CM	4/30/19			
4/30/19	1125	10.3	1.91	7.29	3.21	0.77	-85.8	-	250	11.20	POST SAMPLE READINGS

Recorded By: [signature] 4/30/19 **QA Checked By:** [signature] 4/30/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** NTAmw-120

Date and Time: 04/30/19 Start: 0937 Complete: 1111

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 33.13 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 116 ft. **PSI=** 116 /2 + 10 = 68

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 116 - DTW 33.13 = 82.87

2.) Volume of stagnant water in tubing

Difference of ID-DTW 82.87 x Tf 21.576 = 1788

3.) Total Volume of stagnant water

Total volume = 622 + 1788 = 2410 ml

2x Total volume = 4820 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	04/30/19
Water Level Tape: SOLONIST	Pine 2178-T	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): ~~0.75 L~~ 9.35 L gw 04/30/19 Sample Method: Bladder Pump

Sample ID / Date / Time: NTAmw-120-190401-GW/04/30/19/1048 **QC Sample ID** N/A

Analysis SVOC: Hexachlorocyclopentadiene,

Field Observations/Site Conditions During Purging: 48°F, light wind, cloudy. Well pad is clear surrounded by mowed grass.

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary: QA 04/30/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 04/30/19 (Signature and Date)

QA Checked By: 4/30/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** NTAmw-120

Initial DTW: 33.13

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
	3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
04/30/19	0941	9.3	0.899	8.05	4.47	10.72	213.6	300	85	33.13	Initial reading through flow cell 2/2/28
	1003	--	--	--	--	--	--	2875	85	33.15	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1004	10.4	0.928	7.48	3.48	0.79	-27.4	75	85	33.14	Start recording stability parameters
	1009	10.4	0.926	7.48	3.37	1.04	-28.3	475	95	33.14	2/2.0/28.0
	1014	10.4	0.923	7.48	5.89	0.58	-30.8	450	90	33.14	
	1019	10.5	0.922	7.48	4.36	0.48	-33.1	450	90	33.14	
	1024	10.5	0.922	7.48	2.87	0.39	-35.9	450	90	33.14	
	1029	10.6	0.921	7.48	3.05	0.29	-38.1	450	90	33.14	
	1034	10.6	0.921	7.49	2.36	0.20	-39.3	475	90	33.15	
	1039	10.7	0.920	7.49	3.30	0.16	-40.6	450	90	33.15	
	1045	--	--	--	--	--	--	550	90	33.15	Volume purged while awaiting stability confirmation
				gm	04/30/19						
04/30/19	1111	10.8	0.928	7.52	2.89	1.55	-31.8	350	90	33.15	POST SAMPLE READINGS

Recorded By: 04/30/19 **QA Checked By:** 4/30/19

RVAAP-40 LOAD LINE 7

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL7mw-001

Date and Time: Start: 5/1/19 0905 Complete: 5/1/19 1025

Personnel: Charles Spurr

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 19.94 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 28.65 ft. **PSI=** 28.65 /2 + 10 = 24

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 28.65 - DTW 19.94 = 8.71

2.) Volume of stagnant water in tubing

Difference of ID-DTW 8.71 x Tf 21.576 = 187.9

3.) Total Volume of stagnant water

Total volume = 622 + 188 = 810

2x Total volume = 1620 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	CS 5/1/19 ~~2178-T~~ FA03313	5/1/19
Water Level Tape: ~~SOLONIST~~ CS 5/1/19 Heron	2178-T	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): ~~8.55~~ CS 5/1/19 8.85 Sample Method: Bladder Pump

Sample ID / Date / Time: LL7MW-001-190401-GW 5/1/19 1020 **QC Sample ID** N/A

Analysis TAL metals & Cyanide

Field Observations/Site Conditions During Purging: 62°F; Cloudy; calm

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/1/19 (Signature and Date)

QA Checked By: 05/01/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL7mw-001

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 19.94

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	0918	11.9	1.01	6.60	956	4.27	63	~600mL	~50	19.97	Initial reading through flow cell CPM2 29:1 ~24 PSI
-	-	--	--	--	--	--	--	-	-	-	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/1/19	0930	10.5	0.683	6.22	126.2	1.19	9.8	1.8(L)	150	19.98	Start recording stability parameters CPM2 27:3 24 PSI
	0935	10.5	0.680	6.20	69.9	0.75	7.1	0.75	150	19.98	
	0940	10.6	0.681	6.20	28.6	0.61	3.0	0.75	150	19.99	
	0945	10.6	0.669	6.18	18.4	0.54	1.1	0.75	150	19.99	
	0950	10.5	0.691	6.19	14.7	0.53	-0.6	0.75	150	19.99	
	0955	10.6	0.684	6.18	12.7	0.50	-1.7	0.75	150	19.99	
	1000	10.7	0.680	6.20	9.81	0.77	-1.0	0.75	150	19.99	water clear
	1005	10.7	0.684	6.20	9.29	0.50	-3.2	0.75	150	19.99	
	1010	10.8	0.679	6.19	6.78	0.48	-3.5	0.75	150	19.99	
	1015	10.8	0.686	6.19	6.30	0.47	-4.1	0.75	150	19.99	
							CS				
							5/1/19				
5/1/19	1025	10.9	0.688	6.18	5.42	0.38	-5.7	300mL	150	19.99	POST SAMPLE READINGS

Initial water orang in colu

water is clearing up

Recorded By: [signature] 5/1/19 **QA Checked By:** [signature] 05/01/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL7mw-006

Date and Time: Start: 5/1/19 1100 Complete: 5/1/19 1230

Personnel: Charles Spurr

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 9.45 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 28.37 ft. **PSI=** 28.4 /2 + 10 = 24

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 28.37 - DTW 9.45 = 18.92

2.) Volume of stagnant water in tubing

Difference of ID-DTW 18.92 x Tf 21.576 = 408

3.) Total Volume of stagnant water

Total volume = 622 + 408 = 1030

2x Total volume = 2060 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/1/19
Water Level Tape: ~~SOLONIST~~ cs 5/1/19 Heron	2178-T	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): ~~3.975~~ cs 5/1/19 4.275 Sample Method: Bladder Pump

Sample ID / Date / Time: LL7MW-006-190401-GW 5/1/19 1205 **QC Sample ID** N/A

Analysis Explosives

Field Observations/Site Conditions During Purging: 75°F; mostly sunny; breezy w/ gusts

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/1/19 (Signature and Date)

QA Checked By: [signature] 05/01/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL7mw-006

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 9.45

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	1108	12.9	0.313	5.57	10.5	3.20	123	~600mL	75	9.56	Initial reading through flow cell CPM2 29:1 24 PSI
—	—	--	--	--	--	--	--	—	—	—	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/1/19	1135	12.8	0.313	5.48	6.62	2.22	191	2.1(L)	75	9.57	Start recording stability parameters CPM2 29:1 24 PSI
	1140	13.2	0.314	5.47	5.37	2.10	186	0.375	75	9.57	
	1145	13.0	0.315	5.51	4.08	2.20	190	0.375	75	9.57	
	1150	12.6	0.315	5.49	3.78	1.97	194	0.375	75	9.57	
	1155	12.8	0.314	5.48	5.65	1.86	198	0.375	75	9.57	
	1200	12.9	0.315	5.47	6.07	1.85	200	0.375	75	9.57	
							CS 5/1/19				
5/1/19	1220	14.2	0.324	5.54	3.36	2.30	189	~~300~~mL	75	9.57	POST SAMPLE READINGS

Recorded By: 5/1/19

QA Checked By: 05/01/19

RVAAP-43 LOAD LINE 10

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LL10mw-003

Date and Time: 05/01/19 Start: 1029 Complete: 1253

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 17.25 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 26.9 ft. **PSI=** 26.9 /2 + 10 = 23.45

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 26.9 - DTW 17.25 = 9.65

2.) Volume of stagnant water in tubing

Difference of ID-DTW 9.65 x Tf 9.46 = 91.29

3.) Total Volume of stagnant water

Total volume = 622 + 91.29 = 713.29

2x Total volume = 1426.58

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	05/01/19
Water Level Tape: SOLONIST 200 ft.	Pine 07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): 4.25 L Sample Method: Bladder Pump

Sample ID / Date / Time: LL10mw-003-190403-GW / 05/01/19 / 1230 **QC Sample ID** Dup/split: LL10mw-003-190402-GW

Analysis VOCs

Field Observations/Site Conditions During Purging: Water is clear, colorless, with no odor. 78°F, sunny, moderate winds.

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary:

QA 05/01/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: 05/01/19 (Signature and Date)

QA Checked By: 5/1/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** LL10mw-003

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 17.25

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/01/19	1140	18.4	0.502	6.85	3.19	8.42	142.3	300	25	17.25	Initial reading through flow cell 2 CPM/1.0/29.0
	1203	--	--	--	--	--	--	1350	50	17.25	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded Increased PSI
	1208	14.3	0.513	6.78	84.25	7.34	169.2	300	50	17.25	Start recording stability parameters Water is clear, colorless,
	1213	14.4	0.515	6.77	25.13	6.99	173.1	325	50	17.25	with no odor
	1218	14.3	0.512	6.77	27.02	6.78	175.9	325	50	17.25	
	1223	14.4	0.512	6.77	10.17	6.70	178.0	300	50	17.25	Parameters Stable, send confirmation text
	1229	--	--	--	--	--	--	1050	50	17.25	Amount purged while awaiting confirmation
05/01/19	1253	14.7	0.504	6.74	14.04	6.82	177.3	300	50	17.25	POST SAMPLE READINGS

Recorded By: 05/01/19 **QA Checked By:** 5/1/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** LLIDmw-005

Date and Time: 05/01/19 Start: 1355 Complete: 1516

Personnel: Jamie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 12.12 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 25.0 ft. **PSI=** 25.0 /2 + 10 = 22.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 25.0 - DTW 12.12 = 12.88

2.) Volume of stagnant water in tubing

Difference of ID-DTW 12.88 x Tf 9.46 = 121.84

3.) Total Volume of stagnant water

Total volume = 622 + 121.84 = 743.84

2x Total volume = 1487.69

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	05/01/19
Water Level Tape: SOLONIST 200 ft.	Pinc 07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pinc 43635	N/A

Total Volume of Water Removed (Liters): 3.575 L Sample Method: Bladder Pump

Sample ID / Date / Time: LLIDmw-005-190401-GW/05/01/19/1505 **QC Sample ID** N/A

Analysis TAL Metals

Field Observations/Site Conditions During Purging: water is clear with some black particles, colorless, with no odor. 70°F, moderately windy, sunny

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 05/01/19 (Signature and Date)

QA Checked By: 5/1/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL10mw-005

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 12.12

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/01/19	1405	19.2	0.479	6.95	36.01	5.79	166.6	300	50	12.12	Initial reading through flow cell 2 CPM/1.6/29.0
	1429	--	--	--	--	--	--	1300	50	12.12	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1434	16.5	0.450	6.85	20.46	2.10	159.2	225	50	12.12	Start recording stability parameters
	1439	15.9	0.456	6.84	16.77	1.55	161.4	250	50	12.12	water is clear with some black particles, colorless, with no odor
	1444	15.6	0.454	6.84	11.86	1.47	162.9	225	50	12.12	
	1449	15.9	0.455	6.84	10.12	1.44	163.7	250	50	12.12	
	1454	15.9	0.454	6.84	6.41	1.39	163.9	250	50	12.12	stable. send confirmation text.
	1459	--	--	--	--	--	--	475	50	12.12	Amount purged while awaiting confirmation
05/01/19	1516	17.1	0.460	6.85	4.22	4.28	164.6	300	50	12.12	POST SAMPLE READINGS

05/01/19

Recorded By: 05/01/19

QA Checked By: 5/1/19

RVAAP-44 LOAD LINE 11

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: LL11 mw - 005

Date and Time: Start: 5/1/19 1250 Complete: 5/1/19 1430

Personnel: Charles Spurr

Purge Method(s): Bailer ☑ Bladder Pump Other:

Depth To Water: 4.67 ft. from measuring point

Well Diameter: _____ inches **PSI = Intake Depth/2 + 10**

Intake Depth: 13.6 ft. **PSI=** 13.6 /2 + 10 = ~17

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 13.6 - DTW 4.67 = 8.93

2.) Volume of stagnant water in tubing

Difference of ID-DTW 8.93 x Tf 9.46 = 84.5

3.) Total Volume of stagnant water

Total volume = 622 + 84.5 = 706.5

2x Total volume = 1413

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/1/19
Water Level Tape: ~~SOLONIST~~ CS 5/1/19 Heron	2178-T	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): ~~1.675~~ CS 5/1/19 1.975 Sample Method: Bladder Pump

Sample ID / Date / Time: LL11mw-005-190401-GW 5/1/19 1400 **QC Sample ID** N/A

Analysis Cyanide

Field Observations/Site Conditions During Purging: 78°F ; ~~mostly~~ sunny ; windy w/ gusts

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/1/19 (Signature and Date)

QA Checked By: [signature] 05/01/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: LL11mw-005

Initial DTW: 4.67

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/1/19	1315	18.2	0.221	5.44	3.32	8.11	204	600mL	25	4.76	Initial reading through flow cell CPM2 29:1 ~17 PSI
–	–	--	--	--	--	--	--	–	–	–	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/1/19	1347	16.1	0.221	5.42	9.53	7.62	227	1425(L)	25	4.76	Start recording stability parameters CPM2 29:1 ~17 PSI
↓	1352	16.0	0.220	5.41	9.39	7.66	229	0.125	25	4.76	↓ ↓
↓	1357	15.9	0.221	5.40	9.27	7.68	232	0.125	25	4.76	↓ ↓
							CS 5/1/19				

5/1/19	1425	18.8	0.228	5.41	7.67	7.59	206	300mL	25	4.76	POST SAMPLE READINGS

Recorded By: [signature] 5/1/19

QA Checked By: [signature] 05/01/19

RVAAP-49 CENTRAL BURN PITS

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** CBPmw-008

Date and Time: 5/8/19 Start: 1314 Complete: 1401

Personnel: R. Lavoy

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 15.83 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 22.97 ft. **PSI=** 22.97 /2 + 10 = 21.49

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 22.97 - DTW 15.83 = 7.14

2.) Volume of stagnant water in tubing

Difference of ID-DTW 7.14 x Tf 9.46 = 67.54

3.) Total Volume of stagnant water

Total volume = 622 + 67.54 = 689.54

2x Total volume = 1379

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03179	5/8/19
Water Level Tape: SOLONIST Heron	T-2178	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 18836	N/A

Total Volume of Water Removed (Liters): 2.30 Sample Method: Bladder Pump

Sample ID / Date / Time: CBPmw-008-190401-GW 5/8/19 1411 **QC Sample ID** N/A

Analysis CYANIDE.

Field Observations/Site Conditions During Purging: CLEAR/COLORLESS/ODORLESS

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/8/19 (Signature and Date)

QA Checked By: 05/08/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** CISP MW-008

Initial DTW: 15.83

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/8/19	1323	12.9	2.304	7.02	3.8	5.99	196.2	325	25	16.35	Initial reading through flow cell CPM 1 57/3
	1340	--	--	--	--	--	--	1050	~60	17.10	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded CPM 1 56/4
	1341	12.2	2.293	7.01	2.1	4.83	195.1	25	25	17.13	Start recording stability parameters CLEAR / COLORLESS / ODORLESS CPM 1 58/2
	1346	12.7	2.295	7.01	1.9	4.71	198.2	100	20	17.18	CPM 1 59/1
	1351	13.2	2.284	7.01	3.2	4.65	198.8	100	20	17.18	
	1356	13.1	2.287	7.01	2.5	4.89	198.9	100	20	17.23	CPM 1 58/2
	1401	13.0	2.297	6.98	2.6	4.56	188.0	100	20	17.25	STABLE CPM 1 59/1
	1410	—	—	—	—	—	—	180	20	17.30	STABILITY CONFIRMED
5/8/19	1456	16.7	2.316	7.02	2.6	5.54	106.5	320	20	17.40	POST SAMPLE READINGS

RC 5/8/19

Recorded By: RC 5/8/19 **QA Checked By:** 05/08/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** CBPmw-009

Date and Time: 5/9/19 Start: 1425 Complete: 1503

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 9.02 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 61.29 ft. **PSI=** 61.29 /2 + 10 = 40.65

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 61.29 - DTW 9.02 = 52.27

2.) Volume of stagnant water in tubing

Difference of ID-DTW 52.27 x Tf 21.576 = 1,127.78

3.) Total Volume of stagnant water

Total volume = 622 + 1127.78 = 1,749.78

2x Total volume = 3,499.56

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/9/19
Water Level Tape: ~~SOLONIST~~ 5/9/19 Heron	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	4206	N/A

Total Volume of Water Removed (Liters): 7.6 Sample Method: Bladder Pump

Sample ID / Date / Time: CBPmw-009-190401-GW/5-9-19/1505 **QC Sample ID** N/A

Analysis Chronicle

Field Observations/Site Conditions During Purging: 70's cloudy/windy water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/9/19 (Signature and Date)

QA Checked By: 05/09/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** CBPmw-009

Initial DTW: 9.02

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	1429	14.5	0.689	7.05	1.71	5.75	270.2	400mL	100	9.10	Initial reading through flow cell CPM-1 R=58.0 D=2.0
	1447	--	--	--	--	--	--	3600	200	9.13	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded CPM-1 R=54.0 D=6.0
	1448	11.8	0.699	7.28	0.80	0.81	-11.2	200	200	9.13	Start recording stability parameters
	1453	11.8	0.701	7.30	0.83	0.73	-21.3	1000	200	9.13	
	1458	11.7	0.702	7.32	0.68	0.71	-32.4	1000	200	9.14	5/9/19
	1503	11.7	0.701	7.33	0.69	0.72	-30.0	1000	200	9.14	Jed Dun 5/9/19 confirms stability
											5/9/19
5/9/19	1510	12.3	0.703	7.34	0.84	0.98	-3.3	400	200	9.15	POST SAMPLE READINGS

Recorded By: 5/9/19 **QA Checked By:** 05/09/19

RVAAP-66 FACILITY-WIDE GROUNDWATER

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw - 004

Date and Time: 5/8/19 Start: 0826 Complete: 0906

Personnel: R. Launch

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 11.00 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 20.5 ft. **PSI=** 20.5 /2 + 10 = 20.25

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 20.5 - DTW 11.00 = 9.5

2.) Volume of stagnant water in tubing

Difference of ID-DTW 9.5 x Tf 21.576 = 204.97

3.) Total Volume of stagnant water

Total volume = 622 + 204.97 = 826.97

2x Total volume = 1653.94

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FA03179	5/8/19
Water Level Tape: SOLONIST 5/8/19 HERON	T-2178	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 19836	N/A

Total Volume of Water Removed (Liters): 3.375 Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-004-190401-GW 5/8/19 0912 **QC Sample ID** N/A

Analysis TAL METALS + EXPLOSIVES

Field Observations/Site Conditions During Purging: CLEAR / COLORLESS / ODORLESS

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

TL 5/8/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/8/19 (Signature and Date)

QA Checked By: 05/08/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGmw - 004

Initial DTW: 11.00

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/8/19	0830	9.9	0.867	7.23	4.3	~~232.0~~ 6.50	239.6	375	~75mL	11.17	Initial reading through flow cell CPM 1 57 3
	0850	--	--	--	--	--	--	1325	~65	11.20	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded CPM 1 57 2
	0951	9.6	0.911	6.96	2.5	1.85	249.1	50	50	11.20	Start recording stability parameters CLEAR | COLORLESS | ODORLESS
	0856	9.7	0.918	6.95	2.0	1.59	249.9	325	65	11.18	
	0901	9.8	0.921	6.95	1.9	1.45	250.7	325	65	11.18	
	0906	9.8	0.924	6.95	2.1	1.46	251.0	325	65	11.18	STABLE
	0911	—	—	—	—	—	—	325	65	11.18	STABILITY CONFIRMED
							7L				
							5/8/19				
5/8/19	0935	10.5	0.936	7.01	1.8	2.16	275.6	325	65	11.18	POST SAMPLE READINGS

Recorded By: [signature] 5/8/19 **QA Checked By:** [signature] 05/08/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw-007

Date and Time: 04/30/19 Start: 1210 Complete: 1430

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 24.43 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 29.9 ft. **PSI=** 29.9 /2 + 10 = 24.95

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 29.9 - DTW 24.43 = 5.47

2.) Volume of stagnant water in tubing

Difference of ID-DTW 5.47 x Tf 9.46 = 51.75

3.) Total Volume of stagnant water

Total volume = 622 + 51.75 = 673.75

2x Total volume = 1347.5 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA039666	04/30/19
Water Level Tape: SOLONIST	Pine 2178-T	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): 2.8 L Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-007-190401-GW/04/30/19/1335 **QC Sample ID** N/A

Analysis Explosives(6)(A), TAL Metals(7)(C)

Field Observations/Site Conditions During Purging: 56°F, light wind, cloudy. Well pad clear, surrounded by mud and short grass.

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary:

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: 04/30/19 (Signature and Date)

QA Checked By: 4/30/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGmw-007

Initial DTW: 24.43

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
04/30/19	1220	11.8	1.245	7.19	36.90	7.96	148.6	300	25	24.49	Initial reading through flow cell CPM 1/2.0/58.0
	1258	--	--	--	--	--	--	1050	25	24.52	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1259	11.7	1.194	7.21	12.48	2.36	110.5	25	25	24.52	Start recording stability parameters CPM 1/2.0/58.0
	1304	11.8	1.192	7.21	15.69	2.44	107.3	130	25	24.52	
	1309	11.8	1.190	7.21	29.58	2.21	104.9	140	25	24.52	
	1314	11.7	1.189	7.21	8.27	2.11	101.9	140	25	24.52	
	1319	11.7	1.210	7.21	6.45	1.67	99.2	130	25	24.52	
	1324	11.7	1.209	7.21	7.60	1.65	95.9	130	25	24.52	
	1329	11.6	1.208	7.21	6.51	1.82	92.2	130	25	24.52	
	1334	--	--	--	--	--	--	225	25	24.52	Volume purged while awaiting stability confirmation
04/30/19	1430	10.6	1.206	7.24	5.90	4.00	92.5	400	25	24.52	POST SAMPLE READINGS

Recorded By: 04/30/19 **QA Checked By:** 4/30/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID Number: FWGmw-011

Date and Time: Start: 5/7/19 1315 Complete: 5/7/19 1535

Personnel: Charles Spurr

Purge Method(s): ☐ Bailer ☑ Bladder Pump ☐ Other:

Depth To Water: 1.60 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 14 ft. **PSI=** 14 /2 + 10 = 17

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 14 - DTW 1.60 = 12.4

2.) Volume of stagnant water in tubing

Difference of ID-DTW 12.4 x Tf 21.576 = 268

3.) Total Volume of stagnant water

Total volume = 622 + 268 = 890

2x Total volume = 1780 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	5/7/19
Water Level Tape: SOLONIST	212380	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 37.5 Sample Method: Bladder Pump

Sample ID / Date / Time: FWGMW-011-190401-GW 5/7/19 1520 **QC Sample ID** N/A

Analysis Explosives + TAL metals

Field Observations/Site Conditions During Purging: 60°F; Cloudy; calm Turbidity > 10 but stable after 2 hours. Receive approval to sample

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: Charles Spurr 5/7/19 (Signature and Date)

QA Checked By: [signature] 5/8/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGmw-011

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 1.60

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1316	10.4	0.398	7.16	368	3.11	-42	300 mL	300	1.73	Initial reading through flow cell CPM2/3/27 ~17 PSI
–	–	--	--	--	--	--	--	–	–	–	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded
5/7/19	1328	10.2	0.396	6.98	96.3	1.24	-45	3.9(L)	300	1.80	Start recording stability parameters CPM2/3/27 ~17 PSI
	1333	9.9	0.400	7.13	82.5	0.90	-64	1.5	300	1.80	
	1338	9.8	0.400	7.17	67.2	0.83	-70	1.5	300	1.80	
	1343	9.8	0.401	7.18	64.6	0.96	-71	1.5	300	1.80	
	1348	9.7	0.403	7.17	58.7	0.65	-72	1.5	300	1.80	
	1353	9.7	0.402	7.16	52.6	0.98	-73	1.5	300	1.80	
	1358	9.6	0.406	7.17	48.9	0.75	-74	1.5	300	1.80	
	1403	9.6	0.406	7.17	34.6	0.69	-75	1.5	300	1.80	
	1408	9.7	0.404	7.18	29.8	0.76	-75	1.5	300	1.80	
	1413	9.7	0.404	7.18	26.7	0.79	-76	1.5	300	1.80	
	1418	9.6	0.406	7.19	26.3	1.02	-75	1.5	300	1.80	
	1423	9.6	0.406	7.19	26.4	0.80	-77	1.5	300	1.80	

Turbidity jumped very high after first reading Water is a dark orange color purging additional volume to remove fouling

						CS 5/7/19					POST SAMPLE READINGS

Recorded By: [signature] 5/7/19 **QA Checked By:** [signature] 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FWGmw-011

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/7/19	1428	9.8	0.407	7.18	21.2	0.96	-78	1.5	300	1.80	CPM 2/3/27 ~17 PSI
	1433	9.7	0.407	7.20	18.8	0.52	-82	1.5	300	1.80	
	1438	9.7	0.406	7.20	17.7	0.61	-82	1.5	300	1.80	
	1443	9.9	0.406	7.19	16.3	0.57	-87	1.5	300	1.80	
	1448	9.8	0.410	7.20	16.1	0.59	-83	1.5	300	1.80	
	1453	9.7	0.408	7.21	15.8	0.56	-81	1.5	300	1.80	
	1458	9.7	0.409	7.21	15.2	0.49	-81	1.5	300	1.80	
	1503	9.6	0.410	7.21	14.8	0.95	-81	1.5	300	1.80	
	1508	9.6	0.410	7.21	15.3	1.05	-82	1.5	300	1.80	
	1513	9.7	0.407	7.20	14.7	0.99	-75	1.5	300	1.80	
	1518	9.7	0.407	7.20	14.4	1.04	-78	1.5	300	1.80	
							CS				
								5/7/19			
5/7/19	1530	9.7	0.406	7.18	15.6	1.05	-66	600 mL	300	1.80	Post Sample Reading

Recorded By: 5/7/19

QA Checked By: 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw012

Date and Time: Start: 5-7-19 / 1433 Complete: 5-7-19 / 1520

Personnel: Gabby Gromofsky

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: Approx. 0.25 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 37 ft. **PSI=** 37 /2 + 10 = 28.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 37 - DTW 0.25 = 36.75

2.) Volume of stagnant water in tubing

Difference of ID-DTW 36.75 x Tf ~~0~~ 21.576 = 792.9

3.) Total Volume of stagnant water

Total volume = 622 + 792.9 = 1,414.9

2x Total volume = 2,829 ml

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5-7-19
Water Level Tape: SOLONIST (Heron)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	1930	N/A

Total Volume of Water Removed (Liters): 14.95 L Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-012-190401-GW / 5-7-19 / 1515 **QC Sample ID** N/A

Analysis Explosives, TAL Metals

Field Observations/Site Conditions During Purging: water is very turbid, reddish orange, odorless (initially); water becomes clear.

Sampling Procedure Followed (YES) / NO If no, why was deviation necessary:

5-7-19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5-7-19 (Signature and Date)

QA Checked By: 5/8/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FWGMW012

Initial DTW: Approx. 0.25'

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5-7-19	1434	9.8	0.274	6.34	34.8	0.98	177.8	500	500	~~Approx.~~ 0.80	Initial reading through flow cell (1/20/40) water is redish orange, odorless
	1438	--	--	--	--	--	--	3,000	750	1.12	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded (1/10/50) water is clear orange red
	1443	9.8	0.266	6.20	18.0	0.82	140.0	2,300	460	1.15	Start recording stability parameters water is slightly red
	1448	10.2	0.259	6.20	10.3	0.79	130.6	2,350	470	1.15	(1/8/52) water is more clear
	1453	9.9	0.255	6.15	7.3	0.77	123.1	2,050	410	1.10	(1/5/55) water is clear, colorless, odorless
	1458	10.2	0.255	6.13	5.9	0.76	119.0	1,950	390	0.97	
↓	1503	10.1	0.254	6.12	5.5	0.74	116.3	~~1,950~~ 2,000 ml	400	0.95	Stable - continue w/ A. Sprinzl
				MM 5-7-19							

5-7-19	1520	10.0	0.255	6.19	4.3	1.96	152.9	8000 ml	400 ml	1.02	POST SAMPLE READINGS

Recorded By: [signature] 5-7-19

QA Checked By: [signature] 5/8/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw-015

Date and Time: 05/02/19 Start: 1436 Complete: N/A

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 2.52 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 18.5 ft. **PSI=** 18.5 /2 + 10 = 19.25

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 18.5 - DTW 2.52 = 15.98

2.) Volume of stagnant water in tubing

Difference of ID-DTW 15.98 x Tf 21.576 = 344.78

3.) Total Volume of stagnant water

Total volume = 622 + 344.78 = 966.78

2x Total volume = ~~1932~~ gm 05/02/19 1933.57

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	05/02/19
Water Level Tape: SOLONIST 200 ft.	Pine 07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): ~~gm 05/02/19 N/A~~ 1300 L gm 05/02/19

Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-015-190401-GW/~~05/02/19~~/N/A **QC Sample ID** N/A

Analysis N/A

Field Observations/Site Conditions During Purging: Higher turbidity then expected.

Sampling Procedure Followed: YES / (NO) If no, why was deviation necessary: gm 05/02/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: 05/02/19 (Signature and Date)

QA Checked By: 5/2/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGmw-015

Initial DTW: 2.52

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/02/19	1441	16.7	2.979	6.96	6.51	3.94	137.7	3000	50	3.15	Initial reading through flow cell
		--	--	--	--	--	--				Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
											Start recording stability parameters
Due to time constraints the decision to end purging was made due to turbidity >60 NTU, additional 1000 mL purged											

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw-015

Date and Time: 5/8/19 Start: ~~0959~~ 1004 (NLS 5/8/19) Complete: 1040

Personnel: R. Laurich

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 4.23 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 18.5 ft. **PSI=** 18.5 /2 + 10 = 19.25

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) **Length of Tubing w/ stagnant water**
Intake Depth (ID) 18.5 - DTW 4.23 = 14.27

2.) **Volume of stagnant water in tubing**
Difference of ID-DTW 14.27 x Tf 21.576 = 307.88

3.) **Total Volume of stagnant water**
Total volume = 622 + 307.88 = 929.88

2x Total volume = 1859.77

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: YSI PRO DSS or Horiba U-52	FN03179	5/8/19
Water Level Tape: SOLONIST (NLS 5/8/19) HERON	T-2178	N/A
Other: MP-10 with QED Well Wizzard or MP-50	1032 18836	N/A

Total Volume of Water Removed (Liters): 2.82 Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-015-190401-GW 5/8/19 1055 **QC Sample ID** N/A

Analysis EXPLOSIVES + TAL METALS

Field Observations/Site Conditions During Purging: CLEAR / COLORLESS / ODORLESS TL 5/8/19

Sampling Procedure Followed: YES / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: 5/8/19 (Signature and Date)

QA Checked By: 05/08/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGMW-015

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 4.23

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/8/19	1009	11.4	3.252	6.96	1.9	5.52	266.4	375	75	4.80	Initial reading through flow cell CLEAR / COLORLESS / ODORLESS CPM 1 57/3
	1024	--	--	--	--	--	--	1500	100	6.25	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1025	11.0	3.253	6.89	2.4	1.61	270.1	25	25	6.23	Start recording stability parameters CPM 1 59/1
	1030	11.5	3.249	6.89	2.7	1.55	269.9	125	25	6.20	CPM 1 58/2
	1035	11.7	3.256	6.88	1.7	1.41	269.7	225	45	6.21	↓
↓	1040	11.4	3.264	6.89	2.1	1.40	269.2	225	45	6.25	CPM 1 59/1 STABLE
						5/8/19					

5/8/19	1202	13.6	3.324	6.94	2.2	3.83	226.0	345	45	6.20	POST SAMPLE READINGS

Recorded By: 5/8/19 **QA Checked By:** 05/08/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGMW-016

Date and Time: Start: 4/29/19 1426 Complete: 1519

Personnel: Lindsey Mayer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 15.87 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 59.5 ft. **PSI=** 59.5 /2 + 10 = 39.75

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 59.5 - DTW 15.87 = 43.63

2.) Volume of stagnant water in tubing

Difference of ID-DTW 43.63 x Tf 21.576 = 941.36

3.) Total Volume of stagnant water

Total volume = 622 + 941.36 = 1563.36

2x Total volume = 3126.72

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA02140	4/29/19
Water Level Tape: ~~SOLONIST~~ Heron (4/29/19)	07-0573	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 6.16 Sample Method: Bladder Pump

Sample ID / Date / Time: FWGMW-016-190401-GW/4/29/19/1520 **QC Sample ID** N/A

Analysis Explosives / Tal metals

Field Observations/Site Conditions During Purging: 61°F, cloudy water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 4/29/19 (Signature and Date)

QA Checked By: Amanda Spring 04/29/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGMW-016

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 15.87

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
4/29/19	1429	11.9	1.245	7.30	0.03	5.10	176.0	330mL	110	15 ~~15.92~~ 15.92 4/29/19	Initial reading through flow cell CPM-1 D=5.0 R=55.0
	1458	--	--	--	--	--	--	3190	110	15.93	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1503	12.1	1.254	7.14	6.10	0.84	-40.7	550	110	15.93	Start recording stability parameters
	1508	12.2	1.257	7.14	0.31	0.82	-42.2	550	110	15.93	
	1513	12.0	1.252	7.14	0.09	0.68	-43.5	550	110	15.93	
	1519	—	—	—	—	—	—	660	110	15.93	1517 A.Sprinzel gives approval to sample
											4/29/19

4/29/19	~~1537~~ 1537 4/29/19	12.3	1.260	7.15	0.04	0.98	-30.2	330	110	15.93	POST SAMPLE READINGS

Recorded By: 4/29/19 **QA Checked By:** Amanda Sprinzl 04/29/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FNGmw-0018

Date and Time: 05/09/19 Start: 0830 Complete: 0935

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 20.90 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 141.0 ft. **PSI=** ~~80.5~~ 141.0 /2 + 10 = 80.5

gm 05/08/19

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 141.0 - DTW 20.90 = 120.1

2.) Volume of stagnant water in tubing

Difference of ID-DTW 120.1 x Tf 21.576 =

3.) Total Volume of stagnant water

Total volume = 622 + 2591.28 = 3213.28

2x Total volume = 6426.56

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	05/09/19
Water Level Tape: SOLONIST 300 ft.	34827	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	MP10-3308, QED 18421	N/A

Total Volume of Water Removed (Liters): 14.25 L Sample Method: Bladder Pump

Sample ID / Date / Time: FNGmw-0018-MP0401-GW/05/09/19/0925 **QC Sample ID** N/A

Analysis VOCs, Cyanide, TAL Metals

Field Observations/Site Conditions During Purging: Water is clear, colorless, with a slight organic odor. Well pad clear.

Sampling Procedure Followed: (YES) NO If no, why was deviation necessary:

gm 05/09/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) NO

Recorded By: 05/09/19 (Signature and Date)

QA Checked By: 5-9-19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FNGMW-018

	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Stabilization Requirements	3	3	3	1	3	3
Consecutive Readings to Sample						

Initial DTW: 20.90

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/09/19	0832	11.6	0.815	7.24	8.33	1.45	-79.9	500	250	21.69	Initial reading through flow cell 2 CPM/2.0/28.0
	0854	--	--	--	--	--	--	6000	250	21.69	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	0857	11.5	0.811	7.28	1.89	1.25	-65.7	750	250	21.60	Start recording stability parameters
	0902	11.6	0.810	7.29	1.82	0.91	-58.7	1250	250	21.60	Water is clear, colorless, with a slight organic odor
	0907	11.6	0.810	7.29	3.53	0.94	-59.8	1250	250	21.60	
	0912	11.6	0.812	7.29	8.76	0.81	-60.9	1250	250	21.60	Stable
	0923	--	--	--	--	--	--	2750	250	21.60	Stability confirmed
05/09/19	0935	11.8	0.813	7.30	4.15	1.30	-55.3	5000	250	21.62	POST SAMPLE READINGS

05/09/19

Recorded By: 05/09/19

QA Checked By:

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw - 019

Date and Time: Start: 5/2/19 0955 Complete: 5/2/19 1100

Personnel: Charles Spurr

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 114.50 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 230 ft. **PSI=** 230 /2 + 10 = 125

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 230 - DTW 114.50 = 115.5

2.) Volume of stagnant water in tubing

Difference of ID-DTW 115.5 x Tf 21.576 = 2492

3.) Total Volume of stagnant water

Total volume = 622 + 2492 = 3114

2x Total volume = 6228

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5/2/19
Water Level Tape: SOLONIST	250795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 9.6 Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-019-190401-GW 5/2/19 1035 **QC Sample ID** N/A

Analysis Nitrocellulose & Nitroguanidine

Field Observations/Site Conditions During Purging: 63°F; Cloudy; calm

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: [signature] 5/2/19 (Signature and Date)

QA Checked By: [signature] 05/02/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FWGmw - 019

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 114.50

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/2/19	1000	11.6	0.835	7.34	1.6	3.62	-54	1.5(L)	300	114.75	Initial reading through flow cell CPM1/35/25 max pressure of pump 110 PSI
—	—	--	--	--	--	--	--	—	—	—	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/2/19	1021	10.9	0.836	7.09	1.2	1.02	-73	6.3(L)	300	114.75	Start recording stability parameters CPM1/35/25
↓	1026	10.8	0.835	7.09	1.3	0.98	-69	1.5	300	114.75	↓ ↓
↓	1031	11.0	0.834	7.09	1.2	0.97	-66	1.5	300	114.75	↓ ↓
								CS 5/2/19			
5/2/19	1046	11.8	0.847	7.19	0.7	2.70	92.5	300 mL	300	114.75	POST SAMPLE READINGS

Recorded By: [signature] 5/2/19

QA Checked By: [signature] 05/02/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGMW-020

Date and Time: Start: 5/13/19 0935 Complete: 5/13/19 1030

Personnel: Charles Spurr

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 21.47 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 40 ft. **PSI=** 40 /2 + 10 = 30

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 40 - DTW 21.47 = 18.53

2.) Volume of stagnant water in tubing

Difference of ID-DTW 18.53 x Tf 21.576 = 400

3.) Total Volume of stagnant water

Total volume = 622 + 400 = 1022

2x Total volume = 2044 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	F103179	5/13/19
Water Level Tape: SOLONIST	212380	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	1032 & 18836	N/A

Total Volume of Water Removed (Liters): 3.7 Sample Method: Bladder Pump

Sample ID / Date / Time: FWGMW-020-190401-GW 5/13/19 1015 **QC Sample ID** N/A

Analysis VOCs, CYANIDE, + TAL METALS

Field Observations/Site Conditions During Purging: 48°F ; Cloudy; calm ; S.S. portable bladder pump used in well. Set on 5/9/19

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected ~~YES / NO~~ cc 5/13/19 N/A

Recorded By: Charles Spurr 5/13/19 (Signature and Date)

QA Checked By: [signature] 5/20/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGmw-020

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements	Initial DTW: 21.47
3	3	3	1	3	3	Consecutive Readings to Sample	

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/13/19	0939	10.2	0.934	7.14	12.7	7.74	229	300 mL	100	21.73	Initial reading through flow cell CPM2/2/28 30 PSI
—	—	--	--	--	--	--	--	—	—	—	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/13/19	1000	10.1	0.902	7.08	8.9	4.88	180	2.4(L)	100	21.73	Start recording stability parameters CPM2/2/28 30 PSI
↓	1005	10.1	0.902	7.08	9.1	4.79	175	0.5	100	21.73	↓ ↓
↓	1010	10.1	0.901	7.08	8.8	4.67	172	0.5	100	21.73	↓ ↓
5/13/19	1028	10.2	0.911	7.12	7.6	5.79	204	300 mL	100	21.73	POST SAMPLE READINGS

CS 5/13/19

Recorded By: [signature] 5/13/19 **QA Checked By:** [signature] 5/14/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw-021

Date and Time: 5/9/19 Start: 1012 Complete: 1119

Personnel: Lindsey Moyer

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 18.18 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 40 ft. **PSI=** 40 /2 + 10 = 30

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 40 - DTW 18.18 = 21.82

2.) Volume of stagnant water in tubing

Difference of ID-DTW 21.82 x Tf 21.576 = 470.79

3.) Total Volume of stagnant water

Total volume = 622 + 470.79 = 1092.79

2x Total volume = 2185.58

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03313	5/9/19
Water Level Tape: ~~SOLONIST~~ Heron (2m 5/9/19)	07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	42406	N/A

Total Volume of Water Removed (Liters): 13.4 Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-021-190401-GW/5-9-19/1120 **QC Sample ID** FWGmw-021-190401-GWMSD/FWGmw-021-190402FB FWGmw-021-190403-GW

Analysis Explosives, TAL metals

Field Observations/Site Conditions During Purging: 72°F Sunny, 1020 water became turbid. Sampling water is clear, colorless, odorless

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A /2m 5/9/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/9/19 (Signature and Date)

QA Checked By: 05/09/19 (Signature and Date)

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FWGMW-021

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 18.18

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/9/19	1016	14.1	0.218	6.57	6.48	8.98	198.1	400mL	100	18.40	Initial reading through flow cell CPM=1 D=2.0 R=58.0
	1036	--	--	--	--	--	--	4000	200	18.55	Purged 2x's volume of stagnant water in pump and tubing - stability parameters not recorded CPM=1 D=5.0
	1037	13.0	0.229	6.23	44.07	4.44	207.9	200	200	18.55	Start recording stability parameters water was turbid, waited longer to start read R=550
	1042	11.6	0.226	6.09	32.09	4.15	193.3	1000	200	18.55	
	1047	11.7	0.226	6.04	24.17	4.09	203.7	1000	200	18.55	
	1052	11.7	0.226	6.03	11.19	4.09	210.7	1000	200	18.55	
	1057	11.7	0.226	6.02	15.14	4.12	214.1	1000	200	18.56	
	1102	11.7	0.225	6.02	10.50	4.04	217.1	1000	200	18.57	
	1107	11.8	0.226	6.02	8.63	3.99	219.3	1000	200	18.57	
	1112	11.7	0.226	6.01	6.64	3.95	222.1	1000	200	18.57	5/9/19
	1119	—	—	—	—	—	—	1400	200	18.57	R. Lavrich approves sampling parameters stable
											5/9/19
5/9/19	1201	12.9	0.229	6.20	4.12	4.04	223.5	400	200	18.60	POST SAMPLE READINGS

Recorded By: 5/9/19

QA Checked By: 05/09/19

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WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw-022

Date and Time: Start: 5/2/19 0835 Complete: 5/2/19 0935

Personnel: Charles Spurr

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 113.52 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 160 ft. **PSI=** 160 /2 + 10 = 90

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 160 - DTW 113.52 = 46.48

2.) Volume of stagnant water in tubing

Difference of ID-DTW 46.48 x Tf 21.576 = 1003

3.) Total Volume of stagnant water

Total volume = 622 + 1003 = 1625

2x Total volume = 3250 mL

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5/2/19
Water Level Tape: SOLONIST	250795	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	3308	N/A

Total Volume of Water Removed (Liters): 11.4

Sample Method: Bladder Pump

Sample ID / Date / Time: FWGMW-022-190401-GW 5/2/19 0915 **QC Sample ID** N/A

Analysis Nitrocellulose & Nitroguanidine

Field Observations/Site Conditions During Purging: 60°F; Cloudy; Calm

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary: N/A

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 5/2/19 (Signature and Date)

QA Checked By: 05/02/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** FWGmw-022

Initial DTW: 113.57

Stabilization Requirements	+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV
Consecutive Readings to Sample	3	3	3	1	3	3

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/2/19	0840	11.6	0.816	7.25	6.2	4.47	242	1200 mL	300	113.68	Initial reading through flow cell CPM 1 / 35 / 25 90 PSI
-	-	--	--	--	--	--	--	-	-	-	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
5/2/19	0848	10.9	0.784	7.03	27.6	1.63	93	3.6(L)	300	113.68	Start recording stability parameters CPM 1 / 35 / 25 Air bubbles around sensors
	0853	10.8	0.783	7.04	12.6	1.21	56	1.5	300	113.68	water clear in YS
	0858	10.8	0.782	7.04	9.5	1.11	39	1.5	300	113.68	bubbles dissipated
	0903	10.9	0.781	7.04	9.1	1.06	27	1.5	300	113.68	
	0908	10.9	0.782	7.04	7.5	1.05	18	1.5	300	113.68	
	0913	10.9	0.781	7.04	9.6	1.04	12	1.5	300	113.68	
							CS 5/2/19				
5/2/19	0927	11.5	0.788	7.17	5.9	2.57	165	300 mL	300	113.69	POST SAMPLE READINGS

Recorded By: 5/2/19 **QA Checked By:** 05/02/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FWGmw-023

Date and Time: 05/01/19 Start: 0910 Complete: 1041

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other:

Depth To Water: 115.51 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 208.5 ft. **PSI=** 208.5 /2 + 10 = 114

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 208.5 - DTW 115.51 = 92.99

2.) Volume of stagnant water in tubing

Difference of ID-DTW 92.99 x Tf 21.576 = 2006.35

3.) Total Volume of stagnant water

Total volume = 622 + 2006.35 = 2628.35

2x Total volume = 5256.70

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA039466	05/01/19
Water Level Tape: SOLONIST 200 ft.	Pine 07-0572	N/A
Other: MP-10 with QED Well Wizzard or (MP-50)	Pine 43635	N/A

Total Volume of Water Removed (Liters): 8.43 L Sample Method: Bladder Pump

Sample ID / Date / Time: FWGmw-023-190401-GW/05/01/19/1009 **QC Sample ID** N/A

Analysis Nitroguanidine (6)(A), Nitrocellulose (12)(A)

Field Observations/Site Conditions During Purging: 65°F, partly sunny, light wind. Well pad clear, surrounded by med. length grass. Water is clear, colorless, with NO odor.

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

05/01/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 05/01/19 (Signature and Date)

QA Checked By: 5/1/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FWGmw-023

Initial DTW: 115.51

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/01/19	0918	11.5	0.716	7.55	1.71	10.37	221.5	400	200	115.51	Initial reading through flow cell 1 CPM/20.0/40.0
	0953	--	--	--	--	--	--	5200	145	115.54	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded 1 CPM/18.0/38
	0955	11.5	0.702	7.09	1.68	0.60	-22.6	425	145	115.54	Start recording stability parameters
	1000	11.5	0.702	7.09	1.72	0.55	-21.4	725	145	115.54	Water is clear, colorless, with no odor
	1005	11.7	0.701	7.09	1.69	0.53	-21.9	725	145	115.54	Parameters stable, send confirmation text to A. Sprinzl
	1008	--	--	--	--	--	--	575	145	115.54	Amount purged while awaiting confirmation
05/01/19	1041	13.6	0.709	7.12	1.49	2.03	-19.1	380	145	115.54	POST SAMPLE READINGS

05/01/19

5/1/19 42.1

Recorded By: 05/01/19

QA Checked By: 5/1/19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** FNGmw-024

Date and Time: 05/09/19 Start: 1231 Complete: 1347

Personnel: Jackie Mitchell

Purge Method(s): Bailer Bladder Pump Other: N/A

Depth To Water: 14.03 ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: 31.0 ft. **PSI=** 31.0 /2 + 10 = 25.5

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) Length of Tubing w/ stagnant water

Intake Depth (ID) 31.0 - DTW 14.03 = 16.97

2.) Volume of stagnant water in tubing

Difference of ID-DTW 16.97 x Tf 21.576 = 366.14

3.) Total Volume of stagnant water

Total volume = 622 + 366.14 = 988.14

2x Total volume = 1976.29

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03966	05/08/19
Water Level Tape: SOLONIST 300 ft.	34827	N/A
Other: (MP-10 with QED Well Wizzard) or MP-50	MP10-3308, QED 18421	N/A

Total Volume of Water Removed (Liters): 22.75 L Sample Method: Bladder Pump

Sample ID / Date / Time: FNGmw-024-190401-GW/05/09/19/1340 **QC Sample ID** N/A

Analysis Explosives, TAL Metals

Field Observations/Site Conditions During Purging: Water turbid and orange upon initial purging, cleared once stagnant water removed. Tall grasses surround well pad

Sampling Procedure Followed: (YES) / NO If no, why was deviation necessary:

05/09/19

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected (YES) / NO

Recorded By: 05/09/19 (Signature and Date)

QA Checked By: 5-9-19 (Signature and Date)

leidos

WELL PURGE FORM

Volume removed and flow rate opposite starting at 1247 - jm 05/09/19 1336

Project Name: Facility-wide Groundwater RVAAP-66

Well ID: FNGMW-024

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 14.03

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
05/09/19	1234	13.1	0.610	6.95	7.92	3.36	-38.4	450	225	14.03	Initial reading through flow cell 2 CPM/3.0/27.0
	1241	--	--	--	--	--	--	2350	350	14.03	Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
	1242	11.6	0.569	6.92	154.88	0.15	-19.0	350	350	14.03	Start recording stability parameters - Water is orange and cloudy
	1247	11.7	0.573	6.93	47.03	-0.02	-26.9	350	1750	14.03	2 CPM/5.0/29.0
	1252	11.6	0.578	6.93	40.33	0.07	-30.5	350	1750	14.03	
	1257	11.6	0.586	6.99	27.73	1.02	-35.4	350	1750	14.03	Emptied flow cell to try to clear turbidity
	1302	11.6	0.587	6.96	22.90	-0.05	-37.5	350	1750	14.03	2CPM/5.0/25.0
	1307	11.6	0.590	6.97	17.98	-0.09	-39.4	350	1750	14.03	
	1312	11.7	0.590	6.97	13.99	-0.10	-41.0	350	1750	14.03	
	1317	11.7	0.594	6.98	12.89	-0.06	-43.7	350	1750	14.03	
	1323	11.8	0.594	6.99	12.45	-0.10	-44.0	350	1750	14.03	
	1328	11.9	0.596	7.00	11.05	-0.13	-45.0	350	1750	14.03	
	1333	11.9	0.598	7.00	9.96	-0.12	-45.2	350	1750	14.03	Stable
	1336	--	--	--	--	--	--	1200	1750	14.03	Stability confirmed
05/09/19	1347	12.2	0.603	7.06	7.27	0.16	-36.9	850	350	14.03	POST SAMPLE READINGS

Recorded By: 05/09/19

QA Checked By: 5-9-19

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID Number:** SCFmw-004

Date and Time: Start: 5/2/19 1350 Complete: 5/2/19 1410

Personnel: Charles Spurr CS 5/2/19

Purge Method(s): ☐ Bailer ☒ Bladder Pump Other: artesian No purge

Depth To Water: 31.00' ATOC ft. from measuring point

Well Diameter: 2 inches **PSI = Intake Depth/2 + 10**

Intake Depth: N/A ft. **PSI=** N/A /2 + 10 = N/A

Calculate 2x's volume of stagnant water in well

Pump vol. = **622** ml, Tubing factor (Tf) **1/4" = 9.46, 3/8" = 21.576**

1.) **Length of Tubing w/ stagnant water**

Intake Depth (ID) _____ - CS DTW _____ = _____

2.) **Volume of stagnant water in tubing**

Difference of ID-DTW _____ x 5/2/19 Tf _____ = _____

3.) **Total Volume of stagnant water**

Total volume = 622 + _____ = _____

2x Total volume =

FIELD INSTRUMENT (circle model used)	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality Meter: (YSI PRO DSS) or Horiba U-52	FA03179	5/2/19
Water Level Tape: SOLONIST Not used	N/A	N/A
Other: MP-10 with QED Well Wizzard or MP-50 Not Used	N/A	N/A

Total Volume of Water Removed (Liters): N/A Sample Method: ~~Bladder Pump~~ bailer CS 5/2/19

Sample ID / Date / Time: SCFmw-004-190401-GW 5/2/19 1405 **QC Sample ID** N/A

Analysis TAL metals

Field Observations/Site Conditions During Purging: 72°F; partly cloudy; calm

Sampling Procedure Followed: YES / (NO) If no, why was deviation necessary: Well is artesian and no pump is present. Sample taken directly from water column with bailer

Well Wizard - Well Cap Freeze Protection used to discharge sample tube above frost line after sample was collected YES / NO

Recorded By: _____ 5/2/19 (Signature and Date)

QA Checked By: _____ 05/02/19 (Signature and Date)

leidos

WELL PURGE FORM

Project Name: Facility-wide Groundwater RVAAP-66 **Well ID:** SCFmw-004

+/- 0.5 °C	+/- 3%	+/-0.1 SU	≤ 10 NTU	+/- 10% or 0.2 mg/L, whichever is greater	+/- 20 mV	Stabilization Requirements
3	3	3	1	3	3	Consecutive Readings to Sample

Initial DTW: 3 /100' ATOC

Date	Time	Temp (°C)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Volume Removed	Flow Rate mL/min	Water Level (ft btoc)	Comments *Record Cycles per minute/Discharge/Refill (CPM/D/R)
5/2/19	1400	9.8	1.376	7.20	37.7	2.96	261	N/A	N/A	3/100' ATOC	Initial reading through flow cell Well artesian: No purge
		--	--	--	--	--	--				Purged 2x's volume of stagnant water in pump and tubing - stabality parameters not recorded
											Start recording stability parameters
							CS				
								5/2/19			
					CS 5/2/19						POST SAMPLE READINGS

Recorded By: 5/2/19 **QA Checked By:** 05/02/19

D.3 Chains of Custody

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leido.

280-123183 Chain of Custody

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-100 -TA

Date: 04/29/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	DA2mw-115-190401-GW		4/29/19	0930	W	1		1	
	DA2mw-115-190401-GWMSD		↓		W	1		1	Extra Volume for MS/MSD
	DA2mw-115-190402-GW		↓		W	1		1	

Signature: Amanda Springer — 04/29/19
Printed Name: AMANDA SPRINGER
Company: Leidos
Time: 1501

Received by: Test America
Signature: RC Robison
Printed Name: RICK ROBISON
Company:
Date: 4/29/19
Time: 1501

Relinquished by: TAi 240
Signature: RC Robison
Printed Name: RICK ROBISON
Company:
Date:
Time:

Received by: TADEN
Signature:
Printed Name: Steven Zimmerman
Date: 4/30/19
Time: 0930

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

1.9, +0, IR9, xfered by SF, 4/30/19

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-104-TA

Date: 04/30/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Requested Parameters

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Hexachlorocyclopentadiene (2)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	NTAmw-120-190401-GW	GW	04/30/19	1048	W	2		2	

280-123221 Chain of Custody

Ans 04/30/19

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2
Amanda Springl	04/30/19	TestAmerica	4/30/19	A. Cool, 4C
Signature		Signature		B. HCl, pH<2, Cool, 4C
AMANDA SPRINGL	Time 1505	RC Robison	Time 1505	C. HNO3, pH<2, Cool, 4C
Printed Name		Printed Name		D. NaOH, pH>12, Cool 4C
Leidos		RICK ROBISON		1. SW 8260B Notes:
Company		Company		2. SW 8270D
Relinquished by	Date 4/30	Received by TA-Den	Date 5/1/19	3. SW 8270D SIM
Signature		Signature Reed Pottruff		4. SW 8082A
Printed Name	Time 1615	Printed Name Reed Pottruff	Time 0915	5. SW 8081B
Company		Company		6. SW 8330
				7. SW 6010/6020/7470
				8. SW 9012B
				9. SW 9034
				10. SW 9056/9056A
				11. SW 6860
				12. EPA 353.2
				13. SW 7196
				14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

4.8, 0.6 BRDG 0.0 Transfer RP 5/1/19

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-103-TA
Date: 04/30/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) [signature] (Printed Name) Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	LL PAHs (3)(A)	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	NTAmw-119-190401-GW	—	4/30/19	1045	W	2	2	1		5	
	NTAmw-119-190401-GWMSD	—	4/30/19	1045	W		4			4	
	NTAmw-119-190402-GW	—	4/30/19	1045	W		2			2	

~~[illegible] 04/30/19~~

Relinquished by	Date		Date
Amanda Springl (Signature)	04/30/19	Test America (Signature)	4/30/19
AMANDA SPRINZL (Printed Name)	Time 1505	RC [signature] (Printed Name)	Time 1505
Leidos (Company)		RICK REBISCH (Company)	

Relinquished by	Date	Received by	Date
[signature] (Signature)	4/30	TA-Den (Signature)	5/1/19
[signature] (Printed Name)	Time 1605	[signature] (Printed Name)	Time 0915
(Company)		Reed Pottruck (Company)	

Notes: Total Number of Containers: 11

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

4.8, 0.6 IR#9 0.0 Transfer RP 5/11/19

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-101-TA
Date: 04/30/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Ryan Lawrence

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	Phthalates/Nitroaromatics/ Phenols (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	DET-003-190401-GW	—	4/29/19	1055	W	3	2	2	2		2	1	1		13	
	DET-003-190401-GWMSD	—	↓	↓	W	4			4	4	4	1			17	Extra Volume for MS/MSD
	DET-003-190402-GW	—	↓	↓	W	3			2		2	1	1		9	
	FWGTB-191001-TB	—	↓	0900	W	2									2	Trip Blank

Total Number of Containers: 41

Relinquished by	Date	Received by	Date
Amanda Sprinzl (Signature)	04/30/19	Test America (Signature)	4/30/19
Amanda Sprinzl (Printed Name)	Time 1505	RC Robison (Printed Name)	Time 1505
Leidos (Company)		Rick Robison (Company)	
Relinquished by	Date 4/30	Received by Reed Pottruff (Signature)	Date 5/1/19
(Signature)	Time 1615	Reed P (Printed Name)	Time 0915
(Printed Name)		TA-Den (Company)	
(Company)			

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

0.7, 0.7, 0.6 IR# : 0.0 Transfer RP 5/1/19

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-102-TA

Date: 04/30/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	Phthalates/Nitroaromatics/ Phenols (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	DET-004-190401-GW	GW	04/29/19	1004	W	3	2	2	2	2	1		1		13	USE TRIP Blank: FWGTB-191@001-TB

Jms 04/30/19

Relinquished by	Date	Received by	Date	Time
Amanda Springl	04/30/19	TestAmerica	4/30/19	
Signature		Signature		
AMANDA SPRINGL	Time 1505	Rick Robison	Time 1505	
Printed Name		Printed Name		
Leidos				
Company		Company		
Relinquished by	Date	Received by	Date	Time
	4/30	TA-Den	5/1/19	
Signature		Signature		
	Time 1415	Reed Pottruff	Time 0915	
Printed Name		Printed Name		
Company		Company		

Notes: Total Number of Containers: 13

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

0.6, 0.7 IRH 9 0.0 Transfer RP 5/1/19

Chain of Custody Record

leidos

COC No.: RVAAP- 110 -TA

Page(of 1

Date: 04/30/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-007-190401-GW	GW	04/30/19	1335	W	2	1		3	

dns 04/30/19

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 3	Shipment Method: Courier
Amanda Sprinzl Signature	04/30/19	TestAmerica Signature	4/30/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	
AMANDA SPRINZL Printed Name	Time 1505	RICK ROBISON Printed Name	Time 1505	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B	
Leidos Company		Company		6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A	
Relinquished by Signature	Date 4/30	Received by TA-Den Signature	Date 5/1/19	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Temperature Blank
Printed Name	Time 1415	Reed Pottruff Printed Name	Time 0915		Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
Company		Company			

2.4 IR # 900 Transfer RP 5/1/19

Chain of Custody Record

leidos

COC No.: RVAAP-109-TA

Page 1 of 1

Date: 04/30/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Ryan Lanham

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-020-190401-GW	—	4/30/19	1150	W	2	1		3	

Requested Parameters

Relinquished by: Amanda Sprinzl (Signature) — Amanda Sprinzl (Printed Name) — Leidos (Company) — Date: 04/30/19 — Time: 1505

Received by: Test America (Signature) — Rick Robison (Printed Name) — Company — Date: 4/30/19 — Time: 1505

Relinquished by: (Signature) — (Printed Name) — Company — Date: 4/30 — Time: 1615

Received by: TA-Den (Signature) — Reed Pottmeyer (Printed Name) — Company — Date: 5/1/19 — Time: 0915

Notes:
Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

0.6, 0.6 IR# 9 0.0 Transfer RP 5/1/19

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-106-TA

Date: 04/30/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Lindsey Meyer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Depth	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-006-190401-GW			4/30/19	0910	W	2	1		3	

Rec'd: 04/30/19

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 3	Shipment Method: Courier
Amanda Spinzl	04/30/19	Test America	4/30/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	
Signature		Signature			
AMANDA SPINZL	Time 1505	RC Kobison	Time 1505	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	
Printed Name		Printed Name			
Leidos		RIC ROBISON			
Company		Company			
Relinquished by	Date 4/30	Received by TA-Den	Date 5/1/19		Temperature Blank
Signature		Signature			
Printed Name	Time 1610	Printed Name Reed Pottruff	Time 0915		Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
Company		Company			

0.6.0.6 RLA 9 0.0 Transfer RP 5/1/19

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-108-TA

Date: 04/30/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Ryan Lawson

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-021-190401-GW		4/30/19	0945	W	2	1		3	

Requested Parameters

Relinquished by: Amanda Spinzl — Signature — Printed Name: AMANDA SPINZL — Company: Leidos — Date: 04/30/19 — Time: 1505

Received by: TestAmerica — Signature — Printed Name: Rick Robison — Company — Date: 4/30/19 — Time: 1505

Relinquished by: — Signature — Printed Name — Company — Date: 4/30 — Time: 1605

Received by: TA-Dem — Signature — Printed Name: Reed Pothruff — Company — Date: 5/1/19 — Time: 0945

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

0.6, 0.6 RLA 90.0 Transfer RP 5/1/19

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-107 -TA

Date: 04/30/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Lindsey Meyer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No	Sample ID	Site Type	Depth	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-009-190401-GW			4/30/19	1053	W	2	1		3	

dms 04/30/19

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 3	Shipment Method: Courier
Signature: Amanda Springl	04/30/19	Signature: Test America	4/30/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	
Printed Name: AMANDA SPRINGL	Time: 1515	Printed Name: RICK ROBISON	Time: 1505	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	
Leidos					
Company		Company			
Relinquished by	Date: 4/30	Received by: TA-Den	Date: 5/1/19		
Signature		Signature: Reed Pf			
Printed Name	Time: 1615	Printed Name: Reed Pothroff	Time: 0915		Temperature Blank
Company		Company			Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802

0.6, 0.6 DRB900 Transfer RP 5/1/19

Chain of Custody Record

leidos

COC No.: RVAAP-105 -TA

Page 1 of 1

Date: 04/30/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Lindsey Mase

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-016-190401-GW	—	4/29/19	1520	W	2	1		3	

Requested Parameters

Relinquished by	Date	Received by	Date	Time
Amanda Sprinzl (Signature)	04/30/19	Test America (Signature)	4/30/19	1505
AMANDA SPRINZL (Printed Name)	Time 1505	RC Robison (Printed Name)	Time 1505	
Leidos (Company)		RICK ROBISON (Company)		
Relinquished by	Date 4/30	Received by TA Dev	Date 5/1/19	Time 0915
(Signature)	Time 1615	Reed Puthuff (Signature)		
(Printed Name)		Reed Puthuff (Printed Name)		
(Company)		(Company)		

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

0.6, 0.6 IR# 9 a.d Transfer RP 5/1/19

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP- 111 -TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

L. Mayer — Lindsey Mayer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-172-190401-GW		4/30/19	1351	W	1		1	
	FBQmw-172-190402-GW		4/30/19	1351	W	1		1	

Requested Parameters

Relinquished by: Jed Thomas — Signature: Jed Thomas — Printed Name: Leidos Leidos — Company: Leidos
Date: 05/01/19 — Time: 1515

Relinquished by — Signature — Printed Name — Company
Date: 5/1/19 — Time: 1632

Received by: M. Kowalski TA Canton — Signature — Printed Name — Company
Date: 5/2/19 — Time: 8:50

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

0.6, 1.8, +0, IR9, Received by SS, 5/2/19

280-123261 Chain of Custody

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-112-TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Ryan Lanich

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Temperature Blank	Total Number of Containers
	FBQmw-171-190401-GW	—	4/30/19	1420	W	1	1	1			3

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS

Relinquished by: Jed Thomas — Date: 05/01/19 — Time: 1515
Printed Name: Jed Thomas — Company: Leidos

Received by: Test America — Signature: RC — Printed Name: RICK ROBSON — Company:
Date: 5/1/19 — Time: 1515

Relinquished by: RC — Date: 5/1/19 — Time: 1632
Printed Name: — Company:

Received by: — Signature: — Printed Name: — Company:
Date: 5/2/19 — Time: 850

Notes:
Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 113 -TA
Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-174-190401-GW	—	4/30/19	1507	W	2	1	1			4	

Ans 04/30/19

Total Number of Containers: 4

Relinquished by	Date	Received by	Date
Jed Thomas	05/01/19	Test America	5/1/19
Signature		Signature	
Jed Thomas	Time	Rick Robison	Time
Printed Name	1515	Printed Name	1515
Leidos			
Company		Company	

Relinquished by	Date	Received by	Date
	5/1/19	TA Denver	5/2/19 850
Signature		Signature	
Rc Robison	Time	Printed Name	Time
Printed Name	1632		
Company		Company	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-21-TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-023-190401-GW	GW	05/01/19	1009	W	2	2		4	

JJ 05/01/19

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 4
Signature: Jed Thomas	05/01/19	Signature: Test America	5/1/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: Jed Thomas	Time: 1515	Printed Name: Rick Robison	Time: 1515	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Leidos / Company		Company		Notes:
Relinquished by	Date 5/1/19	Received by	Date 5/2/19 8:50	
Signature		Signature		
Printed Name	Time 1632	Printed Name	Time	
Company		Company		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 115 -TA
Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
RYAN LAURICH

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Nitrate (10)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-247-190401-GW		5/1/19	1015	W	1	1		2	

JT 05/01/19

Relinquished by	Date	Received by	Date
Jed Thomas (Signature)	05/01/19	Test America (Signature)	5/1/19
Jed Thomas (Printed Name)	Time 1515	Rick Robison (Printed Name)	Time 1515
Leidos (Company)		Company	
Relinquished by (Signature)	Date 5/1/19	Received by (Signature)	Date 5/2/19 850
Rc Robison (Printed Name)	Time 1632	Printed Name	Time
Company		Company	

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-114-TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
L. Meyer Lindsey Meyer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-183-190401-GW		5/1/19	1017	W	1		1	

Requested Parameters

JT 05/01/19

Relinquished by	Date	Received by	Date	Time
Signature: Jed Thomas	05/01/19	Signature: TestAmerica	5/1/19	
Printed Name: Jed Thomas	Time: 1515	Printed Name: RACK ROBISON	Time: 1515	
Company: Leidos		Company:		
Relinquished by	Date: 5/1/19	Received by	Date: 5/2/19	
Signature: RC	Time: 1632	Signature:	Time: 850	
Printed Name:		Printed Name:		
Company:		Company:		

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

COC No.: RVAAP- 117 -TA

Page 1 of 1

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL7mw-001-190401-GW		5/1/19	1020	W	1	1		2	

Jed Thomas 05/01/19

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2
Signature: Jed Thomas	5/01/19	Signature: Test America	5/1/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: Jed Thomas	Time: 1515	Printed Name: Rick Robison	Time: 1515	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B
Company: Leidos		Company		6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Relinquished by	Date	Received by	Date	
Signature	5/1/19	Signature	5/2/19 850	
Printed Name	Time: 1632	Printed Name	Time	
Company		Company		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-120-TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL7mw-006-190401-GW		5/1/19	1205	W	2		2	
				05/01/19					

Requested Parameters

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2
Jed Thomas (Signature)	05/01/19	Test America (Signature)	5/1/19	A. Cool, 4C
Jed Thomas (Printed Name)	Time 1515	Rick Robison (Printed Name)	Time 1525	B. HCl, pH<2, Cool, 4C
Leidos (Company)		(Company)		C. HNO3, pH<2, Cool, 4C
				D. NaOH, pH>12, Cool 4C
Relinquished by	Date	Received by	Date	1. SW 8260B Notes:
R C (Signature)	5/1/19	(Signature)	5/2/19	2. SW 8270D
(Printed Name)	Time 1632	(Printed Name)	Time 850	3. SW 8270D SIM
(Company)		(Company)		4. SW 8082A
				5. SW 8081B
				6. SW 8330
				7. SW 6010/6020/7470
				8. SW 9012B
				9. SW 9034
				10. SW 9056/9056A
				11. SW 6860
				12. EPA 353.2
				13. SW 7196
				14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-119 -TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL10mw-003-190401-GW	GW	05/01/19	1230	W	3		3	
	LL10mw-003-190402-GW	GW	05/01/19	↓	W	3		3	
	FWGTB-191002-TB		05/01/19	1215	W	2		2	

JT 05/01/19

Relinquished by	Date	Received by	Date
Signature: Jed Thomas	05/01/19	Signature: 1st America	5/1/19
Printed Name: Jed Thomas	Time: 1515	Printed Name: Rick Robbins	Time: 1515
Company: Leidos		Company:	

Relinquished by	Date	Received by	Date
Signature: RC Robbins	5/1/19	Signature: [signature] 5/2/19	5/2/19 850
Printed Name:	Time: 1632	Printed Name:	Time:
Company:		Company:	

Notes: Total Number of Containers: 8

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-116-TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Nitrate (10)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-185-190401-GW		5/1/19	1240	W	1		1	

JT 05/01/19

Relinquished by	Date	Received by	Date
Jed Thomas	05/01/19	Test America	5/1/19
Signature		Signature	
Jed Thomas	Time 1515	RC Robison	Time 1515
Printed Name		Printed Name	
Leidos		Rick Robison	
Company		Company	

Relinquished by	Date	Received by	Date
	5/1/19	[signature]	5/2/19 850
Signature		Signature	
RC Robison	Time 1632		Time
Printed Name		Printed Name	
Company		Company	

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 118 -TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL11mw-005-190401-GW		5/1/19	1400	W	1		1	

JT 05/01/19

Relinquished by	Date	Received by	Date	Time
Signature: Jed Thomas	05/01/19	Signature: Test America	5/1/19	1515
Printed Name: Jed Thomas	Time: 1515	Printed Name: Rick Robson		
Company: Leidos		Company		
Relinquished by	Date: 5/2/19	Received by: TA Canton	Date: 5/2/19 0850	
Signature: Rick Robson	Time: 1632	Signature	Time	
Printed Name		Printed Name		
Company		Company		

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 8012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rydberg, Donna R	Carrier Tracking No(s):	COC No: 280-481782.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: donna.rydberg@testamericainc.com	State of Origin: Ohio	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-123261-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 5/20/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8330_NGu/Filtration_47D Nitroguanidine Only	353.2_Nitrocell/NCEL_Prep_A (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
FWGmw-023-190401-GW (280-123261-5)	5/1/19	10:09 Eastern		Water			X	X	4	Q5.0_DIL1

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Dawna Castro	5-3-19 1325	TAL D		905 5/4/19	TAL SAC
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.5

Ver: 01/16/2019

280-123330 Chain of Custody

leidos

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COC No.: RVAAP-122-TA

Date: 5/1/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

D. Maye Lindsey Maye

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Nitrate (10)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-242-190401-GW		5/1/19	1405	W	1	1 ST		2 ST	Please analyze and report metals as two parameters 1) filtered ST filtered metals and 2) unfiltered metals

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS

Relinquished by	Date	Received by	Date	Time
Signature	5/2/19	Signature	5/2/19	1500
Printed Name: Heather Means	Time: 1500	Printed Name: Rick Robison	Time: 1500	
Company: Leidos		Company		
Relinquished by	Date	Received by	Date	Time
Signature	5/3	Signature	5/3/19	900
Printed Name	Time: 1630	Printed Name: Chris Kovatch	Time: 900	
Company		Company: TAL		

5/3/19

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

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COC No.: RVAAP-123-TA

Date: 05/01/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL10mw-005-190401-GW	GW	05/01/19	1505	W	1		1	

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 1
Signature	5/2/19	Test America Signature	5/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Heather Adams	Time 1500	Rick Robison	Time 1500	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Printed Name Leidos Company		Printed Name Company		
Relinquished by Signature	Date 5/3	Received by Signature	Date 5/3/19	
Printed Name Company	Time 1630	Chris Kovitch Printed Name TA Oen Company	Time 900	

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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Chain of Custody Record

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COC No.: RVAAP- 124 -TA

Date: 05/02/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Temperature Blank	Total Number of Containers
	FWGmw-022-190401-GW		5/2/19	0915	W	2	2		4

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 4
Signature	5/2/19	Signature	5/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Heather Adams	Time 1500	Rick Robison	Time 1500	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Leidos		Test America		
Company		Company		
Relinquished by	Date 5/2	Received by	Date 5/3/19	
Signature		Signature		
Printed Name	Time 1630	Printed Name	Time 900	
Company		Company		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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Chain of Custody Record

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COC No.: RVAAP- 128 -TA

Date: 05/02/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Requested Parameters

Laboratory No.	Sample ID	Site Type		Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL2mw-264-190401-GW	GW		05/02/19	1005	W	1		1	

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 1
Signature	5/2/19	Signature	5/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: HEATHER ADAMS	Time: 1500	Printed Name: Rick Robison	Time: 1500	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Company: Leidos		Company		
Relinquished by	Date 5/2	Received by	Date 5/3/19	
Signature		Signature		
Printed Name	Time 1630	Printed Name	Time 900	
Company		Company		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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Chain of Custody Record

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COC No.: RVAAP-125-TA

Date: 05/02/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-019-190401-GW		5/2/19	1035	W	2	2		4	

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 4
Signature	5/2/19	Signature	5/2/19	A. Cool, 4C
Heather Adams	Time 1500	Rick Robison	Time 1500	B. HCl, pH<2, Cool, 4C
Printed Name		Printed Name		C. HNO3, pH<2, Cool, 4C
Leidos		Company		D. NaOH, pH>12, Cool 4C
Company				
Relinquished by	Date 5/3	Received by	Date 5/3/19	1. SW 8260B Notes:
Signature		Signature		2. SW 8270D
Printed Name	Time 1630	Printed Name TA Del	Time 900	3. SW 8270D SIM
Company		Company		4. SW 8082A
				5. SW 8081B
				6. SW 8330
				7. SW 6010/6020/7470
				8. SW 9012B
				9. SW 9034
				10. SW 9056/9056A
				11. SW 6860
				12. EPA 353.2
				13. SW 7196
				14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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Chain of Custody Record

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COC No.: RVAAP- 126 -TA

Date: 05/02/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Nitrate (10)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-187-190401-GW		5/2/19	1148	W	1	1		2	

Relinquished by	Date	Received by	Date
Signature	5/2/19	Signature	5/2/19
Printed Name: Heather Adams	Time: 1500	Printed Name: Rick Robison	Time: 1500
Company: Leidos		Company:	

Relinquished by	Date	Received by	Date
Signature	5/2	Signature	5/3/19
Printed Name	Time: 1630	Printed Name: Chris Kovitch	Time: 900
Company		Company: TA Dan	

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP- 127 -TA

Date: 05/02/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Nitrate (10)(A)	TAL metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-245-190401-GW		5/2/19	1230	W	2	1	1		4	

Relinquished by	Date	Received by	Date
Signature: [signature]	05/02/19	Signature: Test America	5/2/19
Printed Name: HEATHER Adams	Time: 1500	Printed Name: RC Robison	Time: 1500
Company: Leidos		Company: Rick Robison	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/2	Signature: [signature] TADen Chris Kovach	5/3/19
Printed Name: [signature]	Time: 1630	Printed Name: TADen	Time: 900
Company:		Company: TADen	

Notes: Total Number of Containers: 4

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

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COC No.: RVAAP- 17-TA

Date: 05/02/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type		Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL2mw-267-190401-GW	GW		05/02/19	1320	W	2	1		3	

Requested Parameters

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 3
Signature	5/2/19	Signature	5/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: Heather Adams	Time: 1500	Printed Name: Rick Robison	Time: 1500	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Leidos		Test America		
Company		Company		
Relinquished by	Date 5/2	Received by	Date 5/3/19	Notes:
Signature		Signature		
Printed Name	Time 1630	Printed Name Chris Kovtch	Time 900	
Company		Company TA Denver		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP- 131 -TA

Page of 1

Date: 05/02/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-087-190401-GW		5/2/19	1320	W	2	1		3	

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 3
Signature	5/2/19	Signature	5/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: HEATHER JOHNS	Time: 1500	Printed Name: RICK ROBISON	Time: 1500	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B
Leidos / Company		Company		6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Relinquished by	Date: 5/2	Received by	Date: 5/3/19	
Signature		Signature		
Printed Name	Time: 1630	Printed Name: TA Courier	Time: 900	
Company		Company		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

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COC No.: RVAAP-132-TA

Date: 05/02/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	SCFmw-004-190401-GW		5/2/19	1405	W	1		1	

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 1
Signature	5/2/19	Test America Signature	5/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: HEATHER ADAMS	Time: 1500	Printed Name: RICK ROBISON	Time: 1500	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Leidos Company		Company		
Relinquished by	Date	Received by	Date	
Signature		Signature	5/3/19	
Printed Name	Time	Printed Name	Time 900	
Company		Company		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-133-TA

Page of 1

Date: 05/02/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
2.My Lindsey Mayer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL4mw-200-190401-GW		5/2/19	1450	W	1		1	

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 1
Signature: [signature]	5/2/19	Signature: [signature]	5/2/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: HEATHER ADAMS	Time: 1500	Printed Name: RICK ROBISON	Time: 1500	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B
Leidos		Company		6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Relinquished by	Date	Received by	Date	
Signature: [signature]	5/3/19	Signature: [signature]	5/3/19	
Printed Name:	Time: 1615	Printed Name: [signature]	Time: ~~1615~~ 900	
Company		Company: TA Courier		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rydberg, Donna R	Carrier Tracking No(s):	COC No: 280-482181.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: donna.rydberg@testamericainc.com	State of Origin: Ohio	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-123330-2
Address: 880 Riverside Parkway, ,	Due Date Requested: 5/21/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8330_NGu/Filtration_47D Nitroguanidine Only	353.2_Nitrocell/NCEL_Prep_A (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
FWGmw-022-190401-GW (280-123330-3)	5/2/19	09:15 Eastern		Water			X	X	4	Q5.0_DIL1
FWGmw-019-190401-GW (280-123330-5)	5/2/19	10:35 Eastern		Water			X	X	4	Q5.0_DIL1

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: Laura Castro	Date/Time: 5-6-19 1430	Company: TAD	Received by: [signature]	Date/Time: 7 May 19 0910	Company: ETAW Sac
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: MAN 5/7/19 Seal	Cooler Temperature(s) °C and Other Remarks: 2.1°C 1.6°C 0.8°C

Ver: 01/16/2019

leidos

Chain of Custody Record

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COC No.: RVAAP-[illegible]-TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spur

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-084-190401-GW		5/6/19	0925	W	2	1	1		1		5	

280-123457 Chain of Custody

Relinquished by	Date	Received by	Date	Time
Signature	5/6/19	Signature	5/6/19	1518
Printed Name: HEATHER Adams	Time: 1500	Printed Name: RICK ROBISON		
Company: Leidos		Company: TestAmerica		
Relinquished by	Date	Received by	Date	Time
Signature		Signature	5/7/19	0945
Printed Name		Printed Name		
Company		Company		

Notes: Total Number of Containers: 5

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

2.2. to, IR#9 by AP 5/7/19

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-(39)-TA

Date: 5-6-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Gabby Gramofsky

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-244-190401-GW		5-6-19	1040	W	2	1		3	

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Relinquished by	Date	Received by	Date	Time
Signature	5/6/19	Test America	5/6/19	1517
Heather Adams	Time	Signature	Time	
Printed Name	1500	Printed Name		
Leidos		Rick Robson		
Company		Company		
Relinquished by	Date	Received by	Date	Time
Signature		Signature	5/7/19	0945
Printed Name	Time	Printed Name	Time	
Company		Company		

Notes:
Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP- 139 -TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-083-190401-GW		5/6/19	1135	W	2	1	1			4	

Relinquished by	Date	Received by	Date
Signature	5/6/19	Signature	5/6/19
Printed Name: HEATHER Adams	Time: 1500	Printed Name: RKK ROBSON	Time: 1518
Company: Leidos		Company:	

Relinquished by	Date	Received by	Date
Signature		Signature	5/7/19
Printed Name	Time	Printed Name	Time: 0945
Company		Company	

Notes: Total Number of Containers: 4

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-140-TA

Date: 5-6-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Granofsky

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-237-190401-GW		5-6-19	1415	W	2		2	

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Relinquished by	Date	Received by	Date	Time
Signature	5/6/19	Signature	5/6/19	1548
Printed Name: HEATHER ADAMS	Time: 1500	Printed Name: RICK ROBSON	Time: 1548	
Company: Leidos		Company		
Relinquished by	Date	Received by	Date	Time
Signature		Signature	5/7/19	0945
Printed Name	Time	Printed Name	Time: 0945	
Company		Company		

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 135-TA

Date: 5-6-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gronefsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL2mw-059-190401-GW		5-6-19	0905	W	2	1		3	

Requested Parameters

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 3
Signature	5/6/19	Signature	5/6/19	A. Cool, 4C
Heather Adams	Time	Printed Name	Time	B. HCl, pH<2, Cool, 4C
Printed Name	1600	Rick Parsons	1518	C. HNO3, pH<2, Cool, 4C
Leidos		Company		D. NaOH, pH>12, Cool 4C
Company				

Relinquished by	Date	Received by	Date	1. SW 8260B Notes:
Signature		Signature	5/7/19	2. SW 8270D
	Time		Time	3. SW 8270D SIM
Printed Name		Printed Name	0945	4. SW 8082A
				5. SW 8081B
Company		Company		6. SW 8330
				7. SW 6010/6020/7470
				8. SW 9012B
				9. SW 9034
				10. SW 9056/9056A
				11. SW 6860
				12. EPA 353.2
				13. SW 7196
				14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP-42-TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-081-190401-GW		5/6/19	1505	W	2	1		3	

Relinquished by
Signature
Printed Name: HEATHER Adams
Company: Leidos
Date: 05/07/19
Time: 1515

Received by
Signature
Printed Name: RICK POSSON
Company
Date: 5/7/19
Time: 1515

Relinquished by
Signature
Printed Name
Company
Date: 5/7
Time: 622

Received by
Signature
Printed Name: Chris Kavitch
Company: TA Denver
Date: 5/8/19 905
Time: 905

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP-14 -TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Q. Myer Lindsey Myer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-234-190401-GW		05/06/19	1455	W	1		1	

Requested Parameters

Relinquished by: Signature [signature] Printed Name Heather Leidos Company — Date 05/07/19 — Time 1515

Received by: Signature TestAmerica Printed Name RC - RICK TESSEAU Company — Date 5/7/19 — Time 1515

Relinquished by: Signature [signature] Printed Name [illegible] Company — Date 5/8/19 — Time 1622

Received by: Signature TA DOT Chris Kuehl Printed Name TA Courier Company — Date 5/8/19 905 — Time 905

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page of 1

COC No.: RVAAP-42-TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-081-190401-GW		5/6/19	1505	W	2	1		3	

Relinquished by
Signature
Printed Name: Heather Adams
Company: Leidos
Date: 05/07/19
Time: 1515

Received by
Signature
Printed Name: Rick Rossow
Company
Date: 5/7/19
Time: 1515

Relinquished by
Signature
Printed Name
Company
Date: 5/7/19
Time: 622

Received by
Signature
Printed Name: Chris Kavitch
Company: TA Denver
Date: 5/8/19 905
Time: 905

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

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COC No.: RVAAP-141-TA
Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Q. Myer Lindsey Moran

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-234-190401-GW		05/06/19	1455	W	1		1	

Relinquished by	Date	Received by	Date
Signature: [signature]	05/07/19	Signature: Test America RC Robson	5/7/19
Printed Name: Heather	Time: 1515	Printed Name: - Rick Robison	Time: 1515
Company: Leidos		Company:	
Relinquished by	Date: 5/7	Received by: TA Den	Date: 5/8/19
Signature: [signature]		Signature: [signature]	905
Printed Name:	Time: 1622	Printed Name: Chris Kovitch TA Denver	Time: 905
Company:		Company:	

Notes: Total Number of Containers: 1
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

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COC No.: RVAAP- 130-TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Lindsey Mayer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL2mw-272-190401-GW		05/06/19	1110	W	1		1	

Relinquished by	Date	Received by	Date	Time
Signature	5/6/19	Test America Signature	5/6/19	1518
Printed Name: Heather Adams	Time: 1500	Printed Name: Rick Robison		
Company: Leidos		Company		
Relinquished by	Date	Received by	Date	Time
Signature		Signature	5/7/19	0945
Printed Name		Printed Name		
Company		Company		

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

COC No.: RVAAP- 15 -TA

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Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Lindsey Mayer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-064-190401-GW		05/07/19	1429	W	1		1	

280-123467 Chain of Custody

Relinquished by	Date	Received by	Date	Time
Signature	5/7/19	Signature	5/7/19	1515
Printed Name: Heather Adams	Time: 1515	Printed Name: Rick Robison	Time: 1515	
Company: Leidos		Company: Test America		
Relinquished by	Date	Received by	Date	Time
Signature	5/7	Signature	5/8/19	905
Printed Name	Time: 1615	Printed Name: TA Courier	Time: 905	
Company		Company		

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Total Number of Containers: 1

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

3.9, 2.8, 0.1, +0, IR9, offered by SB, 5/8/19

leidos

Chain of Custody Record

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COC No.: RVAAP- 15@TA
Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-065-190401-GW		05/07/19	1314	W	2	1		3	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/7/19	Signature: Test America	5/7/19
Printed Name: Heather Adams	Time: 1515	Printed Name: Rick Robison	Time: 1515
Company: Leidos		Company:	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/7	Signature: [signature]	5/8/19
Printed Name:	Time: 1622	Printed Name: Chris Kautz	Time: 905
Company:		Company: TA Cannell	

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

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COC No.: RVAAP-147-TA
Date: 05/07/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Hexavalent Chromium (13)(A) *	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-175-190401-GW		5/7/19	1115	W	1	1		1		3	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-190401-GWMSD		↓	1115	W				1		1	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-190402-GW		↓	1115	W	1	1		1		3	Cr6 24 hr HT bottles stay at No. CANTON

Total Number of Containers: 7

Relinquished by	Date	Received by	Date
Signature: [signature]	5/7/19	Signature: Rick Robisch, Test America	5/7/19
Printed Name: Heather Adams	Time: 1515	Printed Name: [signature]	Time: 1515
Company: Leidos		Company:	
Relinquished by: TAY 240	Date: 5/7/19	Received by: [signature] TA Den	Date: 5/8/19
Signature: [signature]		Signature: Chris Kovitch	905
Printed Name:	Time: 1622	Printed Name: Chris Kovitch	Time: 905
Company:		Company: TA Den	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

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COC No.: RVAAP-46-TA

Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

D. Mayer Lindsey Mayer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Alkalinity (14)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-086-190401-GW		05/07/19	1153	W	1	1	2	4	4	ONE METAL FIELD FILTERED SAMPLE COLLECTED.

Requested Parameters

Relinquished by
Signature
Heather Adams
Printed Name
Leidos
Company
Date 05/07/19
Time 1515

Received by
Signature
Rick Robison
Printed Name
Company
Date 5/7/19
Time 1515

Relinquished by
Signature
Printed Name
Company
Date 5/7
Time 1622

Received by
Signature
Chris Kartch
Printed Name
TA Denver
Company
Date 5/8/19
Time 905

Notes: Total Number of Containers: 3 4
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP- 145-TA
Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EBGmw-131-190401-GW		5/7/19	1205	W	1		1	

Relinquished by	Date	Received by	Date
Signature	05/07/19	Test America	5/7/19
Printed Name: Heather Adams	Time: 1515	Printed Name: Rick Robison	Time: 1515
Company: Leidos		Company:	

Relinquished by	Date	Received by	Date
Signature	5/7	Signature	5/8/19
Printed Name	Time: 1622	Printed Name: Chris Kovitch	Time: 905
Company		Company: TA Canton	

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page of 1

COC No.: RVAAP-144-TA

Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EBGmw-125-190401-GW		5/7/19	1055	W	1		1	

Requested Parameters

Relinquished by (Signature) — Printed Name: HEATHER ADAMS — Company: Leidos — Date: 05/08/19 — Time: 1515

Received by (Signature) — Printed Name: Rick Robson — Company: Test America — Date: 5/7/19 — Time: 1515

Relinquished by (Signature) — Printed Name: — Company: — Date: 5/8/19 — Time: 1600

Received by (Signature) — Printed Name: Chris Kovitch — Company: TA Canton — Date: 5/8/19 905 — Time: 905

Notes:
Total Number of Containers: 1
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-143TA

Date: 5-7-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gurnofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-089-190401-GW		5-7-19	0920	W	2	2	2		6	
	LL1mw-089-190401-GWMSD		5-7-19	0920	W		4	4		8	Extra Volume for MS/MSD
	LL1mw-089-190402-GW		5-7-19	0920	W	2	2	2		6	

Requested Parameters

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 20
Signature	05/07/19	Signature TestAmerica	5/7/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name Heather Adams	Time 1515	Printed Name Rick Robison	Time 1515	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B
Leidos				6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Company		Company		
Relinquished by	Date	Received by	Date	
Signature	5/7	Signature TA Denver	5/8/19	
Printed Name	Time 1622	Printed Name Chris Kovitch	Time 905	
Company		Company TA Denver		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP-147-TA

Date: 05/07/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Hexavalent Chromium (13)(A)*	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-175-190401-GW		5/7/19	1115	W	1	1		1		3	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-190401-GWMSD		↓	1115	W				1		1	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-190402-GW		↓	1115	W	1	1		1		3	Cr6 24 hr HT bottles stay at No. CANTON

Relinquished by
Signature
Printed Name: Heather Adams
Company: Leidos
Date: 5/7/19
Time: 1515

Received by
Signature: Rick Robison
Printed Name
Company: Test America
Date: 5/7/19
Time: 1515

Relinquished by: TAJ 240
Signature
Printed Name
Company
Date: 5/7/19
Time: 1622

Received by
Signature
Printed Name
Company
Date: 5-7-19
Time: 1622

Notes: Total Number of Containers: 7

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802



280-123467 Chain of Custody

Chain of Custody Record

leidos

COC No.: RVAAP- 15 -TA

Page of 1

Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Lindsey Mayer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-064-190401-GW		05/07/19	1429	W	1		1	

280-123467 Chain of Custody

Relinquished by	Date	Received by	Date	Time
Signature	5/7/19	Signature	5/7/19	1515
Printed Name: HEATHER Adams	Time: 1515	Printed Name: Rick Robison	Time: 1515	
Company: Leidos		Company		
Relinquished by	Date	Received by	Date	Time
Signature	5/7	Signature	5/8/19	905
Printed Name	Time: 1615	Printed Name	Time: 905	
Company		Company		

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

3.9, 2.8, 0.1, +0, IR9, offered by SB, 5/8/19

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP- 15-TA

Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

DMayer Lindsey Mayer

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers
	LL1mw-065-190401-GW		05/07/19	1314	W	2	1		3

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS

Relinquished by	Date	Received by	Date
Signature	5/7/19	Signature	5/7/19
Heather Adams	Time 1515	Printed Name Rick Robison	Time 1515
Leidos		Company	
Company			
Relinquished by	Date 5/7	Received by	Date 5/8/19
Signature		Signature	
Printed Name	Time 1622	Printed Name	Time 0905
Company		Company	

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

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COC No.: RVAAP-147-TA
Date: 05/07/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Ryan Lawler

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Hexavalent Chromium (13)(A) *	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-175-190401-GW		5/7/19	1115	W	1	1		1		3	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-190401-GWMSD		↓	1115	W				1		1	Cr6 24 hr HT bottles stay at No. CANTON
	FBQmw-175-190402-GW		↓	1115	W	1	1		1		3	Cr6 24 hr HT bottles stay at No. CANTON

Total Number of Containers: 7

Relinquished by	Date	Received by	Date
Signature: [signature]	5/7/19	Signature: Rick Robisch, Test America	5/7/19
Printed Name: Heather Adams	Time: 1515	Printed Name: [signature]	Time: 1515
Company: Leidos		Company:	
Relinquished by: TAY 240	Date: 5/7/19	Received by: [signature] TA Den	Date: 5/8/19
Signature: [signature]		Signature: Chris Kovitch	905
Printed Name:	Time: 1622	Printed Name: Chris Kovitch	Time: 905
Company:		Company: TA Den	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

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COC No.: RVAAP-46-TA

Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

D. Mayer Lindsey Mayer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Alkalinity (14)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-086-190401-GW		05/07/19	1153	W	1	1	2	4	4	ONE METAL FIELD FILTERED SAMPLE COLLECTED.

Relinquished by
Signature
Heather Adams
Printed Name
Leidos
Company
Date 05/07/19
Time 1515

Received by
Signature
Rick Robison
Printed Name
Company
Date 5/7/19
Time 1515

Relinquished by
Signature
Printed Name
Company
Date 5/8/19
Time 1622

Received by
Signature
Chris Kartch
Printed Name
TA Denver
Company
Date 5/8/19
Time 905

Notes: Total Number of Containers: 3 4
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP- 145-TA
Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EBGmw-131-190401-GW		5/7/19	1205	W	1		1	

Relinquished by	Date	Received by	Date
Signature	05/07/19	Test America	5/7/19
Printed Name: Heather Adams	Time: 1515	Printed Name: Rick Robison	Time: 1515
Company: Leidos		Company:	

Relinquished by	Date	Received by	Date
Signature	5/7	Signature	5/8/19
Printed Name	Time: 1622	Printed Name: Chris Kovitch	Time: 905
Company		Company: TA Canton	

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP-144-TA

Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	EBGmw-125-190401-GW		5/7/19	1055	W	1		1	

Relinquished by
Signature
HEATHER ADAMS
Printed Name
Leidos
Company
Date 05/07/19
Time 1515

Received by
Test America
Signature
Rick Robson
Printed Name
Company
Date 5/7/19
Time 1515

Relinquished by
Signature
Printed Name
Company
Date 5/8/19
Time 1605

Received by
Signature
Chris Kovitch
Printed Name
TA Canton
Company
Date 5/8/19 905
Time 905

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-143TA

Date: 5-7-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gurnofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-089-190401-GW		5-7-19	0920	W	2	2	2		6	
	LL1mw-089-190401-GWMSD		5-7-19	0920	W		4	4		8	Extra Volume for MS/MSD
	LL1mw-089-190402-GW		5-7-19	0920	W	2	2	2		6	

Requested Parameters

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 20	Shipment Method: Courier
Signature	05/07/19	Signature: TestAmerica	5/7/19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	
Printed Name: Heather Adams	Time: 1515	Printed Name: Rick Robison	Time: 1515	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Notes:
Company: Leidos		Company			
Relinquished by	Date 5/7	Received by: TA Driver	Date 5/8/19 905		Temperature Blank
Signature		Signature: Chris Kovatch			Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
Printed Name	Time 1625	Printed Name: TA Driver	Time 905		
Company		Company			

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-155-TA
Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) RC (Printed Name) Ryan Lauwick

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-176-190401-GW		5/7/19	1532	W	1		1	

280-123584 Chain of Custody

Relinquished by	Date	Received by	Date
[signature] Signature	5/8/19	Test America Signature	5/8/19
HEATHER Adams Printed Name	Time 1530	R. Robson Printed Name	Time 1530
Leidos Company		Rick Robson Company	
Relinquished by TAC Signature	Date 5/8/19	Received by [signature] TA-DEN Signature	Date 5-9-19
R. Robson Printed Name	Time 1640	Ryan Paul Printed Name	Time 0900
Company		TA-DEN Company	

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Temp: 2.4, 1.6, 2.1, 0.6, 0.3, 0.7, 0.5, to IR9 x [illegible] by RDP 5-9-19

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 154 -TA

Date: 05/07/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Charles Spurr

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-011-190401-GW		5/7/19	1520	W	2	1		3	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/8/19	Signature: Test America	5/8/19
Printed Name: Heather Adams	Time: 1530	Printed Name: RC [signature]	Time: 1530
Company: Leidos		Company: Rick Robison	

Relinquished by	Date	Received by	Date
Signature: TAi	5/8/19	Signature: [signature]	5-9-19
Printed Name: R [signature]	Time: 1640	Printed Name: Ryan Paul	Time: 0900
Company:		Company: TA-DEN	

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-153-TA

Date: 5-7-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gromofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-012-190401-GW		5-7-19	1515	W	2	1		3	

Requested Parameters

Relinquished by	Date	Received by	Date	Time
Signature	5/8/19	Signature	5/8/19	1532
Printed Name: HEATHER ADAMS	Time: 1530	Printed Name: RICK FERRISOLA		
Company: Leidos		Company		
Relinquished by	Date: 5/8/19	Received by	Date: 5-9-19	
Signature	Time: 1600	Signature: Ryan Paul	Time: 0900	
Printed Name		Printed Name: TA-DEN		
Company		Company		

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-152-TA

Date: 5-7-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gromofsky

Requested Parameters

Laboratory No	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-080-190401-GW		05/07/2019	1305	W	2		2	

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Relinquished by	Date	Received by	Date
Signature	5/8/19	Signature	5/8/19
Printed Name: HEATHER ADAMS	Time: 1530	Printed Name: RICK ROBSON	Time: 1530
Company: Leidos		Company	
Relinquished by	Date	Received by	Date
Signature	5/8/19	Signature	5-9-19
Printed Name	Time: 1640	Printed Name: TA-DEN	Time: 0900
Company		Company	

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-157-TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
[signature] Ryan Laurich

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-015-190401-GW		5/8/19	1055	W	2	1		3	

Relinquished by	Date	Received by	Date
[signature] Signature	5/8/19	Test America Signature	5/8/19
HEATHER Adams Printed Name	Time 1530	[signature] Printed Name	Time 1530
Leidos Company		RICK ROBSON Company	
Relinquished by	Date	Received by	Date
[signature] Signature	5/8/19	[signature] Signature	5-9-19
[signature] Printed Name	Time 1640	Ryan Paul Printed Name	Time 0900
Company		TA·DEN Company	

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 150-TA
Date: 05/08/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Ryan Lawrence

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-004-190401-GW		5/8/19	0912	W	2	1		3	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/8/19	Signature: Test America	5/8/19
Printed Name: HEATHER Adams	Time: 1530	Printed Name: RC [signature]	Time: 1530
Company: Leidos		Company: RICK ROBISON	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/8/19	Signature: [signature]	5-9-19
Printed Name: R. [signature]	Time: 1640	Printed Name: Ryan Paul	Time: 0900
Company:		Company: TA-DEN	

Notes: Total Number of Containers: 3

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-160-TA

Page 1 of 1

Date:

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Lindsey Moyer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	SVOCs (TCL) (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Perchlorate (11)(A)	TAL Metals + Phosphorus(7)(C)		Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	SCLmw-003-190401-GW		05/08/19	1010	W	3	2	2	2		2	1	1	1		2	2	1	1			20	Sample Assc. with FWGTB-191005-TB

Total Number of Containers: 20

Relinquished by	Date	Received by	Date
Signature: [signature]	5/8/19	Signature: [signature]	5/8/19
Printed Name: Heather Adams	Time: 1530	Printed Name: R Robison	Time: 1530
Company: Leidos		Company: Rick Robison	

Relinquished by	Date	Received by	Date
Signature: TAC	5/8/19	Signature: [signature]	5-9-19
Printed Name: R [signature]	Time: 1610	Printed Name: Ryan Paul	Time: 0900
Company:		Company: TA-DEW	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 158-TA

Date: 5-8-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gromofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	SVOCs (TCL) (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Perchlorate (11)(A)	TAL Metals+Phosphorus (7)(C)		Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	SCLmw-002-190401-GW		5-8-19	0925	W	3	2	2	2		2	1	1	1		2	2	1	1			20	
	SCLmw-002-190401-GWMSD		5-8-19	0925	W		4	4				2							1			11	Extra Volume for MS/MSD
	SCLmw-002-190402-GW		5-8-19	0925	W		2	2				1							1			6	
	FWGTB-191005-TB		5-8-19	0925	W	2																2	Trip Blank

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Relinquished by	Date	Received by	Date	Time
Signature	5/8/19	Signature	5/8/19	1530
Printed Name: Heather Adams	Time: 1530	Printed Name: Rick Robison		
Company: Leidos		Company		
Relinquished by	Date: 5/8/19	Received by	Date: 5-9-19	
Signature		Signature		Time: 0900
Printed Name	Time: 1640	Printed Name: TA-DEN		
Company		Company		

Notes: Total Number of Containers: 39

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-159-TA

Date: 05/06/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Ryan Lankill

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	CBPmw-008-190401-GW		5/8/19	1411	W	1		1	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/8/19	Signature: Test America	5/8/19
Printed Name: Heather Adams	Time: 1530	Printed Name: R. Robison	Time: 1530
Company: Leidos		Company: Rick Robison	

Relinquished by	Date	Received by	Date
Signature: [signature]	5/8/19	Signature: [signature]	5-9-19
Printed Name: RC Robison	Time: 1640	Printed Name: Ryan Paul	Time: 0900
Company:		Company: TH-DEN	

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-101 -TA

Date: 05/08/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
[signature] Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	SVOCs (TCL) (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Nitroguanidine (6)(A)	Nitrocellulose (12)(A)	Perchlorate (11)(A)	TAL Metals+Phosphorus (7)(C)		Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	SCLmw-001-190401-GW	GW	05/08/19	1015	W	3	2	2	2		2	1	1	1		2	2	1	1			20	Sample Assc. with FWGTB-191005-TB

gm 05/08/19

Relinquished by	Date	Received by	Date
[signature] Signature	5/8/09	Test America Signature	5/8/19
HEATHER Adams Printed Name	Time 1530	[signature] Printed Name	Time 1530
Leidos Company		RICK ROBISON Company	
Relinquished by	Date	Received by	Date
[signature] Signature	5/8/19	[signature] Signature	5-9-19
[signature] Printed Name	Time 1640	Ryan Paul Printed Name	Time 0900
Company		TA-DEN Company	

Notes: Total Number of Containers: 20

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

Notes:

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-~~163~~ 163-TA

Page 1 of 1

Date: 5-8-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Gabby Gromofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Alkalinity (14)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-088-190401-GW		5-8-19	1505	W	2	1	1		4	

Requested Parameters

Relinquished by
Signature
HEATHER ADAMS
Printed Name
Leidos
Company
Date 5/9/19
Time 1530

Received by
Signature
William R Cordell
Printed Name
Company ETPL
Date 5-9-19
Time 1545

Relinquished by
Signature
Printed Name
Company
Date 5-9
Time

Received by
240 1755
Signature
Reed Pottruff
Printed Name
Company TIA - Denver
Date 5/10/19
Time 0915

Notes: Total Number of Containers: 4

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rydberg, Donna R	Carrier Tracking No(s):	COC No: 280-483002.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: donna.rydberg@testamericainc.com	State of Origin: Ohio	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-123584-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 5/28/2019			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8330_NGu/Filtration_47D Nitroguanidine Only	353.2_Nitrocell/NCEL_Prep_A (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
SCLmw-003-190401-GW (280-123584-7)	5/8/19	10:10 Eastern		Water			X	X	4	Q5.0_DIL1
SCLmw-002-190401-GW (280-123584-8)	5/8/19	09:25 Eastern		Water			X	X	4	Q5.0_DIL1
SCLmw-001-190401-GW (280-123584-12)	5/8/19	10:15 Eastern		Water			X	X	4	Q5.0_DIL1

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Laura Castro	5-10-19 1630	TAL	Gabriela Arroyo	5/11/19 940	EAB Sac
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.8°C, 1.4°C

Ver: 01/16/2019

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-~~175~~-TA -174 HA

Date: 05/09/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers
	FWGmw-024-190401-GW	GW	05/09/19	1340	W	2	1		3

05/09/19

280-123656 Chain of Custody

Relinquished by	Date	Received by	Date	Time
Signature	5/9/19	Signature	5-9-19	
Printed Name: Heather Adams	Time: 1530	Printed Name: William R Corder	Time: 1545	
Company: Leidos		Company: ETR		
Relinquished by	Date: 5-9	Received by: 240 1755	Date: 5/10/19	
Signature		Signature: Reed Pottruff		
Printed Name	Time	Printed Name: Reed Pottruff	Time: 0915	
Company		Company: TA-Denver		

Notes: Total Number of Containers:

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes: 1.6, 0.2, 0.2, 3.0, 0.7, 1.2 IR#9 0.0 Transfer RP 5/10/19

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-104-TA
Date: 5/9/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: CT Labs
Address: 1230 Lange Court
Baraboo, WI 53913
Phone: (608) 356-2760
Fax:
Contact: Eric Korthals

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	Perchlorate (11)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-246-190401-GW		5/9/19	0905	W	2	1	1		4	
	LL3mw-246-190401-GWMSD		5/9/19	0905	W		2			2	Extra Volume for Matrix Spike/Duplicate
	LL3mw-246-190402-GW		5/9/19	0905	W	2	1	1		4	

Total Number of Containers: 10

Relinquished by	Date	Signature	Date
Signature: [signature]	5/9/19	Signature: [signature]	5-9-19
Printed Name: Heather Adams	Time: 1530	Printed Name: William R Cordell	Time: 1545
Company: Leidos		Company: ETAL	

Relinquished by	Date	Received by	Date
Signature: [signature]	5-9	Signature: Reed Pott	5/10/19
Printed Name:	Time:	Printed Name: Reed Pottruff	Time: 0913
Company:		Company: TA-Denver	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-173-TA
Date: 05/09/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Q. Myer Lindsey Myer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	RQLmw-013-190401-GW		5/9/19	1353	W	1	1			2	

Relinquished by	Date	Received by	Date
Signature: [signature]	05/09/19	Signature: [signature]	5-9-19
Printed Name: Heather Adams	Time: 1530	Printed Name: William R Cordell	Time: 1545
Company: Leidos		Company: ETRL	

Relinquished by	Date	Received by	Date
Signature: Charles [signature]	5-9	Signature: Reed Pottruff	5/10/19
Printed Name:	Time:	Printed Name: Reed Pottruff	Time: 0915
Company:		Company: TA-Deliver	

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-[illegible]-TA

Page 1 of 1

Date: 5-9-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gromofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	RQLmw-012-190401-GW		5-9-19	1420	W	1	1	1			3	

Requested Parameters

Relinquished by
Signature
Heather Adams
Printed Name
Leidos
Company
Date 5/9/19
Time 1530

Received by
Signature
William R Cordell
Printed Name
ETRC
Company
Date 5-9-19
Time 1545

Relinquished by
Signature
Charles B
Printed Name
Company
Date 5-9
Time

Received by
Signature
Reed Loftruft
Printed Name
TA-Denver
Company
Date 5/10/19
Time 0915

Notes:
Total Number of Containers: 3
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-[illegible]-TA

Date:

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

L. Mayer Lindsey Mayer

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	CBPmw-009-190401-GW		5/9/19	1505	W	1		1	

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Relinquished by	Date	Received by	Date	Time
Signature	05/9/19	Signature	5-9-19	
Printed Name: HEATHER Adams	Time: 1520	Printed Name: WILLIAM R Cordell	Time: 1545	
Company: Leidos		Company: ETEC		
Relinquished by	Date: 5-9	Received by: 240 1755	Date: 5/10/19	
Signature		Signature: Reed Pottruff		
Printed Name	Time	Printed Name: Reed Pottruff	Time: 0915	
Company		Company: TA-Denver		

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-175-TA

Date: 05/09/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
RYAN CURRICH

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: Cyanide (8)(D)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	RQLmw-016-190401-GW		5/9/19	1530	W	1		1	

Relinquished by	Date	Received by	Date	Time
Signature	5/9/19	Signature	5-9-19	
Printed Name: HEATHER ADAMS	Time: 1530	Printed Name: WILLIAM R CORDELL	Time: 1545	
Company: Leidos		Company: ETR		
Relinquished by: Charles S	Date: 5-9	Received by: 240	Date: 1755 5/10/19	
Signature		Signature: Reed Poff		
Printed Name	Time	Printed Name: Reed Poffraff	Time: 0915	
Company		Company: TA-Denver		

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-169-TA

Date: 05/09/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Ryan Lynch

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Sulfide (9)(E)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	RQLmw-011-190401-GW		5/9/19	0953	W	1	1			2	
	RQLmw-011-190401-GWMSD		↓	0953	W	1	1			2	Extra Volume for Matrix Spike
	RQLmw-011-190402-GW		↓	0953	W	1	1			2	

Relinquished by
Signature
Heather Adams
Printed Name
Leidos
Company
Date 5/9/19
Time 1539

Signature
William R Cordell
Printed Name
ETPL
Company
Date 5-9-19
Time 1545

Notes: Total Number of Containers: 6
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Relinquished by
Signature
Charles S
Printed Name
Company
Date 5-9
Time

Received by
Signature
Reed Pot
Printed Name
Reed Pottruff
Company TA-Denver
Date 5/10/19
Time 0915

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-165-TA

Date: 5/9/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
D. Moyer Lindsey Moyer

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Explosives (6)(A)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-021-190401-GW		5/9/19	1120	W	2	1		3	
	FWGmw-021-190401-GWMSD		↓	1120	W	4	1		5	Extra volume for MS/MSD
	FWGmw-021-190402-GW		↓	1120	W	2	1		3	

Relinquished by	Date		Date
Signature: [signature]	5/9/19	Signature: [signature]	5-9-19
Printed Name: Heather Adams	Time: 1530	Printed Name: William R Cordell	Time: 1545
Company: Leidos		Company: ETPL	
Relinquished by: Charles G	Date: 5-9	Received by: 240 1755	Date: 5/10/19
Signature:		Signature: Reed Pott	
Printed Name:	Time:	Printed Name: Reed Pottruff	Time: 0915
Company:		Company: TA-Denver	

Notes: Total Number of Containers: 11
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-175-TA

Date: 05/09/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Jackie Mitchell

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	Requested Parameters: VOCs (1)(B)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-018-190401-GW	GW	05/09/19	0925	W	3	1	1		5	
	FWGTB-190003-TB		↓	0920	W	2				2	Trip Blank

On 05/09/19

Relinquished by
Signature
Heather Adams
Printed Name
Leidos
Company
Date 5/9/19
Time 1330

Received by
Signature
William R Cordell
Printed Name
William R Cordell
Company ETEC
Date 5-9-19
Time 1545

Relinquished by
Signature
Charles P
Printed Name
Company
Date 5-9
Time

Received by
Signature
Reed Pottratt
Printed Name
Reed Pottratt
Company TA-Denver
Date 5/10/19
Time 0915

Notes: Total Number of Containers: 16

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-171-TA

Date: 5-9-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gromofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	Phthalates/Phenols (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	RQLmw-008-190401-GW		5-9-19	1200	W	3	2	2	2		2	1	1		13	Sample Assc. With FWGTB-191008-TB

Requested Parameters

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 13
Signature	5/9/19	Signature	5-9-19	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: HEATHER ADAMS	Time: 1530	Printed Name: WILLIAM R Cordell	Time: 1545	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B 6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A 11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Company: Leidos		Company: ETRL		
Relinquished by: Charles M	Date: 5-9	Received by: 240 1755	Date: 5/10/19	
Signature		Signature: Reed Pottruff		
Printed Name	Time	Printed Name: Reed Pottruff	Time: 0915	
Company		Company: TA - Denver		

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

COC No.: RVAAP- 190-TA

Page 1 of 1

Date: 5-9-19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Gabby Gramofsky

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	Phthalates/Phenols (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	TAL Metals+Phosphorus (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	RQLmw-007-190401-GW		5-9-19	0940	W	3	2	2	2		2	1	1		13	
	FWGTB-191008-TB		5-9-19	0940	W	2									2	Trip Blank

Page 3755 of 3757

Relinquished by	Date	Received by	Date	Time
Signature	5/9/19	Signature	5-9-19	
Printed Name: HEATHER ADAMS	Time: 1530	Printed Name: WILLIAM R CORDELL	Time: 1545	
Company: Leidos		Company: ETRL		
Relinquished by	Date: 5-9	Received by: 240 1755	Date: 5/10/19	
Signature		Signature: Reed Pettruff		
Printed Name	Time	Printed Name: Reed Pettruff	Time: 0915	
Company		Company: TTA - Denver		

Notes: Total Number of Containers: 15

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-172-TA

Date: 5/9/19

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Ryan Carrick

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	Phthalates/Phenols (2)(A)	LL PAHs (3)(A)	PCBs (4)(A)	Pesticides (5)(A)	Explosives (6)(A)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	RQLmw-009-190401-GW		5/9/19	1240	W	3	2	2	2		2	1	1		13	Sample Assc. With FWGTB-191008-TB

Relinquished by	Date	Received by	Date
Signature: [signature]	5/9/19	Signature: [signature]	5-9-19
Printed Name: Heather Adams	Time: 1530	Printed Name: William R Cordell	Time: 1545
Company: Leidos		Company: ETRC	

Relinquished by	Date	Received by	Date
Signature: [signature]	5-9	Signature: Reed Pottruff	5/10/19
Printed Name:	Time:	Printed Name: Reed Pottruff	Time: 0915
Company:		Company: TH-Denver	

Notes: Total Number of Containers: 13

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP- 178 -TA

Page 1 of 1

Date: 5/13/2019

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event Spring 2019
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Date	Time	Matrix	VOCs (1)(B)	Cyanide (8)(D)	TAL Metals (7)(C)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-020-190401-GW	GW	5/13/2019	1015	W	3	1	1		5	
	FWGTB-191006-TB	TB	5/13/2019	1015	W	2				2	Trip Blank

Relinquished by: [signature] Signature; Heather Adams Printed Name; Leidos Company — Date: 5/13/19 — Time: 1200

Received by: Test America Signature; RC Robison Printed Name; RICK ROBISON Company — Date: 5/13/19 — Time: 1200

Relinquished by: TAE 240 Signature; RC Robison Printed Name; RICK Company — Date: 5/13/19 — Time: 1250

Received by: [signature] Signature; Ryan Paul Printed Name; TA-DEN Company — Date: 5-14-19 — Time: 0920

Notes: Total Number of Containers: 7

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

Notes:
1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier

280-123802 Chain of Custody

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

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D.4 Calibration Logs

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EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA03179	YSI ProDSS	DO 97.5 %	Calibration	100.1%	DI Water	None	Jackie Mitchell	04/29/19
	Cond.	1.295 ms/cm		1.413 ms/cm	1.413 ms/cm 8GE038			
	pH 4.0	4.17 SU		4.00 SU	pH 4.0 8GJ315			
	pH 7.0	7.06 SU		7.00 SU	pH 7 8GD396			
	pH 10.0	10.28 SU		10.07 SU	pH 10 8GD929			
	Turbidity	261.5 N/A		N/A	N/A			
	ORP	261.5 mV		240.0 mV	240 mV 8GL723	None	Jackie Mitchell	04/29/19
FA03966	YSI ProDSS	DO 93.1%	Calibration	97.7%	DI Water			
	Cond.	1.304 ms/cm		1.413 ms/cm	1.413 ms/cm 8GE038			
	pH 4.0	4.34 SU		4.00 SU	pH 4 8GJ315			
	pH 7.0	7.06 SU		7.00 SU	7 pH 8GD396			
	pH 10.0	10.03 SU		10.00 SU	pH 10 8GD929			
	Turbidity	N/A		N/A	N/A			
	ORP	248.0 mV		239.9 mV	240.0 mV 8GL723			
FA02140	YSI ProDSS	DO 94.2 %	Calibration	97.7%	DI Water	None	Jackie Mitchell	04/29/19
	Cond.	0.873 ms/cm		1.463 ms/cm	1.413 ms/cm 8GE038			
	pH 4.0	4.17 SU		4.00 SU	pH 4 8GJ315			
	pH 7.0	6.95 SU		7.04 SU	7 pH 8GD396			
	pH 10.0	9.92 SU		10.0 SU	pH 10 8GD292			
	Turbidity	N/A		N/A	N/A			
	ORP	260.3 mV		240.0 mV	240.0 mV 8GL723			
					Jm 04/29/19			

QA performed by: [signature] 5/2/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA03313	YSI ProDSS DO	97.1%	Calibration	97.6%	DI water	None	Jackie Mitchell	04/29/19
	Cond.	1.403 ms/cm		1.413 ms/cm	1.413 ms/cm 8GE038			
	pH 4.0	4.08SU		4.00 SU	4pH8GJ315			
	pH 7.0	6.94SU		7.00 SU	7pH GJ396			
	pH 10.0	9.97SU		10.00 SU	pH10 8GD929			
	ORP	264.0 mV		239.8 mV	240 mV 8GZ723			
FA03313	YSI ProDSS DO	100.5%	Calibration	99.4%	DI water	None	Jackie Mitchell	04/30/19
	cond	1.214		1.413	1.413 8GF038			
	pH 4.0	3.98		4.00	pH4 3GJ315			
	pH 7.0	6.92		7.00	7pH GJ396			
	pH 10.0	10.02		10.00	pH10 8GD929			
	ORP	236.9		240.0	240mV 8GZ723			
FA02140	YSI ProDSS DO	101.5%	Calibration	97.4%	DI water	None	Jackie Mitchell	04/30/19
	cond	1.344		1.413	1.413ms/cm 8GF038			
	pH 4.0	3.97		4.00	4pH H3GJ315			
	pH 7.0	6.90		7.05	7pH GD396			
	pH 10.0	10.09		10.00	10pH8GD929			
	ORP	233.5		240.0	240mV 8GZ723			

QA performed by: EQ 5/20/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS PRE	ADJUSTMENT	POST	Standard/Lot #	Comments	NAME	DATE
FA03966	YSI Pro DSS DO	99.6%	Calibration	99.4%	DI Water	None	Jackie Mitchell	04/30/19
	cond	1.270 ms/cm		1.413 ms/cm	1.413 ms/cm 8GF038			
	pH 4.0	4.10 SU		4.0 SU	4pH H3GJ315			
	pH 7.0	7.05 SU		7.0 SU	7pH GD396			
	pH 10.0	10.48 SU		10.01 SU	10pH 8GD929			
	ORP	235.3 mV		240.3 mV	240 mV 8G2723			
FA03179	YSI Pro DSS DO	102.2%	Calibration	99.8%	DI Water	None	Jackie Mitchell	04/30/19
	cond	1.374 ms/cm		1.413 ms/cm	1.413 ms/cm 8GF038			
	pH 4.0	4.01 SU		4.0 SU	4pH H3GJ315			
	pH 7.0	6.94 SU		7.0 SU	7pH GD396			
	pH 10.0	10.37 SU		10.15 SU	10pH 8GD929			
	ORP	237.7 mV		239.9 mV	240mV 8G2723			
FA03179	YSI Pro DSS DO	101.5%	calibration	99.5%	~~99.5%~~ DI	None	L. Mage	5/1/19
	cond	1.306 ms/cm		1.413 ms/cm	1.413ms 8GF038			
	pH 4.0	4.02 SU		4.00 SU	4pH H3GJ315			
	pH 7.0	7.04 SU		7.00 SU	7pH GD396			
	pH 10.0	10.33 SU		10.00 SU	10pH 8GD929			
	ORP	241.2mv		240.0mv	240mv 8G2723			

5/2/19

QA performed by: [signature] 5/2/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA02140	YSI ProDSS DO	99.5 %	calibration	97.0 %	DI water	None	L. Mason	5/1/19
	cond	1.103 ms/cm		1.413 ms/cm	1413 ms/cm SGF038			
	pH 4.0	4.01 SU		4.00 SU	4pH H3GJ315			
	pH 7.0	6.83 SU		7.00 SU	7pH GD396			
	pH 10.0	10.02 SU		10.00 SU	10 pH SGD929			
	ORP	236.0 mV		236.0 mV	240mV SGJ723			
FA03313	YSI ProDSS DO	99.4 %		96.9 %	DI H_2O		J. Mitchell	
	cond	2.228 ms/cm		1.416 ms/cm	1.413 ms/cm SGF038			
	pH 4.0	4.11 SU		4.00 SU	4pH H3GJ315			
	pH 7.0	~~7.00 SU~~ ~~10.12 SU~~		7.00 SU	7pH GD396			
	pH 10.0	10.12 SU		10.00 SU	10 pH SGD929			
	ORP	235.7 mV		240.0 mV	240mV SGJ723			
FA03966	YSI ProDSS DO	101.3 %		97.0 %	DI H_2O			
	cond	1.490 ms/cm		1.414 ms/cm	1.413ms SGF038			
	pH 4.0	3.96 SU		4.00 SU	4pH H3GJ315			
	pH 7.0	7.04 SU		7.00 SU	7pH GD396			
	pH 10.0	10.12 SU		10.05 SU	10pH SGD929			
	ORP	235.8 mV		240.1 mV	240mV SGJ723			

QA performed by: _____ 5/20/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
YSI Pro DSS	DO	98.9 %	Calibration	97.1 %	DI Water	None	Jackie Mitchell	05/02/19
#FA02140	Conductivity	1.487 ms/cm		1.413 ms/cm	1.413 ms/cm 86E038			
	4pH	4.06 SU		4.0 SU	4pH H3GJ315			
	7pH	7.03 SU		7.03 SU	7pH GD396			
	10pH	10.09 SU		10.04 SU	10pH 8GD			
	ORP	234.0 mV		240.0 mV	240 mV 8G2723			
YSI Pro DSS	DO	101.3 %		99.5				
#FA03179	Conductivity	1.413 ms/cm		1.413 ms/cm				
	4 pH	4.02 SU		4.0 SU				
	7 pH	7.03 SU		7.0 SU				
	10 pH	10.10 SU		10.04 SU				
	ORP	230.8 mV		239.9 mV				
YSI ProDSS	DO	99.8%		97.1 %				
#FA03966	Conductivity	1.404 ms/cm		1.414 ms/cm				
	4pH	3.99 SU		4.0 SU				
	7pH	7.03 SU		7.0 SU				
	10pH	10.09 SU		10.04 SU				
	ORP	238.3 mV		239.9 mV				

QA performed by: _____ 5/6/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA03313	YSI Pro DSS DO	97.7 %	calibration	96.6 %	DI water	None	L Meyer	5/6/19
	cond	1.274 ms/cm		1.413 ms/cm	8GE038 1.413 ms/cm			
	pH 4.0	3.98 SU		4.00 SU	pH4.0 H3GJ35			
	pH 7.0	6.72 SU		7.00 SU	pH7.0 GP396			
	pH 10.0	9.95 SU		10.00 SU	pH10. 8GD929			
	ORP	234.3 mV		240.0 mV	240mV 8GL723			
FA03179	YSI Pro DSS DO	92.3 %		99.1 %				
	cond	1.422 ms/cm		1.413 ms/cm				
	pH 4.0	4.11 SU		4.00 SU				
	pH 7.0	6.88 SU		7.00 SU				
	pH 10.0	9.96 SU		10.00 SU				
	ORP	225.8 mV		240.0 mV	240mV 8GL723 5/6/19			
FA02140	YSI Pro DSS DO	93.9 %		96.7 %				
	cond	1.370 ms/cm		1.413 ms/cm				
	pH 4.0	4.09 SU		4.00 SU				
	pH 7.0	6.81 SU		7.00 SU				
	pH 10.0	9.93 SU		10.00 SU				
	ORP	238.0 mV		240.0 mV				

QA performed by: _____ 5/6/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA03179	YSI ProDSS DO	105.8	calibration	99.5	DI water	none	C Rowan	5/17/19
	cond	1.423		1.413	1.413 ms/cm 8GE038			
	pH 4.0	4.10		4.0	pH 4.0 #3GJ315			
	pH 7.0	6.85		7.0	pH 7.0 GD316			
	pH 10.0	9.90		10.00	pH 10. 8GD927			
	ORP	240.8		240.0	240mV 8GL723			
FA03313	YSI ProDSS DO	97.4		97.0				
	cond	3.191		1.413				
	pH 4.0	4.16		4.00				
	pH 7.0	6.81		7.00				
	pH 10.0	9.94		10.00				
	ORP	232.7		240.0				
FA02140	YSI ProDSS DO	99.5%		99.7%				
	cond	1.408 ms/cm		1.413 ms/cm				
	pH 4.0	4.11 SU		4.00 SU				
	pH 7.0	7.17 SU		7.00 SU				
	pH 10.0	10.54 SU		10.00 SU				
	ORP	236.2 mV		240.0 mV				
				start				

QA performed by: _____ 5/17/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA03966	YSI Pro DSS DO	96.1%	calibration	97.1%	DI water	None	L. Mayer	5/7/19
	cond	1.311 ms/cm		1.413 ms/cm	1.413 ms/cm 8GE038			
	pH 4.0	4.00 SU		4.00 SU	pH4.0 HG3315			
	pH 7.0	6.84 SU		7.00	pH7.0 GD396			
	pH 10.0	10.0 SU		10.0 SU	pH10. 8GD928			
	ORP	233.5 mV		240.0 mV	240mV 8GL723			
FA03313	YSI Pro DSS DO	95.3		97.6		None	G. Grandesky	5-8-19
	cond	1.379		1.413				
	pH 4	4.03		4.00				
	pH 7.0	6.82		7.04				
	pH 10	9.95		10.00				
	ORP	242.2		240.0				
FA03966	YSI Pro DSS DO	94.5		97.6				
	cond	1.367		1.413				
	pH 4	4.18		4.00				
	pH 7.0	6.84		7.04				
	pH 10.0	9.93		10.00				
	ORP	242.0		240.0				
				No station				

QA performed by: _____ 5/8/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA02140	YSI ProDSS DO	88.7%	calibration	94.1%	DI water	None	L. Mgh	5/8/19
	cond	1.370 ms/cm		1.413 ms/cm	1.413 ms/cm 8GE038			
	pH 4.0	4.11 SU		4.00 SU	pH4.0 H3GJ315			
	pH 7.0	6.85 SU		7.04 SU	pH7.0 GD3GG			
	pH 10.0	10.02 SU		10.00 SU	pH10.0 8GD929			
	ORP	240.2 mV		240.0 mV	240 mV 8GL723			
FA03179	YSI ProDSS DO	93.5%		99.9%				
	cond	1.310 ms/cm		1.413 ms/cm				
	pH 4.0	4.06 SU		4.00 SU				
	pH 7.0	6.97 SU		7.00 SU				
	pH 10.0	10.22 SU		10.00 SU				
	ORP	254.5 mV		240.0 mV				
FA02140	YSI ProDSS DO	97.8%		96.5%		None	L. Morgan	5/9/19
	cond	1.412 ms/cm		1.413 ms/cm				
	pH 4.0	4.03 SU		4.00 SU				
	pH 7.0	6.92 SU		7.03 SU				
	pH 10.0	10.04 SU		10.00 SU				
	ORP	234.1 mV		240.0 mV				

my station

QA performed by: 5/2/19

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA03179	YSI ProDSS DO	98.2%	calibration	99.0%	DI water	None	G. Gromolsky	5-9-19
	cond	1.411 mS/cm		1.413 mS/cm	1.413 mS/cm ~~BGG038~~			
	pH 4.0	4.03 SU		4.00 SU	pH4 ~~HBGEJ315~~			
	pH 7.0	6.93 SU		7.03 SU	pH7 GD396			
	pH 10.0	10.05 SU		10.00 SU	pH10 8GD929			
	ORP	234.7 mV		240.0 mV	240mV 8GL723			
FA03313	YSI ProDSS DO	90.7%		96.5%			L. Moyer	
	cond	1.354 mS/cm		1.413 mS/cm				
	pH 4.0	4.21 SU		4.00 SU				
	pH 7.0	7.08 SU		7.03 SU				
	pH 10.0	10.25 SU		10.00 SU				
	ORP 5/9/19	~~235.9mV~~ 235.9mV		240.0mV				
FA03966	YSI ProDSS DO	92.9%		95.6%				
	cond	1.350 mS/cm		1.413 mS/cm				
	pH 4.0	4.19 SU		4.00 SU				
	pH 7.0	6.93 SU		7.00 SU				
	pH 10.0	10.21 SU		10.00 SU				
	ORP	236.0 mV		240.0				

QA performed by: [signature]

EQUIPMENT CALIBRATION

PROJECT NAME: RVAAP Groundwater Monitoring 2018

Calibration Log

IDENTIFIER	ITEM DESCRIPTION	CALIBRATION MEASUREMENTS			Standard/Lot #	Comments	NAME	DATE
		PRE	ADJUSTMENT	POST				
FA03179	YSI PRO DSS	–	–	–	–	None	C. Spurr	5/13/19
	D.O.	104.2 %	Calibration	98.2 %	DI H_2O			
	Sp. Cond.	1.439 mS/cm		1.413 mS/cm	1.413 mS/cm 8GE038			
	pH 4	4.15 SU		4.00 SU	pH 4 HBGJ315			
	pH 7	6.93 SU		7.04 SU	pH 7 GD396			
	pH 10	10.01 SU		10.00 SU	pH 10 8GD929			
	ORP	245.2 mV		239.8 mV	240 mV 8GL723			

QA performed by: _____ 5/13/19

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APPENDIX E

Investigation-Derived Waste Documentation

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E.1 Characterization and Disposal Plan, dated June 11, 2019

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June 11, 2019

Ms. Katie Tait, OHARNG
Camp James A. Garfield - Environmental Office
1438 State Route 534 SW
Newton Falls, OH 44444

Subject: **May 2019 Facility-wide Groundwater Monitoring Program Sampling - Investigation-Derived Waste (IDW) Characterization and Disposal Plan**
Reference: **Contract No. W912QR-16-D-0003, Delivery Order No. W912QR-18-F-0337, Groundwater Investigation and Reporting Services, RVAAP Restoration Program**

Dear Ms. Tait:

Investigative activities in accordance with the *Facility-wide Groundwater Monitoring Addendum for 2019* were performed from April 29, 2019 through May 13, 2019. These activities resulted in the generation of liquid IDW (consisting of purge water and equipment decontamination fluids). The purpose of this letter is to characterize and classify the IDW and to propose methods for disposal. This letter report includes a summary of IDW generated, the origin of the IDW, and proposed classification and recommendations for disposal of the IDW.

The May 2019 IDW stream was generated during the collection of groundwater from wells within the former RVAAP. These were the same activities conducted in October 2018 which generated the same liquid IDW stream. The October 2018 IDW stream was characterized under provisions established by the *Facility-Wide Sampling and Analysis Plan* (USACE 2011) (herein referred to at the Facility-wide SAP). Please reference Attachment 1 for the October 2018 Facility-wide Groundwater Monitoring Program Sampling - Investigation-Derived Waste (IDW) Characterization and Disposal Plan. That IDW stream was classified as non-hazardous, non-contaminated under Clean Harbors Profile No. CH1784679. Please reference Attachment 2 for the Waste Material Profile Sheet, Clean Harbors Profile No. CH1784679.

As the October 2018 and May 2019 liquid IDW streams are generated from the same sampling activities and have the same characteristics, Leidos recommends that the four (4), 55 gallon drums containing approximately 163.5 gallons of groundwater be classified as non-hazardous, noncontaminated utilizing generator knowledge and prior characterization results. Leidos also recommends that the liquid IDW and be removed offsite and disposed of at a permitted water treatment or waste facility unless the ARNG/OHARNG has additional information that would result in the IDW meeting the definition of a listed hazardous waste as defined in 40 CFR Part 261 Subpart D. Table 1 presents the disposal pathway identified as a result of IDW characterization data.

Table 1. Summary of Investigation-Derived Wastes and Disposal Recommendation

Container Number	Container Type and Size	Contents	Generation Date	Disposal Recommendation
Leidos-FWGW-012-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 45 gal	4/23/19-5/2/19	Permitted Treatment or Waste Facility
Leidos-FWGW-013-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 45 gal	5/3/19-5/8/19	Permitted Treatment or Waste Facility
Leidos-FWGW-014-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 38 gal	5/7/19-5/8/19	Permitted Treatment or Waste Facility
Leidos-FWGW-015-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 35.5 gal	5/9/19-5/13/19	Permitted Treatment or Waste Facility

Since the former RVAAP, under RCRA, is the generator of this material, Leidos requests concurrence or direction on the waste classification. Following your concurrence, we will proceed with generating waste manifest and coordinating waste disposal under previous Clean Harbors Profile No. CH1784679.

If you have any questions, or require additional information, please do not hesitate to contact me at (330) 405-5802.

Leidos

Jed Thomas, P.E.
Deputy Project Manager

cc: David Connolly, ARNG
Kevin Sedlak, ARNG, Camp James A. Garfield
Jay Trumble, USACE Louisville
Vasu Peterson, Leidos
Heather Adams, Leidos

ATTACHMENT 1.
October 2018 Facility-wide Groundwater Monitoring Program Sampling - Investigation-Derived Waste (IDW) Characterization and Disposal Plan

January 29, 2019

Ms. Katie Tait, OHARNG
Camp James A. Garfield - Environmental Office
1438 State Route 534 SW
Newton Falls, OH 44444

Subject: **October 2018 Facility-wide Groundwater Monitoring Program Sampling - Investigation-Derived Waste (IDW) Characterization and Disposal Plan**
Reference: **Contract No. W912QR-16-D-0003, Delivery Order No. W912QR-18-F-0337, Groundwater Investigation and Reporting Services, RVAAP Restoration Program**

Dear Ms. Tait:

Investigative activities in accordance with the *Facility-wide Groundwater Monitoring Addendum for 2018* were performed from October 18, 2018 through November 06, 2018 and January 28, 2019. These activities have resulted in the generation of solid IDW (consisting of soil cuttings) and liquid IDW (consisting of purge water and equipment decontamination fluids). The purpose of this letter is to characterize and classify IDW for disposal and to propose methods for disposing of the IDW.

This letter report includes a summary of IDW generated, the origin of the IDW and proposed classification and recommendations for disposal of the IDW (Table 1), a summary of the analytical results (Attachment A), and the laboratory data package (Attachment B). In addition to the specified plans, this letter report follows guidance established by the *Facility-Wide Sampling and Analysis Plan* (USACE 2011) (herein referred to at the Facility-wide SAP).

Two distinct IDW streams were generated as part of the field activities. Each waste stream was composited and sampled per requirements outlined in Section 8.0 of the Facility-wide SAP.

IDW streams generated are:

- Eleven (11), 55 gallon drums containing approximately 437 gallons of groundwater well purge water and equipment decontamination fluids (liquinox wash water, 10% nitric acid, isopropanol, and DI water); and
- Five (5), 55-gallon drum containing soil cuttings.

Liquid IDW Discussion

Per Section 8.4 of the Facility-wide SAP, one composite waste sample was collected for laboratory analysis of 1) metals, herbicides, pesticides, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) using the Toxicity Characteristic Leaching Procedure (TCLP) and 2) total PCBs, total sulfide, total cyanide, nitrate/nitrite, corrosivity (pH), and flashpoint to characterize the waste for disposal. Samples FWGIDW-181001-WW and FWGIDW-181002-WW (cyanide only) were collected to characterize the liquid drums containing groundwater well purge water and equipment decontamination fluids [liquinox wash water, 10% nitric acid, isopropanol, and deionized (DI) water]. Upon receipt from the laboratory, the analytical results were reviewed to determine if the waste was potentially hazardous. This review consisted of a comparison of the analytical results against the TCLP criteria presented in Table 8-1: Maximum Concentration of Contaminants for the Toxicity Characteristic (40 *CFR* 261.24) and Table 8-2: Maximum Concentration of Hazardous Waste Characterization Analytes (40 *CFR* 261.21-23) presented in the Facility-wide SAP (USACE 2011), as well as other applicable Resource Conservation Recovery Act (RCRA) Hazardous Waste regulations 40 *CFR* 261 – 265.

Attachment A, Table A.1 presents the analytical laboratory data for the liquid IDW sample. The results are summarized below:

1) All analytical results were below the Maximum Concentration for Toxicity Characteristic per 40 *CFR* 261.24;
2) The sample had nondetectable concentrations for all PCBs analyzed;
3) The pH for the IDW is considered neutral (2 S.U. < pH < 12.5 S.U.);
4) The flash point is >60ûC (140ûF);
5) A detection of cyanide at 0.27 mg/L was identified in sample FWGIDW-181002-WW. Table 8-2 of the FWSAP lists the cyanide criteria as 0.01 mg/L. However, this is not consistent with 40 CFR 261.23 and 261.24, as numerical standards are not specified. Rather, the US Environmental Protection Agency requires generators to use their knowledge to make a D003 determination per 40 CFR 261.23(a)(5) for cyanide-bearing wastes. Based on generator knowledge of the site and a visual assessment of the current condition of the waste, the waste does not qualify as reactive waste.

Given the observed analytical results, it is recommended that the liquid IDW be classified as non-hazardous, non-contaminated.

Solid IDW Discussion

Per Section 8.4 of the Facility-wide SAP, a composite waste sample (FWGIDW-181001-WS) was collected for laboratory analysis 1) metals, herbicides, pesticides, SVOCs, and VOCs using the TCLP and 2) total PCBs, total sulfide, total cyanide, nitrate/nitrite, corrosivity (pH), and flashpoint to characterize the soil IDW for disposal. Upon receipt from the laboratory, the analytical results were reviewed to determine if the waste was potentially hazardous. This review consisted of a comparison of the analytical results against the TCLP criteria presented in Table 8-1: Maximum Concentration of Contaminants for the Toxicity Characteristic (40 *CFR* 261.24) and Table 8-2: Maximum Concentration of Hazardous Waste Characterization Analytes (40 CFR 261.21-23), presented in the Facility-wide SAP (USACE 2011) and RCRA Hazardous Waste regulations 40 *CFR* 261 – 265.

Attachment A, Table A.2 presents the analytical laboratory data for solid IDW generated during ongoing field activities. The results are summarized below:

1) All analytical results were below the Maximum Concentration for Toxicity Characteristic per 40 *CFR* 261.24;
2) The sample had nondetectable concentrations for all PCBs analyzed;
3) The pH for the IDW is considered neutral (2 S.U. < pH < 12.5 S.U.);
4) The flash point is >60ûC (140ûF); and
5) A detection of cyanide at 37B mg/kg was identified in the sample. Table 8-2 of the FWSAP lists the cyanide criteria as 0.66 mg/kg. However, this is not consistent with 40 CFR 261.23 and 261.24, as numerical standards are not specified. Rather, the US Environmental Protection Agency requires generators to use their knowledge to make a D003 determination per 40 CFR 261.23(a)(5) for cyanide-bearing wastes. Based on generator knowledge of the site and a visual assessment of the current condition of the waste, the waste does not qualify as reactive waste.

Given the observed analytical results, it is recommended that the solid IDW waste stream be classified as non-hazardous, non-contaminated.

Recommended Disposal Pathways for IDW

Table 1s present the disposal pathway identified as a result of IDW characterization data. This IDW has been characterized under provisions of the Facility-Wide SAP using TCLP analyses and process knowledge. Leidos recommends that all IDW be disposed as non-hazardous, non-contaminated waste to be removed offsite by a permitted water treatment or waste facility unless the ARNG/OHARNG has additional information that would result in the IDW meeting the definition of a listed hazardous waste as defined in 40 *CFR* Part 261 Subpart D.

Since the former RVAAP, under RCRA, is the generator of this material, Leidos requests concurrence or direction on the waste classification. Following your concurrence, we will proceed with generating a waste profile, waste manifest, and coordinating waste disposal.

If you have any questions, or require additional information, please do not hesitate to contact me at (330) 405-5802.

Leidos



Jed Thomas, P.E.
Deputy Project Manager

cc: David Connolly, ARNG
Kevin Sedlak, ARNG, Camp James A. Garfield
Jay Trumble, USACE Louisville
Vasu Peterson, Leidos
Heather Adams, Leidos

Table 1. Summary of Sampled Investigation-Derived Wastes and Disposal Recommendation

Container Number	Container Type and Size	Contents	Generation Date	Sample ID	Date(s) Sampled	Disposal Recommendation
Leidos-FWGW-001-S	55 Gallon, Steel, Open Top Drum	Soil Cuttings and Sediment	10/23/18	FWGIDW-181001-WS	10/31/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-002-S	55 Gallon, Steel, Open Top Drum	Soil Cuttings and Sediment	10/23/18	FWGIDW-181001-WS	10/31/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-003-S	55 Gallon, Steel, Open Top Drum	Soil Cuttings and Sediment	10/24/18	FWGIDW-181001-WS	10/31/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-004-S	55 Gallon, Steel, Open Top Drum	Soil Cuttings and Sediment	10/23/18	FWGIDW-181001-WS	10/31/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-005-S	55 Gallon, Steel, Open Top Drum	Soil Cuttings and Sediment	10/26/18	FWGIDW-181001-WS	10/31/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-001-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 40 gal	10/15/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-002-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 40 gal	10/22/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-003-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 39 gal	10/24/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-004-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 41.5 gal	10/25/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-005-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	10/26/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-006-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 43.5 gal	10/29/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-007-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 39.5 gal	10/30/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-008-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 39.5 gal	10/30/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-009-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 30 gal	10/20/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-010-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 39 gal	11/01/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility
Leidos-FWGW-011-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 43 gal	10/29/18	FWGIDW-181001-WW	11/2/2018	Permitted Treatment or Waste Facility

Note 1: Sample FWGIDW-181002-WW was collected on 11/14/18 for cyanide analysis of the liquid drums due to an incorrectly preserved sample bottle on 11/2/18.
Note 2: A total of 9 gallons of liquid IDW were generated during the 1/28/19 sampling event. This liquid IDW was placed in drum Leidos-FWGW-010-L.

ATTACHMENT A
ANALYTICAL RESULTS

Table A.1. Liquid IDW Sample Results (FWGIDW-181001-WW)

Analyte	CAS Number	Units	Specific Method	Basis	Regulatory Level Citation	Regulatory Level	Sample Result
Arsenic	7440-38-2	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
Barium	7440-39-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	100	0.015 J
Cadmium	7440-43-9	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.1 U
Chromium	7440-47-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
Lead	7439-92-1	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
Mercury	7439-97-6	mg/L	Mercury (CVAA)	TCLP	40 CFR 261.24	0.2	<0.002 U
Selenium	7782-49-2	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.1 U
Silver	7440-22-4	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
2,4-D	94-75-7	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	10	<0.04 U
Silvex (2,4,5-TP)	93-72-1	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	1	<0.01 U
Chlordane (technical)	57-74-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.03	<0.005 U
Endrin	72-20-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.02	<0.005 U
Heptachlor	76-44-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.005 U
Heptachlor epoxide	1024-57-3	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.005 U
Methoxychlor	72-43-5	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	10	<0.02 U
Toxaphene	8001-35-2	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.5	<0.001 U
gamma-BHC (Lindane)	58-89-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.4	<0.0005 U
1,4-Dichlorobenzene	106-46-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	7.5	<0.02 U
2,4,5-Trichlorophenol	95-95-4	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	400	<0.05 U
2,4,6-Trichlorophenol	88-06-2	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	2	<0.025 U
2,4-Dinitrotoluene	121-14-2	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.05 U
2-Methylphenol (o-cresol)	95-48-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.05 U
3 & 4 Methylphenol (m,p-cresol)	15831-10-4	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.05 U
Hexachlorobenzene	118-74-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.05 U
Hexachlorobutadiene	87-68-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.05 U
Hexachloroethane	67-72-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	3	<0.05 U
Nitrobenzene	98-95-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	2	<0.05 U
Pentachlorophenol	87-86-5	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.25 U
Pyridine	110-86-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	5	<0.1 U
1,1-Dichloroethene	75-35-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.7	<0.01 U
1,2-Dichloroethane	107-06-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U
2-Butanone (MEK)	78-93-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.1 U
Benzene	71-43-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U
Carbon tetrachloride	56-23-5	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U
Chlorobenzene	108-90-7	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.01 U
Chloroform	67-66-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	6	<0.01 U
Tetrachloroethene	127-18-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.7	<0.01 U
Trichloroethene	79-01-6	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U

Table A.1. Liquid IDW Sample Results (FWGIDW-181001-WW)

Analyte	CAS Number	Units	Specific Method	Basis	Regulatory Level Citation	Regulatory Level	Sample Result
Vinyl chloride	75-01-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.2	<0.01 U
PCB-1016	12674-11-2	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1221	11104-28-2	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1232	11141-16-5	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1242	53469-21-9	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1248	12672-29-6	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1254	11097-69-1	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1260	11096-82-5	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1262	37324-23-5	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
PCB-1268	11100-14-4	ug/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.0011 U
Flashpoint	N/A	Deg C	Ignitability, Pensky-Martens Closed-Cup Method	Total	40 CFR 261.21	>60ûC (140ûF)	>60ûC (140ûF)
Cyanide, Total	57-12-5	mg/L	Cyanide, Total and/or Amenable	Total	40 CFR 261.23	See Note 1	0.27
Sulfide, Total	18496-25-8	mg/L	Sulfide, Acid Soluble and Insoluble (Titrimetric)	Total	40 CFR 261.23	See Note 1	<4 U
pH adj. to 25 deg C	N/A	SU	pH	Total	40 CFR 261.22	2 ≤ pH ≤ 12.5	7.8 HF
Nitrate as N	14797-55-8	mg/L	Anions, Ion Chromatography	Total	NA	---	14 D
Nitrite as N	14797-65-0	mg/L	Anions, Ion Chromatography	Total	NA	---	0.52 B
Temperature	N/A	Deg C	pH	Total	NA	---	7.8 HF (S.U)

The liquid IDW sample for analysis of cyanide was collected on 11/14/18 under sample ID FWGIDW-181002-WW due to an incorrectly preserved sample bottle on 11/2/18. All other analyses were from sample collected on 11/2/18 under sample ID FWGIDW-181001-WW.
Waste with PCB concentrations greater than 50 ppm (mg/L) [or 50,000 ppb (ug/L)] are regulated and to be disposed in accordance with the Toxic Substances Control Act (TSCA).
Note 1: The US Environmental Protection Agency requires generators to use their knowledge to make a D003 determination per CFR 261.23(a)(5) for cyanide or sulfide-bearing wastes.
--- = No regulatory standards for determination of hazardous waste exist.
B = Compound was found in the blank and in the sample.
D = The reported value is from a dilution.
HF = Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J = Estimated concentration, less than the reporting limit - Lab Qualifier
Q = One or more laboratory quality control criteria failed.
U = Non-detect, concentration reported is reporting limit - Lab Qualifier

Table A.2. Solid IDW Sample Results (FWGIDW-181001-WS)

Analyte	CAS Number	Units	Specific Method	Basis	Regulatory Level Citation	Regulatory Level	Sample Result
Arsenic	7440-38-2	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
Barium	7440-39-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	100	0.65 JB
Cadmium	7440-43-9	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.1 U
Chromium	7440-47-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
Lead	7439-92-1	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
Mercury	7439-97-6	mg/L	Mercury (CVAA)	TCLP	40 CFR 261.24	0.2	<0.002 U
Selenium	7782-49-2	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.1 U
Silver	7440-22-4	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.5 U
2,4-D	94-75-7	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	10	<0.04 U
Silvex (2,4,5-TP)	93-72-1	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	1	<0.01 U
Chlordane (technical)	57-74-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.03	<0.005 U
Endrin	72-20-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.02	<0.0005 U
Heptachlor	76-44-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.0005 U
Heptachlor epoxide	1024-57-3	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.0005 U
Methoxychlor	72-43-5	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	10	<0.001 U
Toxaphene	8001-35-2	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.5	<0.02 U
gamma-BHC (Lindane)	58-89-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.4	<0.0005 U
1,4-Dichlorobenzene	106-46-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	7.5	<0.02 U
2,4,5-Trichlorophenol	95-95-4	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	400	<0.05 U
2,4,6-Trichlorophenol	88-06-2	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	2	<0.025 U
2,4-Dinitrotoluene	121-14-2	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.05 U
2-Methylphenol (o-cresol)	95-48-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.05 U
3 & 4 Methylphenol (m,p-cresol)	15831-10-4	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.05 U
Hexachlorobenzene	118-74-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.05 U
Hexachlorobutadiene	87-68-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.05 U
Hexachloroethane	67-72-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	3	<0.05 U
Nitrobenzene	98-95-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	2	<0.05 U
Pentachlorophenol	87-86-5	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.25 U
Pyridine	110-86-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	5	<0.1 UF2
1,1-Dichloroethene	75-35-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.7	<0.01 U
1,2-Dichloroethane	107-06-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U
2-Butanone (MEK)	78-93-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.1 U
Benzene	71-43-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U
Carbon tetrachloride	56-23-5	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U
Chlorobenzene	108-90-7	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.01 U
Chloroform	67-66-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	6	<0.01 U
Tetrachloroethene	127-18-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.7	<0.01 U

Table A.2. Solid IDW Sample Results (FWGIDW-181001-WS)

Analyte	CAS Number	Units	Specific Method	Basis	Regulatory Level Citation	Regulatory Level	Sample Result
Trichloroethene	79-01-6	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.01 U
Vinyl chloride	75-01-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.2	<0.01 U
PCB-1016	12674-11-2	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 UF1
PCB-1221	11104-28-2	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<1.1 U
PCB-1232	11141-16-5	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 U
PCB-1242	53469-21-9	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 U
PCB-1248	12672-29-6	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 U
PCB-1254	11097-69-1	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 U
PCB-1260	11096-82-5	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 U
PCB-1262	37324-23-5	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 U
PCB-1268	11100-14-4	ug/Kg	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50,000	<0.8 U
Flashpoint	N/A	Deg C	Ignitability, Pensky-Martens Closed-Cup Method	Total	40 CFR 261.21	>60ûC (140ûF)	>60ûC (140ûF)
Cyanide, Total	57-12-5	mg/Kg	Cyanide, Total and/or Amenable	Total	40 CFR 261.23	See Note 1	37 B
Sulfide, Total	18496-25-8	mg/Kg	Sulfide, Acid Soluble and Insoluble (Titrimetric)	Total	40 CFR 261.23	See Note 1	17 J
pH adj. to 25 deg C	N/A	SU	pH	Soluble	40 CFR 261.22	2 ≤ pH ≤ 12.5	8.4 HF
Nitrate as N	14797-55-8	mg/Kg	Anions, Ion Chromatography	Soluble	NA	---	0.41 J
Nitrite as N	14797-65-0	mg/Kg	Anions, Ion Chromatography	Soluble	NA	---	<5.8 U
Temperature	N/A	Deg C	pH	Soluble	NA	---	22.8 HF
Percent Moisture	N/A	%	Percent Moisture	Total	NA	---	18.9%
Percent Solids	N/A	%	Percent Moisture	Total	NA	---	81.1%

The solid IDW sample for analysis was collected on 10/31/18.
Waste with PCB concentrations greater than 50 ppm (mg/L) [or 50,000 ppb (ug/L)] are regulated and to be disposed in accordance with the Toxic Substances Control Act (TSCA).
Note 1: The US Environmental Protection Agency requires generators to use their knowledge to make a D003 determination per CFR 261.23(a)(5) for cyanide or sulfide-bearing wastes.
--- = No regulatory standards for determination of hazardous waste exist.
B = Compound was found in the blank and sample
F1 = MS and/or MSD Recovery is outside acceptance limits.
F2 = MS/MSD RPD exceeds control limits
HF = Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J = Estimated concentration, less than the reporting limit - Lab Qualifier
Q = One or more laboratory quality control criteria failed.
U = Non-detect, concentration reported is reporting limit - Lab Qualifier

ATTACHMENT B
LABORATORY ANALYTICAL REPORTS

Job Number: 280-116404-1: Containing Sample FWGIDW-181001-WS
Job Number: 280-116538-2: Containing Samples FWGIDW-181001-WW, FWGIDW-181002-WW

ANALYTICAL REPORT

Job Number: 280-116404-1

Job Description: Leidos RFP# 001088 - Ravenna AAP-66

For:
Leidos, Inc.
Picatinny Arsenal
356 Ninth Avenue
Suite 106
Dover, NJ 07801

Attention: Rita Schmon-Stasik



Approved for release.
Donna R Rydberg
Senior Project Manager
12/13/2018 7:31 PM

Donna R Rydberg, Senior Project Manager
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0192
donna.rydberg@testamericainc.com
12/13/2018

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

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Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: Leidos, Inc.

Project: Leidos RFP# 001088 - Ravenna AAP-66

Report Number: 280-116404-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 11/1/2018 at 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.0º C, 1.0º C and 1.1º C.

TCLP VOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for TCLP volatile organic compounds (GC-MS) in accordance with 1311. The samples were leached on 11/05/2018 and analyzed on 11/09/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for TCLP semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were leached on 11/05/2018, prepared on 11/06/2018 and analyzed on 11/14/2018.

Pyridine exceeded the RPD limit for the MS/MSD of sample FWGIDW-181001-WS (280-116404-1) in batch 280-437601. The individual spike recoveries were in control. The associated LCS was in control and provides evidence that operating procedures were in control.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ORGANOCHLORINE PESTICIDES (GC)
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for Organochlorine Pesticides (GC) in accordance with EPA SW-846 Method 1311/8081B. The samples were leached on 11/05/2018, prepared on 11/08/2018 and analyzed on 12/03/2018.

DCB Decachlorobiphenyl failed the surrogate recovery criteria low for sample LB 280-436399/1-F. The surrogate Tetrachloro-m-xylene is in control. The associated samples surrogates were in control and the LCS surrogates were in control. The sample was not reanalyzed as hold times had expired. The data was reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

POLYCHLORINATED BIPHENYLS (PCBS)
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for polychlorinated biphenyls (PCBs) in accordance with EPA SW-846 Method 8082A. The samples were prepared on 11/06/2018 and analyzed on 11/27/2018.

PCB-1016 failed the recovery criteria low for the MS/MSD of sample FWGIDW-181001-WS (280-116404-1) in batch 280-438897. The associated LCS was in control and provides evidence that operating procedures were in control.

Sample FWGIDW-181001-WS (280-116404-1)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: FWGIDW-181001-WS (280-116404-1), (LCS 280-436527/2-A), (MB 280-436527/1-A), (280-116404-C-1-D MS) and (280-116404-C-1-E MSD). Acid Lot: 161554.

The following samples required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: FWGIDW-181001-WS (280-116404-1), (LCS 280-436527/2-A), (MB 280-436527/1-A), (280-116404-C-1-D MS) and (280-116404-C-1-E

MSD). The reagent lot number used was: T31E034.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP CHLORINATED HERBICIDES
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for TCLP chlorinated herbicides in accordance with EPA SW-846 Methods 1311/8151A. The samples were leached on 11/05/2018, prepared on 11/07/2018 and analyzed on 11/09/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP METALS
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for TCLP metals in accordance with EPA SW846 Methods 1311/6010C. The samples were leached on 11/05/2018, prepared on 11/07/2018 and analyzed on 11/08/2018.

Barium was detected in method blank LB 280-436399/1-D at a level that was less than one half the RL; therefore, corrective action was deemed unnecessary. The value should be considered an estimate, and has been flagged “J”.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP MERCURY
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for TCLP mercury in accordance with SW-846 1311/7470. The samples were leached on 11/05/2018, and prepared and analyzed on 11/08/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

IGNITABILITY
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for Ignitability in accordance with 1010A. The samples were analyzed on 11/16/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL CYANIDE
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for Total Cyanide in accordance with 9012B. The samples were prepared and analyzed on 11/14/2018.

Cyanide, Total was detected in method blank MB 280-437593/4-A at a level that was less than the RL; therefore, corrective action was deemed unnecessary. The value should be considered an estimate, and has been flagged “J”.

Sample FWGIDW-181001-WS (280-116404-1)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL SULFIDE
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for total sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 11/07/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for Corrosivity (pH) in accordance with EPA SW-846 Method 9045D. The samples were leached on 11/08/2018 and analyzed on 11/08/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for anions in accordance with SW 846 9056A. The samples were leached on 11/13/2018 and analyzed on 11/14/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERCENT SOLIDS
Sample FWGIDW-181001-WS (280-116404-1) was analyzed for percent solids in accordance with ASTM D2216-90. The samples were analyzed on 11/06/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116404-1

Client Sample ID: FWGIDW-181001-WS

Lab Sample ID: 280-116404-1

Analyte	Result	Qualifier	RL		MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.65	J B	1.0		0.0040	mg/L	1		6010C	TCLP
Flashpoint	>60		1.00		1.00	Degrees C	1		1010A	Total/NA
Cyanide, Total	37	B	1.2		0.25	mg/Kg	2	☼	9012B	Total/NA
Sulfide	17	J	21		5.0	mg/Kg	1	☼	9034	Total/NA
pH adj. to 25 deg C	8.4	HF	0.1		0.1	SU	1		9045D	Soluble
Temperature	22.8	HF	1.0		1.0	Degrees C	1		9045D	Soluble
Nitrate as N	0.41	J	5.8		0.36	mg/Kg	1	☼	9056A	Soluble

This Detection Summary does not include radiochemical test results.

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Benzene	ND		0.010	0.0016	mg/L		11/09/18 21:21	1
2-Butanone (MEK)	ND		0.10	0.020	mg/L		11/09/18 21:21	1
Carbon tetrachloride	ND		0.010	0.0019	mg/L		11/09/18 21:21	1
Chlorobenzene	ND		0.010	0.0017	mg/L		11/09/18 21:21	1
Chloroform	ND		0.010	0.0016	mg/L		11/09/18 21:21	1
1,2-Dichloroethane	ND		0.010	0.0013	mg/L		11/09/18 21:21	1
1,1-Dichloroethene	ND		0.010	0.0023	mg/L		11/09/18 21:21	1
Tetrachloroethene	ND		0.010	0.0020	mg/L		11/09/18 21:21	1
Trichloroethene	ND		0.010	0.0016	mg/L		11/09/18 21:21	1
Vinyl chloride	ND		0.010	0.0010	mg/L		11/09/18 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*78 - 120*		*11/09/18 21:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*64 - 129*		*11/09/18 21:21*	*1*
4-Bromofluorobenzene (Surr)	*112*		*78 - 121*		*11/09/18 21:21*	*1*
Dibromofluoromethane (Surr)	*101*		*79 - 119*		*11/09/18 21:21*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
2-Methylphenol	ND		0.050	0.0049	mg/L		11/14/18 19:46	1
3 & 4 Methylphenol	ND		0.050	0.0013	mg/L		11/14/18 19:46	1
1,4-Dichlorobenzene	ND		0.020	0.0016	mg/L		11/14/18 19:46	1
2,4-Dinitrotoluene	ND		0.050	0.0083	mg/L		11/14/18 19:46	1
Hexachlorobenzene	ND		0.050	0.0033	mg/L		11/14/18 19:46	1
Hexachlorobutadiene	ND		0.050	0.017	mg/L		11/14/18 19:46	1
Hexachloroethane	ND		0.050	0.011	mg/L		11/14/18 19:46	1
Nitrobenzene	ND		0.050	0.0041	mg/L		11/14/18 19:46	1
Pentachlorophenol	ND		0.25	0.10	mg/L		11/14/18 19:46	1
Pyridine	ND	F2	0.10	0.0057	mg/L		11/14/18 19:46	1
2,4,5-Trichlorophenol	ND		0.050	0.0022	mg/L		11/14/18 19:46	1
2,4,6-Trichlorophenol	ND		0.025	0.0014	mg/L		11/14/18 19:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*75*		*49 - 120*	*11/06/18 18:15*	*11/14/18 19:46*	*1*
2-Fluorophenol (Surr)	*76*		*50 - 120*	*11/06/18 18:15*	*11/14/18 19:46*	*1*
2,4,6-Tribromophenol (Surr)	*99*		*51 - 120*	*11/06/18 18:15*	*11/14/18 19:46*	*1*
Nitrobenzene-d5 (Surr)	*80*		*51 - 120*	*11/06/18 18:15*	*11/14/18 19:46*	*1*
Phenol-d5 (Surr)	*70*		*47 - 120*	*11/06/18 18:15*	*11/14/18 19:46*	*1*
Terphenyl-d14 (Surr)	*105*		*56 - 120*	*11/06/18 18:15*	*11/14/18 19:46*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Endrin	ND		0.00050	0.000079	mg/L		12/03/18 17:52	1
Heptachlor	ND		0.00050	0.000077	mg/L		12/03/18 17:52	1
Heptachlor epoxide	ND		0.00050	0.000075	mg/L		12/03/18 17:52	1
gamma-BHC (Lindane)	ND		0.00050	0.000069	mg/L		12/03/18 17:52	1
Methoxychlor	ND		0.0010	0.00013	mg/L		12/03/18 17:52	1
Toxaphene	ND		0.020	0.0037	mg/L		12/03/18 17:52	1
Chlordane (technical)	ND		0.0050	0.0014	mg/L		12/03/18 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*83*		*28 - 115*	*11/08/18 13:15*	*12/03/18 17:52*	*1*
DCB Decachlorobiphenyl	*104*		*34 - 122*	*11/08/18 13:15*	*12/03/18 17:52*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30 **Percent Solids: 81.1**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
PCB-1016	ND	F1	800	120	ug/Kg	☼	11/27/18 16:17	10
PCB-1221	ND		1100	380	ug/Kg	☼	11/27/18 16:17	10
PCB-1232	ND		800	120	ug/Kg	☼	11/27/18 16:17	10
PCB-1242	ND		800	220	ug/Kg	☼	11/27/18 16:17	10
PCB-1248	ND		800	140	ug/Kg	☼	11/27/18 16:17	10
PCB-1254	ND		800	130	ug/Kg	☼	11/27/18 16:17	10
PCB-1260	ND		800	64	ug/Kg	☼	11/27/18 16:17	10
PCB-1262	ND		800	280	ug/Kg	☼	11/27/18 16:17	10
PCB-1268	ND		800	95	ug/Kg	☼	11/27/18 16:17	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*77*		*44 - 130*	*11/06/18 15:55*	*11/27/18 16:17*	*10*
DCB Decachlorobiphenyl	*88*		*59 - 130*	*11/06/18 15:55*	*11/27/18 16:17*	*10*

Method: 8151A DOD - Herbicides (GC) - TCLP

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
2,4-D	ND		0.040	0.0021	mg/L		11/09/18 17:30	1
Silvex (2,4,5-TP)	ND		0.010	0.0017	mg/L		11/09/18 17:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*37*		*10 - 131*	*11/07/18 08:15*	*11/09/18 17:30*	*1*

Method: 6010C - Metals (ICP) - TCLP

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Arsenic	ND		0.50	0.022	mg/L		11/08/18 01:20	1

Method: 6010C - Metals (ICP) - TCLP (Continued)

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Barium	**0.65**	**J B**	1.0	0.0040	mg/L		11/08/18 01:20	1
Cadmium	ND		0.10	0.0020	mg/L		11/08/18 01:20	1
Chromium	ND		0.50	0.0030	mg/L		11/08/18 01:20	1
Lead	ND		0.50	0.014	mg/L		11/08/18 01:20	1
Selenium	ND		0.10	0.032	mg/L		11/08/18 01:20	1
Silver	ND		0.50	0.0040	mg/L		11/08/18 01:20	1

Method: 7470A - Mercury (CVAA) - TCLP

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Mercury	ND		0.0020	0.000030	mg/L		11/08/18 20:08	1

General Chemistry

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Flashpoint	**>60**		1.00	1.00	Degrees C		11/16/18 01:16	1
Cyanide, Total	**37**	**B**	1.2	0.25	mg/Kg	☼	11/14/18 20:40	2
Sulfide	**17**	**J**	21	5.0	mg/Kg	☼	11/07/18 20:06	1

General Chemistry - Soluble

Client Sample ID: FWGIDW-181001-WS **Lab Sample ID: 280-116404-1**
Date Collected: 10/31/18 13:00 **Matrix: Solid**
Date Received: 11/01/18 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
pH adj. to 25 deg C	**8.4**	**HF**	0.1	0.1	SU		11/08/18 19:04	1
Temperature	**22.8**	**HF**	1.0	1.0	Degrees C		11/08/18 19:04	1
Nitrate as N	**0.41**	**J**	5.8	0.36	mg/Kg	☼	11/14/18 01:34	1
Nitrite as N	ND		5.8	0.39	mg/Kg	☼	11/14/18 01:34	1

Default Detection Limits

Client: Leidos, Inc. TestAmerica Job ID: 280-116404-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Leach: 1311

Analyte	RL	MDL	Units	Method
1,1-Dichloroethene	0.010	0.0023	mg/L	8260B
1,2-Dichloroethane	0.010	0.0013	mg/L	8260B
2-Butanone (MEK)	0.10	0.020	mg/L	8260B
Benzene	0.010	0.0016	mg/L	8260B
Carbon tetrachloride	0.010	0.0019	mg/L	8260B
Chlorobenzene	0.010	0.0017	mg/L	8260B
Chloroform	0.010	0.0016	mg/L	8260B
Tetrachloroethene	0.010	0.0020	mg/L	8260B
Trichloroethene	0.010	0.0016	mg/L	8260B
Vinyl chloride	0.010	0.0010	mg/L	8260B

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Prep: 3510C
Leach: 1311

Analyte	RL	MDL	Units	Method
1,4-Dichlorobenzene	0.020	0.0016	mg/L	8270D
2,4,5-Trichlorophenol	0.050	0.0022	mg/L	8270D
2,4,6-Trichlorophenol	0.025	0.0014	mg/L	8270D
2,4-Dinitrotoluene	0.050	0.0083	mg/L	8270D
2-Methylphenol	0.050	0.0049	mg/L	8270D
3 & 4 Methylphenol	0.050	0.0013	mg/L	8270D
Hexachlorobenzene	0.050	0.0033	mg/L	8270D
Hexachlorobutadiene	0.050	0.017	mg/L	8270D
Hexachloroethane	0.050	0.011	mg/L	8270D
Nitrobenzene	0.050	0.0041	mg/L	8270D
Pentachlorophenol	0.25	0.10	mg/L	8270D
Pyridine	0.10	0.0057	mg/L	8270D

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Prep: 3510C
Leach: 1311

Analyte	RL	MDL	Units	Method
Chlordane (technical)	0.0050	0.0014	mg/L	8081B
Endrin	0.00050	0.000079	mg/L	8081B
gamma-BHC (Lindane)	0.00050	0.000069	mg/L	8081B
Heptachlor	0.00050	0.000077	mg/L	8081B
Heptachlor epoxide	0.00050	0.000075	mg/L	8081B
Methoxychlor	0.0010	0.00013	mg/L	8081B
Toxaphene	0.020	0.0037	mg/L	8081B

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Prep: 3546

Analyte	RL	MDL	Units	Method
PCB-1016	66	10	ug/Kg	8082A
PCB-1221	94	31	ug/Kg	8082A
PCB-1232	66	10	ug/Kg	8082A
PCB-1242	66	18	ug/Kg	8082A
PCB-1248	66	11	ug/Kg	8082A
PCB-1254	66	11	ug/Kg	8082A

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Prep: 3546

Analyte	RL	MDL	Units	Method
PCB-1260	66	5.3	ug/Kg	8082A
PCB-1262	66	23	ug/Kg	8082A
PCB-1268	66	7.9	ug/Kg	8082A

Method: 8151A DOD - Herbicides (GC) - TCLP

Prep: 8151A
Leach: 1311

Analyte	RL	MDL	Units	Method
2,4-D	0.040	0.0021	mg/L	8151A DOD
Silvex (2,4,5-TP)	0.010	0.0017	mg/L	8151A DOD

Method: 6010C - Metals (ICP) - TCLP

Prep: 3010A
Leach: 1311

Analyte	RL	MDL	Units	Method
Arsenic	0.50	0.022	mg/L	6010C
Barium	1.0	0.0040	mg/L	6010C
Cadmium	0.10	0.0020	mg/L	6010C
Chromium	0.50	0.0030	mg/L	6010C
Lead	0.50	0.014	mg/L	6010C
Selenium	0.10	0.032	mg/L	6010C
Silver	0.50	0.0040	mg/L	6010C

Method: 7470A - Mercury (CVAA) - TCLP

Prep: 7470A
Leach: 1311

Analyte	RL	MDL	Units	Method
Mercury	0.0020	0.000030	mg/L	7470A

General Chemistry

Analyte	RL	MDL	Units	Method
Flashpoint	1.00	1.00	Degrees C	1010A

General Chemistry

Prep: 9012B

Analyte	RL	MDL	Units	Method
Cyanide, Total	0.50	0.10	mg/Kg	9012B

General Chemistry

Prep: 9030B

Analyte	RL	MDL	Units	Method
Sulfide	10	2.4	mg/Kg	9034

General Chemistry - Soluble

Leach: DI Leach

Default Detection Limits

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116404-1

General Chemistry - Soluble

Leach: DI Leach

Analyte	RL	MDL	Units	Method
pH adj. to 25 deg C	0.1	0.1	SU	9045D
Temperature	1.0	1.0	Degrees C	9045D
Nitrate as N	5.0	0.31	mg/Kg	9056A
Nitrite as N	5.0	0.34	mg/Kg	9056A

Surrogate Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116404-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(78-120)	(64-129)	(78-121)	(79-119)
280-116404-1	FWGIDW-181001-WS	102	111	112	101
LB 280-436398/1-A	Method Blank	95	104	110	100
LCS 280-436398/2-A	Lab Control Sample	96	107	108	98

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPHL
Lab Sample ID	Client Sample ID	(49-120)	(50-120)	(51-120)	(51-120)	(47-120)	(56-120)
280-116404-1	FWGIDW-181001-WS	75	76	99	80	70	105
280-116404-1 MS	FWGIDW-181001-WS	85	86	96	93	80	101
280-116404-1 MSD	FWGIDW-181001-WS	81	81	93	86	76	99
LB 280-436399/1-C	Method Blank	67	66	85	70	61	94
LCS 280-436399/2-C	Lab Control Sample	74	74	90	79	68	96

Surrogate Legend

FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHL = Terphenyl-d14 (Surr)

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCBP2
Lab Sample ID	Client Sample ID	(28-115)	(34-122)
280-116404-1	FWGIDW-181001-WS	83	104
280-116404-1 MS	FWGIDW-181001-WS	86	103
280-116404-1 MS	FWGIDW-181001-WS	81	108
280-116404-1 MSD	FWGIDW-181001-WS	89	107
280-116404-1 MSD	FWGIDW-181001-WS	84	107
LB 280-436399/1-F	Method Blank	83	18 X
LCS 280-436399/2-E	Lab Control Sample	84	56
LCS 280-436399/3-C	Lab Control Sample	79	44

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCBP = DCB Decachlorobiphenyl

Surrogate Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116404-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	TCX2 (44-130)	DCBP2 (59-130)
280-116404-1	FWGIDW-181001-WS	77	88
280-116404-1 MS	FWGIDW-181001-WS	70	81
280-116404-1 MSD	FWGIDW-181001-WS	72	82
LCS 280-436527/2-A	Lab Control Sample	83	89
MB 280-436527/1-A	Method Blank	82	88

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCBP = DCB Decachlorobiphenyl

Method: 8151A DOD - Herbicides (GC)

Matrix: Solid **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DCPAA1 (10-131)
280-116404-1	FWGIDW-181001-WS	37
280-116404-1 MS	FWGIDW-181001-WS	44
280-116404-1 MSD	FWGIDW-181001-WS	39
LB 280-436399/1-E	Method Blank	38
LCS 280-436399/3-B	Lab Control Sample	44

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LB 280-436398/1-A
Matrix: Solid
Analysis Batch: 437024

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB Result	LB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Benzene	ND		0.010		0.0016	mg/L		11/09/18 15:11	1
2-Butanone (MEK)	ND		0.10		0.020	mg/L		11/09/18 15:11	1
Carbon tetrachloride	ND		0.010		0.0019	mg/L		11/09/18 15:11	1
Chlorobenzene	ND		0.010		0.0017	mg/L		11/09/18 15:11	1
Chloroform	ND		0.010		0.0016	mg/L		11/09/18 15:11	1
1,2-Dichloroethane	ND		0.010		0.0013	mg/L		11/09/18 15:11	1
1,1-Dichloroethene	ND		0.010		0.0023	mg/L		11/09/18 15:11	1
Tetrachloroethene	ND		0.010		0.0020	mg/L		11/09/18 15:11	1
Trichloroethene	ND		0.010		0.0016	mg/L		11/09/18 15:11	1
Vinyl chloride	ND		0.010		0.0010	mg/L		11/09/18 15:11	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*78 - 120*		*11/09/18 15:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*64 - 129*		*11/09/18 15:11*	*1*
4-Bromofluorobenzene (Surr)	*110*		*78 - 121*		*11/09/18 15:11*	*1*
Dibromofluoromethane (Surr)	*100*		*79 - 119*		*11/09/18 15:11*	*1*

Lab Sample ID: LCS 280-436398/2-A
Matrix: Solid
Analysis Batch: 437024

Client Sample ID: Lab Control Sample
Prep Type: TCLP

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			0.0500	0.0496		mg/L		99	74 - 135		
2-Butanone (MEK)			0.200	0.158		mg/L		79	44 - 150		
Carbon tetrachloride			0.0500	0.0481		mg/L		96	67 - 135		
Chlorobenzene			0.0500	0.0467		mg/L		93	76 - 135		
Chloroform			0.0500	0.0495		mg/L		99	76 - 120		
1,2-Dichloroethane			0.0500	0.0522		mg/L		104	70 - 135		
1,1-Dichloroethene			0.0500	0.0439		mg/L		88	71 - 136		
Tetrachloroethene			0.0500	0.0438		mg/L		88	70 - 135		
Trichloroethene			0.0500	0.0464		mg/L		93	73 - 135		
Vinyl chloride			0.0500	0.0420		mg/L		84	40 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*78 - 120*
1,2-Dichloroethane-d4 (Surr)	*107*		*64 - 129*
4-Bromofluorobenzene (Surr)	*108*		*78 - 121*
Dibromofluoromethane (Surr)	*98*		*79 - 119*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LB 280-436399/1-C
Matrix: Solid
Analysis Batch: 437601

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 436573

Analyte	LB Result	LB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
2-Methylphenol	ND		0.050		0.0049	mg/L		11/14/18 16:23	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LB 280-436399/1-C **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 437601 **Prep Batch: 436573**

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
3 & 4 Methylphenol	ND		0.050	0.0013	mg/L		11/14/18 16:23	1
1,4-Dichlorobenzene	ND		0.020	0.0016	mg/L		11/14/18 16:23	1
2,4-Dinitrotoluene	ND		0.050	0.0083	mg/L		11/14/18 16:23	1
Hexachlorobenzene	ND		0.050	0.0033	mg/L		11/14/18 16:23	1
Hexachlorobutadiene	ND		0.050	0.017	mg/L		11/14/18 16:23	1
Hexachloroethane	ND		0.050	0.011	mg/L		11/14/18 16:23	1
Nitrobenzene	ND		0.050	0.0041	mg/L		11/14/18 16:23	1
Pentachlorophenol	ND		0.25	0.10	mg/L		11/14/18 16:23	1
Pyridine	ND		0.10	0.0057	mg/L		11/14/18 16:23	1
2,4,5-Trichlorophenol	ND		0.050	0.0022	mg/L		11/14/18 16:23	1
2,4,6-Trichlorophenol	ND		0.025	0.0014	mg/L		11/14/18 16:23	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*67*		*49 - 120*	*11/06/18 18:15*	*11/14/18 16:23*	*1*
2-Fluorophenol (Surr)	*66*		*50 - 120*	*11/06/18 18:15*	*11/14/18 16:23*	*1*
2,4,6-Tribromophenol (Surr)	*85*		*51 - 120*	*11/06/18 18:15*	*11/14/18 16:23*	*1*
Nitrobenzene-d5 (Surr)	*70*		*51 - 120*	*11/06/18 18:15*	*11/14/18 16:23*	*1*
Phenol-d5 (Surr)	*61*		*47 - 120*	*11/06/18 18:15*	*11/14/18 16:23*	*1*
Terphenyl-d14 (Surr)	*94*		*56 - 120*	*11/06/18 18:15*	*11/14/18 16:23*	*1*

Lab Sample ID: LCS 280-436399/2-C **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 437601 **Prep Batch: 436573**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylphenol	0.250	0.190		mg/L		76	45 - 120
3 & 4 Methylphenol	0.500	0.429		mg/L		86	44 - 120
1,4-Dichlorobenzene	0.250	0.161		mg/L		64	36 - 120
2,4-Dinitrotoluene	0.100	0.0526		mg/L		53	36 - 120
Hexachlorobenzene	0.100	0.0860		mg/L		86	52 - 120
Hexachlorobutadiene	0.250	0.160		mg/L		64	35 - 120
Hexachloroethane	0.250	0.155		mg/L		62	35 - 120
Nitrobenzene	0.250	0.192		mg/L		77	50 - 120
Pentachlorophenol	0.500	0.430		mg/L		86	39 - 120
Pyridine	0.250	0.127		mg/L		51	10 - 121
2,4,5-Trichlorophenol	0.250	0.200		mg/L		80	46 - 120
2,4,6-Trichlorophenol	0.250	0.201		mg/L		81	43 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*74*		*49 - 120*
2-Fluorophenol (Surr)	*74*		*50 - 120*
2,4,6-Tribromophenol (Surr)	*90*		*51 - 120*
Nitrobenzene-d5 (Surr)	*79*		*51 - 120*
Phenol-d5 (Surr)	*68*		*47 - 120*
Terphenyl-d14 (Surr)	*96*		*56 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-116404-1 MS **Client Sample ID: FWGIDW-181001-WS**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 437601 **Prep Batch: 436573**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylphenol	ND		0.250	0.218		mg/L		87	45 - 120
3 & 4 Methylphenol	ND		0.500	0.474		mg/L		95	44 - 120
1,4-Dichlorobenzene	ND		0.250	0.184		mg/L		74	36 - 120
2,4-Dinitrotoluene	ND		0.100	0.0651		mg/L		65	36 - 120
Hexachlorobenzene	ND		0.100	0.0898		mg/L		90	52 - 120
Hexachlorobutadiene	ND		0.250	0.191		mg/L		76	35 - 120
Hexachloroethane	ND		0.250	0.175		mg/L		70	35 - 120
Nitrobenzene	ND		0.250	0.218		mg/L		87	50 - 120
Pentachlorophenol	ND		0.500	0.448		mg/L		90	39 - 120
Pyridine	ND	F2	0.250	0.0566	J	mg/L		23	10 - 121
2,4,5-Trichlorophenol	ND		0.250	0.216		mg/L		87	46 - 120
2,4,6-Trichlorophenol	ND		0.250	0.219		mg/L		88	43 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl	*85*		*49 - 120*
2-Fluorophenol (Surr)	*86*		*50 - 120*
2,4,6-Tribromophenol (Surr)	*96*		*51 - 120*
Nitrobenzene-d5 (Surr)	*93*		*51 - 120*
Phenol-d5 (Surr)	*80*		*47 - 120*
Terphenyl-d14 (Surr)	*101*		*56 - 120*

Lab Sample ID: 280-116404-1 MSD **Client Sample ID: FWGIDW-181001-WS**
Matrix: Solid **Prep Type: TCLP**
Analysis Batch: 437601 **Prep Batch: 436573**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Methylphenol	ND		0.250	0.210		mg/L		84	45 - 120	4	30
3 & 4 Methylphenol	ND		0.500	0.464		mg/L		93	44 - 120	2	30
1,4-Dichlorobenzene	ND		0.250	0.181		mg/L		72	36 - 120	2	30
2,4-Dinitrotoluene	ND		0.100	0.0618		mg/L		62	36 - 120	5	30
Hexachlorobenzene	ND		0.100	0.0882		mg/L		88	52 - 120	2	30
Hexachlorobutadiene	ND		0.250	0.176		mg/L		70	35 - 120	8	30
Hexachloroethane	ND		0.250	0.174		mg/L		70	35 - 120	1	30
Nitrobenzene	ND		0.250	0.204		mg/L		82	50 - 120	7	30
Pentachlorophenol	ND		0.500	0.444		mg/L		89	39 - 120	1	30
Pyridine	ND	F2	0.250	0.194	F2	mg/L		77	10 - 121	110	30
2,4,5-Trichlorophenol	ND		0.250	0.210		mg/L		84	46 - 120	3	30
2,4,6-Trichlorophenol	ND		0.250	0.214		mg/L		86	43 - 120	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl	*81*		*49 - 120*
2-Fluorophenol (Surr)	*81*		*50 - 120*
2,4,6-Tribromophenol (Surr)	*93*		*51 - 120*
Nitrobenzene-d5 (Surr)	*86*		*51 - 120*
Phenol-d5 (Surr)	*76*		*47 - 120*
Terphenyl-d14 (Surr)	*99*		*56 - 120*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: LB 280-436399/1-F
Matrix: Solid
Analysis Batch: 439676

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 436783

Analyte	LB Result	LB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Endrin	ND		0.00050		0.000079	mg/L		12/03/18 16:59	1
Heptachlor	ND		0.00050		0.000077	mg/L		12/03/18 16:59	1
Heptachlor epoxide	ND		0.00050		0.000075	mg/L		12/03/18 16:59	1
gamma-BHC (Lindane)	ND		0.00050		0.000069	mg/L		12/03/18 16:59	1
Methoxychlor	ND		0.0010		0.00013	mg/L		12/03/18 16:59	1
Toxaphene	ND		0.020		0.0037	mg/L		12/03/18 16:59	1
Chlordane (technical)	ND		0.0050		0.0014	mg/L		12/03/18 16:59	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*83*		*28 - 115*	*11/08/18 13:15*	*12/03/18 16:59*	*1*
DCB Decachlorobiphenyl	*18*	*X*	*34 - 122*	*11/08/18 13:15*	*12/03/18 16:59*	*1*

Lab Sample ID: LCS 280-436399/2-E
Matrix: Solid
Analysis Batch: 439676

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 436783

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Endrin			0.00500	0.00557		mg/L		111	66 - 143		
Heptachlor			0.00500	0.00522		mg/L		104	59 - 143		
Heptachlor epoxide			0.00500	0.00509		mg/L		102	37 - 142		
gamma-BHC (Lindane)			0.00500	0.00495		mg/L		99	68 - 142		
Methoxychlor			0.00500	0.00580		mg/L		116	30 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*84*		*28 - 115*
DCB Decachlorobiphenyl	*56*		*34 - 122*

Lab Sample ID: LCS 280-436399/3-C
Matrix: Solid
Analysis Batch: 439676

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 436783

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Toxaphene			0.200	0.244		mg/L		122	63 - 142		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*79*		*28 - 115*
DCB Decachlorobiphenyl	*44*		*34 - 122*

Lab Sample ID: 280-116404-1 MS
Matrix: Solid
Analysis Batch: 439676

Client Sample ID: FWGIDW-181001-WS
Prep Type: TCLP
Prep Batch: 436783

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Endrin	ND		0.00500	0.00530		mg/L		106	66 - 143		
Heptachlor	ND		0.00500	0.00499		mg/L		100	59 - 143		
Heptachlor epoxide	ND		0.00500	0.00491		mg/L		98	37 - 142		
gamma-BHC (Lindane)	ND		0.00500	0.00479		mg/L		96	68 - 142		

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 280-116404-1 MS — **Client Sample ID: FWGIDW-181001-WS**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 439676 — **Prep Batch: 436783**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methoxychlor	ND		0.00500	0.00561		mg/L		112	30 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*86*		*28 - 115*
DCB Decachlorobiphenyl	*103*		*34 - 122*

Lab Sample ID: 280-116404-1 MS — **Client Sample ID: FWGIDW-181001-WS**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 439676 — **Prep Batch: 436783**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Toxaphene	ND		0.200	0.223		mg/L		111	63 - 142

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*81*		*28 - 115*
DCB Decachlorobiphenyl	*108*		*34 - 122*

Lab Sample ID: 280-116404-1 MSD — **Client Sample ID: FWGIDW-181001-WS**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 439676 — **Prep Batch: 436783**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Endrin	ND		0.00500	0.00583		mg/L		117	66 - 143	9	30
Heptachlor	ND		0.00500	0.00554		mg/L		111	59 - 143	10	30
Heptachlor epoxide	ND		0.00500	0.00540		mg/L		108	37 - 142	9	30
gamma-BHC (Lindane)	ND		0.00500	0.00525		mg/L		105	68 - 142	9	30
Methoxychlor	ND		0.00500	0.00591		mg/L		118	30 - 150	5	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*89*		*28 - 115*
DCB Decachlorobiphenyl	*107*		*34 - 122*

Lab Sample ID: 280-116404-1 MSD — **Client Sample ID: FWGIDW-181001-WS**
Matrix: Solid — **Prep Type: TCLP**
Analysis Batch: 439676 — **Prep Batch: 436783**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toxaphene	ND		0.200	0.232		mg/L		116	63 - 142	4	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*84*		*28 - 115*
DCB Decachlorobiphenyl	*107*		*34 - 122*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 280-436527/1-A
Matrix: Solid
Analysis Batch: 438897

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 436527

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
PCB-1016	ND		59		9.1	ug/Kg		11/27/18 15:35	1
PCB-1221	ND		83		28	ug/Kg		11/27/18 15:35	1
PCB-1232	ND		59		9.1	ug/Kg		11/27/18 15:35	1
PCB-1242	ND		59		16	ug/Kg		11/27/18 15:35	1
PCB-1248	ND		59		9.9	ug/Kg		11/27/18 15:35	1
PCB-1254	ND		59		9.8	ug/Kg		11/27/18 15:35	1
PCB-1260	ND		59		4.7	ug/Kg		11/27/18 15:35	1
PCB-1262	ND		59		21	ug/Kg		11/27/18 15:35	1
PCB-1268	ND		59		7.0	ug/Kg		11/27/18 15:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*82*		*44 - 130*	*11/06/18 15:55*	*11/27/18 15:35*	*1*
DCB Decachlorobiphenyl	*88*		*59 - 130*	*11/06/18 15:55*	*11/27/18 15:35*	*1*

Lab Sample ID: LCS 280-436527/2-A
Matrix: Solid
Analysis Batch: 438897

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 436527

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016			123	105		ug/Kg		85	47 - 134		
PCB-1260			123	106		ug/Kg		86	53 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*83*		*44 - 130*
DCB Decachlorobiphenyl	*89*		*59 - 130*

Lab Sample ID: 280-116404-1 MS
Matrix: Solid
Analysis Batch: 438897

Client Sample ID: FWGIDW-181001-WS
Prep Type: Total/NA
Prep Batch: 436527

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016	ND	F1	160	ND	F1	ug/Kg	☼	0	47 - 134		
PCB-1260	ND		160	87.5	J	ug/Kg	☼	55	53 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*70*		*44 - 130*
DCB Decachlorobiphenyl	*81*		*59 - 130*

Lab Sample ID: 280-116404-1 MSD
Matrix: Solid
Analysis Batch: 438897

Client Sample ID: FWGIDW-181001-WS
Prep Type: Total/NA
Prep Batch: 436527

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	ND	F1	160	ND	F1	ug/Kg	☼	0	47 - 134	NC	30
PCB-1260	ND		160	93.3	J	ug/Kg	☼	58	53 - 140	6	30

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: 280-116404-1 MSD
Matrix: Solid
Analysis Batch: 438897

Client Sample ID: FWGIDW-181001-WS
Prep Type: Total/NA
Prep Batch: 436527

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*72*		*44 - 130*
DCB Decachlorobiphenyl	*82*		*59 - 130*

Method: 8151A DOD - Herbicides (GC)

Lab Sample ID: LB 280-436399/1-E
Matrix: Solid
Analysis Batch: 437038

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 436606

Analyte	LB Result	LB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
2,4-D	ND		0.040		0.0021	mg/L		11/09/18 16:57	1
Silvex (2,4,5-TP)	ND		0.010		0.0017	mg/L		11/09/18 16:57	1

Surrogate	*LB %Recovery*	*LB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*38*		*10 - 131*	*11/07/18 08:15*	*11/09/18 16:57*	*1*

Lab Sample ID: LCS 280-436399/3-B
Matrix: Solid
Analysis Batch: 437038

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 436606

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,4-D			0.0500	0.0327	J	mg/L		65	13 - 115		
Silvex (2,4,5-TP)			0.0500	0.0319		mg/L		64	10 - 158		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*44*		*10 - 131*

Lab Sample ID: 280-116404-1 MS
Matrix: Solid
Analysis Batch: 437038

Client Sample ID: FWGIDW-181001-WS
Prep Type: TCLP
Prep Batch: 436606

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,4-D	ND		0.0500	0.0318	J	mg/L		64	13 - 115		
Silvex (2,4,5-TP)	ND		0.0500	0.0383		mg/L		77	10 - 158		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*44*		*10 - 131*

Lab Sample ID: 280-116404-1 MSD
Matrix: Solid
Analysis Batch: 437038

Client Sample ID: FWGIDW-181001-WS
Prep Type: TCLP
Prep Batch: 436606

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4-D	ND		0.0500	0.0322	J	mg/L		64	13 - 115	1	30
Silvex (2,4,5-TP)	ND		0.0500	0.0373		mg/L		75	10 - 158	3	30

Method: 8151A DOD - Herbicides (GC) (Continued)

Lab Sample ID: 280-116404-1 MSD
Matrix: Solid
Analysis Batch: 437038

Client Sample ID: FWGIDW-181001-WS
Prep Type: TCLP
Prep Batch: 436606

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*39*		*10 - 131*

Method: 6010C - Metals (ICP)

Lab Sample ID: LB 280-436399/1-D
Matrix: Solid
Analysis Batch: 436794

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 436590

Analyte	LB Result	LB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Arsenic	ND		0.50		0.022	mg/L		11/08/18 00:33	1
Barium	0.00459	J	1.0		0.0040	mg/L		11/08/18 00:33	1
Cadmium	ND		0.10		0.0020	mg/L		11/08/18 00:33	1
Chromium	ND		0.50		0.0030	mg/L		11/08/18 00:33	1
Lead	ND		0.50		0.014	mg/L		11/08/18 00:33	1
Selenium	ND		0.10		0.032	mg/L		11/08/18 00:33	1
Silver	ND		0.50		0.0040	mg/L		11/08/18 00:33	1

Lab Sample ID: LCS 280-436399/2-D
Matrix: Solid
Analysis Batch: 436794

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 436590

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			4.00	3.84		mg/L		96	80 - 120		
Barium			12.0	11.6		mg/L		97	80 - 120		
Cadmium			1.10	1.06		mg/L		96	80 - 120		
Chromium			5.20	5.03		mg/L		97	80 - 120		
Lead			5.50	5.39		mg/L		98	80 - 120		
Selenium			3.00	2.85		mg/L		95	80 - 120		
Silver			1.05	1.05		mg/L		100	80 - 120		

Lab Sample ID: LCSD 280-436399/13-B
Matrix: Solid
Analysis Batch: 436794

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 436590

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic			4.00	3.99		mg/L		100	80 - 120	4	20
Barium			12.0	11.9		mg/L		99	80 - 120	3	20
Cadmium			1.10	1.09		mg/L		99	80 - 120	3	20
Chromium			5.20	5.20		mg/L		100	80 - 120	3	20
Lead			5.50	5.59		mg/L		102	80 - 120	4	20
Selenium			3.00	2.97		mg/L		99	80 - 120	4	20
Silver			1.05	1.08		mg/L		103	80 - 120	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LB 280-436399/1-H
Matrix: Solid
Analysis Batch: 436972

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 436799

Analyte	LB Result	LB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Mercury	ND		0.0020		0.000030	mg/L		11/08/18 20:01	1

Lab Sample ID: LCS 280-436399/2-G
Matrix: Solid
Analysis Batch: 436972

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 436799

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00539		mg/L		108	90 - 116		

Lab Sample ID: LCSD 280-436399/13-C
Matrix: Solid
Analysis Batch: 436972

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 436799

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.00500	0.00543		mg/L		109	90 - 116	1	10

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: MB 160-401121/1
Matrix: Solid
Analysis Batch: 401121

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Flashpoint	>60		1.00		1.00	Degrees C		11/15/18 23:43	1

Lab Sample ID: LCS 160-401121/2
Matrix: Solid
Analysis Batch: 401121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Flashpoint			25.0	27.00		Degrees C		108	90 - 110		

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 280-437593/4-A
Matrix: Solid
Analysis Batch: 437647

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 437593

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.268	J	0.50		0.10	mg/Kg		11/14/18 19:22	1

Lab Sample ID: HLCS 280-437593/1-A
Matrix: Solid
Analysis Batch: 437647

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437593

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			17.5	18.5		mg/Kg		106	90 - 110		

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: LCS 280-437593/3-A
Matrix: Solid
Analysis Batch: 437647

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437593

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	5.00	5.50		mg/Kg		110	76 - 120

Lab Sample ID: LLCS 280-437593/2-A
Matrix: Solid
Analysis Batch: 437647

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437593

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	5.00	5.35		mg/Kg		107	51 - 150

Method: 9034 - Sulfide, Acid Soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 280-436723/1-A
Matrix: Solid
Analysis Batch: 436735

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 436723

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Sulfide	ND		2.0	0.48	mg/Kg		11/07/18 20:06	1

Lab Sample ID: LCS 280-436723/3-A
Matrix: Solid
Analysis Batch: 436735

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 436723

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	22.3	16.0		mg/Kg		72	38 - 104

Method: 9045D - pH

Lab Sample ID: LCS 280-436854/1-A
Matrix: Solid
Analysis Batch: 436907

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	97 - 103

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MRL 280-437376/3
Matrix: Solid
Analysis Batch: 437376

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.200	0.212	J	mg/L		106	50 - 150
Nitrite as N	0.200	0.221	J	mg/L		110	50 - 150

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 280-437455/3-A
Matrix: Solid
Analysis Batch: 437376

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Nitrate as N	ND		5.0		0.31	mg/Kg		11/14/18 00:42	1
Nitrite as N	ND		5.0		0.34	mg/Kg		11/14/18 00:42	1

Lab Sample ID: LCS 280-437455/1-A
Matrix: Solid
Analysis Batch: 437376

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate as N			50.0	50.5		mg/Kg		101	87 - 111		
Nitrite as N			50.0	50.2		mg/Kg		100	86 - 115		

Lab Sample ID: LCSD 280-437455/2-A
Matrix: Solid
Analysis Batch: 437376

Client Sample ID: Lab Control Sample Dup
Prep Type: Soluble

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N			49.9	50.1		mg/Kg		100	87 - 111	1	10
Nitrite as N			49.9	49.9		mg/Kg		100	86 - 115	1	10

QC Association Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116404-1

GC/MS VOA

Leach Batch: 436398

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	1311	
LB 280-436398/1-A	Method Blank	TCLP	Solid	1311	
LCS 280-436398/2-A	Lab Control Sample	TCLP	Solid	1311	

Analysis Batch: 437024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	8260B	436398
LB 280-436398/1-A	Method Blank	TCLP	Solid	8260B	436398
LCS 280-436398/2-A	Lab Control Sample	TCLP	Solid	8260B	436398

GC/MS Semi VOA

Leach Batch: 436399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	1311	
LB 280-436399/1-C	Method Blank	TCLP	Solid	1311	
LCS 280-436399/2-C	Lab Control Sample	TCLP	Solid	1311	
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	1311	
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	1311	

Prep Batch: 436573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	3510C	436399
LB 280-436399/1-C	Method Blank	TCLP	Solid	3510C	436399
LCS 280-436399/2-C	Lab Control Sample	TCLP	Solid	3510C	436399
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	3510C	436399
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	3510C	436399

Analysis Batch: 437601

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	8270D	436573
LB 280-436399/1-C	Method Blank	TCLP	Solid	8270D	436573
LCS 280-436399/2-C	Lab Control Sample	TCLP	Solid	8270D	436573
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	8270D	436573
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	8270D	436573

GC Semi VOA

Leach Batch: 436399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	1311	
LB 280-436399/1-E	Method Blank	TCLP	Solid	1311	
LB 280-436399/1-F	Method Blank	TCLP	Solid	1311	
LCS 280-436399/2-E	Lab Control Sample	TCLP	Solid	1311	
LCS 280-436399/3-B	Lab Control Sample	TCLP	Solid	1311	
LCS 280-436399/3-C	Lab Control Sample	TCLP	Solid	1311	
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	1311	
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	1311	

GC Semi VOA (Continued)

Prep Batch: 436527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	3546	
MB 280-436527/1-A	Method Blank	Total/NA	Solid	3546	
LCS 280-436527/2-A	Lab Control Sample	Total/NA	Solid	3546	
280-116404-1 MS	FWGIDW-181001-WS	Total/NA	Solid	3546	
280-116404-1 MSD	FWGIDW-181001-WS	Total/NA	Solid	3546	

Prep Batch: 436606

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	8151A	436399
LB 280-436399/1-E	Method Blank	TCLP	Solid	8151A	436399
LCS 280-436399/3-B	Lab Control Sample	TCLP	Solid	8151A	436399
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	8151A	436399
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	8151A	436399

Prep Batch: 436783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	3510C	436399
LB 280-436399/1-F	Method Blank	TCLP	Solid	3510C	436399
LCS 280-436399/2-E	Lab Control Sample	TCLP	Solid	3510C	436399
LCS 280-436399/3-C	Lab Control Sample	TCLP	Solid	3510C	436399
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	3510C	436399
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	3510C	436399
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	3510C	436399
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	3510C	436399

Analysis Batch: 437038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	8151A DOD	436606
LB 280-436399/1-E	Method Blank	TCLP	Solid	8151A DOD	436606
LCS 280-436399/3-B	Lab Control Sample	TCLP	Solid	8151A DOD	436606
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	8151A DOD	436606
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	8151A DOD	436606

Analysis Batch: 438897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	8082A	436527
MB 280-436527/1-A	Method Blank	Total/NA	Solid	8082A	436527
LCS 280-436527/2-A	Lab Control Sample	Total/NA	Solid	8082A	436527
280-116404-1 MS	FWGIDW-181001-WS	Total/NA	Solid	8082A	436527
280-116404-1 MSD	FWGIDW-181001-WS	Total/NA	Solid	8082A	436527

Analysis Batch: 439676

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	8081B	436783
LB 280-436399/1-F	Method Blank	TCLP	Solid	8081B	436783
LCS 280-436399/2-E	Lab Control Sample	TCLP	Solid	8081B	436783
LCS 280-436399/3-C	Lab Control Sample	TCLP	Solid	8081B	436783
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	8081B	436783
280-116404-1 MS	FWGIDW-181001-WS	TCLP	Solid	8081B	436783
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	8081B	436783
280-116404-1 MSD	FWGIDW-181001-WS	TCLP	Solid	8081B	436783

QC Association Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116404-1

Metals

Leach Batch: 436399

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	1311	
LB 280-436399/1-D	Method Blank	TCLP	Solid	1311	
LB 280-436399/1-H	Method Blank	TCLP	Solid	1311	
LCS 280-436399/2-D	Lab Control Sample	TCLP	Solid	1311	
LCS 280-436399/2-G	Lab Control Sample	TCLP	Solid	1311	
LCSD 280-436399/13-B	Lab Control Sample Dup	TCLP	Solid	1311	
LCSD 280-436399/13-C	Lab Control Sample Dup	TCLP	Solid	1311	

Prep Batch: 436590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	3010A	436399
LB 280-436399/1-D	Method Blank	TCLP	Solid	3010A	436399
LCS 280-436399/2-D	Lab Control Sample	TCLP	Solid	3010A	436399
LCSD 280-436399/13-B	Lab Control Sample Dup	TCLP	Solid	3010A	436399

Analysis Batch: 436794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	6010C	436590
LB 280-436399/1-D	Method Blank	TCLP	Solid	6010C	436590
LCS 280-436399/2-D	Lab Control Sample	TCLP	Solid	6010C	436590
LCSD 280-436399/13-B	Lab Control Sample Dup	TCLP	Solid	6010C	436590

Prep Batch: 436799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	7470A	436399
LB 280-436399/1-H	Method Blank	TCLP	Solid	7470A	436399
LCS 280-436399/2-G	Lab Control Sample	TCLP	Solid	7470A	436399
LCSD 280-436399/13-C	Lab Control Sample Dup	TCLP	Solid	7470A	436399

Analysis Batch: 436972

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	TCLP	Solid	7470A	436799
LB 280-436399/1-H	Method Blank	TCLP	Solid	7470A	436799
LCS 280-436399/2-G	Lab Control Sample	TCLP	Solid	7470A	436799
LCSD 280-436399/13-C	Lab Control Sample Dup	TCLP	Solid	7470A	436799

General Chemistry

Analysis Batch: 401121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	1010A	
MB 160-401121/1	Method Blank	Total/NA	Solid	1010A	
LCS 160-401121/2	Lab Control Sample	Total/NA	Solid	1010A	

Analysis Batch: 436543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	Moisture	

General Chemistry (Continued)

Prep Batch: 436723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	9030B	
MB 280-436723/1-A	Method Blank	Total/NA	Solid	9030B	
LCS 280-436723/3-A	Lab Control Sample	Total/NA	Solid	9030B	

Analysis Batch: 436735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	9034	436723
MB 280-436723/1-A	Method Blank	Total/NA	Solid	9034	436723
LCS 280-436723/3-A	Lab Control Sample	Total/NA	Solid	9034	436723

Leach Batch: 436854

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Soluble	Solid	DI Leach	
LCS 280-436854/1-A	Lab Control Sample	Soluble	Solid	DI Leach	

Analysis Batch: 436907

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Soluble	Solid	9045D	436854
LCS 280-436854/1-A	Lab Control Sample	Soluble	Solid	9045D	436854

Analysis Batch: 437376

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Soluble	Solid	9056A	437455
MB 280-437455/3-A	Method Blank	Soluble	Solid	9056A	437455
LCS 280-437455/1-A	Lab Control Sample	Soluble	Solid	9056A	437455
LCSD 280-437455/2-A	Lab Control Sample Dup	Soluble	Solid	9056A	437455
MRL 280-437376/3	Lab Control Sample	Total/NA	Solid	9056A	

Leach Batch: 437455

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Soluble	Solid	DI Leach	
MB 280-437455/3-A	Method Blank	Soluble	Solid	DI Leach	
LCS 280-437455/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 280-437455/2-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	

Prep Batch: 437593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	9012B	
MB 280-437593/4-A	Method Blank	Total/NA	Solid	9012B	
HLCS 280-437593/1-A	Lab Control Sample	Total/NA	Solid	9012B	
LCS 280-437593/3-A	Lab Control Sample	Total/NA	Solid	9012B	
LLCS 280-437593/2-A	Lab Control Sample	Total/NA	Solid	9012B	

Analysis Batch: 437647

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116404-1	FWGIDW-181001-WS	Total/NA	Solid	9012B	437593
MB 280-437593/4-A	Method Blank	Total/NA	Solid	9012B	437593
HLCS 280-437593/1-A	Lab Control Sample	Total/NA	Solid	9012B	437593
LCS 280-437593/3-A	Lab Control Sample	Total/NA	Solid	9012B	437593
LLCS 280-437593/2-A	Lab Control Sample	Total/NA	Solid	9012B	437593

Lab Chronicle

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116404-1

Client Sample ID: FWGIDW-181001-WS
Date Collected: 10/31/18 13:00
Date Received: 11/01/18 09:30

Lab Sample ID: 280-116404-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			1.0 g	1.0 mL	436398	11/05/18 17:37	DFB1	TAL DEN
TCLP	Analysis	8260B		1	2 mL	20 mL	437024	11/09/18 21:21	GPM	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436399	11/05/18 17:37	DFB1	TAL DEN
TCLP	Prep	3510C			200 mL	1 mL	436573	11/06/18 18:15	MAM	TAL DEN
TCLP	Analysis	8270D		1			437601	11/14/18 19:46	DCK	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436399	11/05/18 17:37	DFB1	TAL DEN
TCLP	Prep	3510C			100 mL	10 mL	436783	11/08/18 13:15	AAG	TAL DEN
TCLP	Analysis	8081B		1			439676	12/03/18 17:52	TEB	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436399	11/05/18 17:37	DFB1	TAL DEN
TCLP	Prep	8151A			100 mL	10 mL	436606	11/07/18 08:15	JZ	TAL DEN
TCLP	Analysis	8151A DOD		1			437038	11/09/18 17:30	AMB1	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436399	11/05/18 17:37	DFB1	TAL DEN
TCLP	Prep	3010A			10 mL	50 mL	436590	11/07/18 16:00	DAL	TAL DEN
TCLP	Analysis	6010C		1			436794	11/08/18 01:20	CML	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436399	11/05/18 17:37	DFB1	TAL DEN
TCLP	Prep	7470A			30 mL	50 mL	436799	11/08/18 12:48	MRJ	TAL DEN
TCLP	Analysis	7470A		1			436972	11/08/18 20:08	MRJ	TAL DEN
Total/NA	Analysis	1010A		1	70 mL	70 mL	401121	11/16/18 01:16	JCB	TAL SL
Soluble	Leach	DI Leach			41.82 g	40 mL	436854	11/08/18 12:20	SGB	TAL DEN
Soluble	Analysis	9045D		1			436907	11/08/18 19:04	JDR	TAL DEN
Total/NA	Analysis	Moisture		1			436543	11/06/18 16:30	SVC	TAL DEN

Client Sample ID: FWGIDW-181001-WS
Date Collected: 10/31/18 13:00
Date Received: 11/01/18 09:30

Lab Sample ID: 280-116404-1
Matrix: Solid
Percent Solids: 81.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			15.3 g	10 mL	436527	11/06/18 15:55	DWC	TAL DEN
Total/NA	Analysis	8082A		10			438897	11/27/18 16:17	BJP	TAL DEN
Total/NA	Prep	9012B			1.0179 g	50 mL	437593	11/14/18 12:51	RK	TAL DEN
Total/NA	Analysis	9012B		2	50 mL	50 mL	437647	11/14/18 20:40	RK	TAL DEN
Total/NA	Prep	9030B			5.88 g	50 mL	436723	11/07/18 17:19	EC	TAL DEN
Total/NA	Analysis	9034		1			436735	11/07/18 20:06	EC	TAL DEN
Soluble	Leach	DI Leach			10.64 g	100 mL	437455	11/13/18 17:44	TLP	TAL DEN
Soluble	Analysis	9056A		1	5 mL	5 mL	437376	11/14/18 01:34	A1D	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116404-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
7470A	7470A	Solid	Mercury
9045D		Solid	Temperature
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116404-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL DEN
8081B	Organochlorine Pesticides (GC)	SW846	TAL DEN
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL DEN
8151A DOD	Herbicides (GC)	SW846	TAL DEN
6010C	Metals (ICP)	SW846	TAL DEN
7470A	Mercury (CVAA)	SW846	TAL DEN
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL SL
9012B	Cyanide, Total and/or Amenable	EPA	TAL DEN
9034	Sulfide, Acid Soluble and Insoluble (Titrimetric)	SW846	TAL DEN
9045D	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
Moisture	Percent Moisture	EPA	TAL DEN
1311	TCLP Extraction	SW846	TAL DEN
3010A	Preparation, Total Metals	SW846	TAL DEN
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL DEN
3546	Microwave Extraction	SW846	TAL DEN
5030B	Purge and Trap	SW846	TAL DEN
7470A	Preparation, Mercury	SW846	TAL DEN
8151A	Extraction (Herbicides)	SW846	TAL DEN
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL DEN
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	TAL DEN
DI Leach	Deionized Water Leaching Procedure	ASTM	TAL DEN

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Leidos, Inc.
TestAmerica Job ID: 280-116404-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116404-1	FWGIDW-181001-WS	Solid	10/31/18 13:00	11/01/18 09:30

Shipping and Receiving Documents

leidos

Chain of Custody Record

COC No.: RVAAP-083

Page 1 of 1 Date: 10/31/2018

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event
Job/P.O. No.: P010216426

Sampler (Signature) (Printed Name)

Laboratory Name: Test America -Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Date	Time	Matrix	TCLP VOCs (1)(A)	TCLP SVOCs (2)(A), TCLP Pesticides (3)(A), TCLP Herbicides (5)(A), TCLP Metals (7)(A)	Total PCBs (12)(A) / (4)(A)	Ignitability (11)(A)	pH (13)(A) / (6)(A)	Total Sulfide (9)(A), Total Cyanide (8)(A), Nitrate, Nitrite (10)(A)	Total Cyanide (8)(D)	Total Sulfide (9)(E)	Nitrate and Nitrite (10)(A)					Temperature Blank	NO. OF CONTAINERS	
	FWGIDW-181001-WS	10/31/18	1300	S	1	2	1	1	1	1									8	PLUS ONE EXTRA VOLUME BOTTLE.
	~~FWGIDW-181001-WW~~			~~W~~	~~3~~	~~2~~	~~2~~	~~2~~	~~1~~		~~1~~	~~1~~	~~1~~						~~13~~	

Total Number of Containers: ~~20~~ 8

Relinquished by	Test America	Date	10/31/2018
Signature	RC Robison		
Printed Name	Rick Robison	Time	1600
Leidos			
Company			
Relinquished by		Date	11/1/18
Signature	Joseph Rhoades		
Printed Name	TA Denver	Time	0930
Company			

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 1311, 8260
2. SW 1311, 8270
3. SW 1311, 8081
4. SW 3510C/8082A (W)
5. SW 1311, 8151
6. SW 9040 (W)
7. SW 1311, 6010, 7470
8. SW 9012A
9. SW 9034
10. SW 9056
11. SW 1010
12. SW 3540C/8082A (S)
13. SW 9045 (S)

S=Soil / W=Water

Notes:

Shipment Method: Courier
HA 10/31/18

Temperature Blank
Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

280-116404 Chain of Custody

Leidos White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

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Chain of Custody Record

leidos

COC No.: RVAAP-083

Page 1 of 1 Date: 10/31/2018

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event
Job/P.O. No.: P010216426

Sampler (Signature) (Printed Name)

Laboratory Name: Test America -Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No.	Sample ID	Date	Time	Matrix	TCLP VOCs (1)(A)	TCLP SVOCs (2)(A),TCLP Pesticides (3)(A), TCLP Herbicides (5)(A), TCLP Metals (7)(A)	Total PCBs (12)(A) / (4)(A)	Ignitability (11)(A)	pH (13)(A) / (6)(A)	Total Sulfide (9)(A), Total Cyanide (8)(A), Nitrate, Nitrite (10)(A)	Total Cyanide (8)(D)	Total Sulfide (9)(E)	Nitrate and Nitrite (10)(A)	Temperature Blank	No. of Containers
	FWGIDW-181001-WS	10/31/18	1300	S	1	2	1	1	1	1					8
	~~FWGIDW-181001-WW~~			~~W~~	~~3~~	~~2~~	~~2~~	~~2~~	~~1~~		~~1~~	~~1~~	~~1~~		~~13~~
															8

PLUS ONE EXTRA VOLUME BOTTLE.

Total Number of Containers: 20

Relinquished by
Signature: [signature]
Printed Name: Heather Adams
Company: Leidos
Date: 10/31/2018
Time: 1600
Received by
Signature: [signature]
Printed Name: RICK ROBSON
Company: Test America

Relinquished by
Signature: [signature]
Printed Name: ROBISON
Company:
Date: 11/1/18
Time: 0930
Received by
Signature: [signature]
Printed Name: Joseph Rhoades
Company: TA Denver

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 1311, 8260
2. SW 1311, 8270
3. SW 1311, 8081
4. SW 3510C/8082A (W)
5. SW 1311, 8151
6. SW 9040 (W)
7. SW 1311, 6010, 7470
8. SW 9012A
9. SW 9034
10. SW 9056
11. SW 1010
12. SW 3540C/8082A (S)
13. SW 9045 (S)

S=Soil / W=Water

Notes:
0.3, 0.4
0.3 + 0.7
IR9 XFERED BY KO 10-01-18

Shipment Method: Courier
HA 10/31/18

Temperature Blank
Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

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280-116404 Chain of Custody

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rydberg, Donna R	Carrier Tracking No(s):	COC No: 280-460987.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: donna.rydberg@testamericainc.com	State of Origin: Ohio	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-116404-1
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/20/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1010A	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
FWGIDW-181001-WS (280-116404-1)	10/31/18	13:00 Eastern		Solid			X	1	Q5.0

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	11-2-2018 1324	TAL Den	Michael Heum	11/3/18 0845	TA SV
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 280-116404-1

Login Number: 116404
List Number: 1
Creator: Dunlap, Krista M

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 280-116404-1

Login Number: 116404
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 11/03/18 12:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Job Number: 280-116538-2

Job Description: Leidos RFP# 001088 - Ravenna AAP-66

For:
Leidos, Inc.
Picatinny Arsenal
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Approved for release.
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12/12/2018 6:48 PM

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12/12/2018
Revision: 1

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

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Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: Leidos, Inc.

Project: Leidos RFP# 001088 - Ravenna AAP-66

Report Number: 280-116538-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

REVISED REPORT
The attached report was revised as the cyanide result for IDW sample (FWGIDW-181002-WW) was included in job 280-116538-1 and should have been included in this job 280-116538-2. No other changes were made.

RECEIPT
The samples were received on 11/3/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.5º C, 2.1º C, 2.6º C, 2.6º C, 3.6º C and 4.8º C.

Received one bottle for sample ID FWGIDW-181001-WW labeled for cyanide analysis. Container is labeled with Zinc Acetate and NaOH preservative label; analysis requires NaOH preservative only.

TCLP VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples FWGIDW-181001-WW (280-116538-4) and FWGqc-015-TB (280-116538-5) were analyzed for TCLP volatile organic compounds (GC-MS) in accordance with 1311. The samples were leached on 11/09/2018 and analyzed on 11/23/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample FWGIDW-181001-WW (280-116538-4) was analyzed for TCLP semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were leached on 11/07/2018, prepared on 11/12/2018 and analyzed on 11/16/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ORGANOCHLORINE PESTICIDES (GC)
Sample FWGIDW-181001-WW (280-116538-4) was analyzed for Organochlorine Pesticides (GC) in accordance with EPA SW-846 Method 1311/8081B. The samples were leached on 11/07/2018, prepared on 11/12/2018 and analyzed on 11/21/2018.

The following sample required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: FWGIDW-181001-WW (280-116538-4). The reagent lot number used was: T31E034.

The continuing calibration verification (CCV) associated with batch 280-438443 recovered above the upper control limit for DCB Decachlorobiphenyl and Methoxychlor on the front column. The compounds were in control on the back column. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported from the back, in control, column.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

POLYCHLORINATED BIPHENYLS (PCBS)
Sample FWGIDW-181001-WW (280-116538-4) was analyzed for polychlorinated biphenyls (PCBs) in accordance with SW-846 8082A. The samples were prepared on 11/13/2018 and analyzed on 11/28/2018.

The continuing calibration verification (CCV) associated to the following samples recovered below the lower limit for Tetrachloro-m-xylene on the confirmation column: (CCVIS 280-439075/4). The primary column was in control. The surrogate recoveries are in control; therefore, the data is being reported from the in control column.

The initial calibration verification (ICV) result for batch 280-439075 was above the upper control limit for surrogate DCB Decachlorobiphenyl, PCB-1248 and PCB-1262. This surrogate in the associated samples was in control. Sample results were non-detects, and have been reported as qualified data.

The following sample required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: FWGIDW-181001-WW (280-116538-4). Acid Lot: 161554.

The following sample required a mercury clean-up, via EPA Method 3660A, to reduce matrix interferences caused by sulfur: FWGIDW-181001-WW (280-116538-4). The reagent lot number used was: T31E034

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP CHLORINATED HERBICIDES

Sample FWGIDW-181001-WW (280-116538-4) was analyzed for TCLP chlorinated herbicides in accordance with EPA SW-846 Methods 1311/8151A. The samples were leached on 11/07/2018, prepared on 11/08/2018 and analyzed on 11/13/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP METALS

Sample FWGIDW-181001-WW (280-116538-4) was analyzed for TCLP metals in accordance with EPA SW846 Methods 1311/6010C. The samples were leached on 11/07/2018, and prepared and analyzed on 11/13/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP MERCURY

Sample FWGIDW-181001-WW (280-116538-4) was analyzed for TCLP mercury in accordance with SW-846 1311/7470. The samples were leached on 11/07/2018, prepared on 11/14/2018 and analyzed on 11/15/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

IGNITABILITY

Sample FWGIDW-181001-WW (280-116538-4) was analyzed for ignitability in accordance with EPA SW-846 Method 1010. The samples were analyzed on 11/16/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CYANIDE, TOTAL

Samples FWGIDW-181001-WW (280-116538-4) and FWIDW0181002-WW were analyzed for Cyanide, Total in accordance with 9012B.

Sample FWGIDW-181001-WW (280-116538-4) required a 5X dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SULFIDE

Sample FWGIDW-181001-WW (280-116538-4) was analyzed for sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 11/07/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Sample FWGIDW-181001-WW (280-116538-4) was analyzed for Corrosivity (pH) in accordance with EPA SW-846 9040C. The samples were analyzed on 11/19/2018.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (48 HOURS)

Sample FWGIDW-181001-WW (280-116538-4) was analyzed for anions (48 hours) in accordance with 9056A. The samples were analyzed on 11/03/2018.

Nitrite as N was detected in method blank MB 280-436181/6 at a level that was less than one half the Reporting limits; therefore, corrective action was deemed unnecessary. The value should be considered an estimate, and has been flagged “J”. .

Sample FWGIDW-181001-WW (280-116538-4) required a 5X dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116538-2

Client Sample ID: FWGIDW-181001-WW — Lab Sample ID: 280-116538-4

Analyte	Result	Qualifier	RL		MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.015	J	1.0		0.0040	mg/L	1		6010C	TCLP
Flashpoint	>60		1.00		1.00	Degrees C	1		1010A	Total/NA
Cyanide, Total	0.63		0.050		0.010	mg/L	5		9012B	Total/NA
pH adj. to 25 deg C	7.8	HF	0.1		0.1	SU	1		9040C	Total/NA
Temperature	20.3	HF	1.0		1.0	Degrees C	1		9040C	Total/NA
Nitrate as N	14		2.5		0.21	mg/L	5		9056A	Total/NA
Nitrite as N	0.52	B	0.50		0.049	mg/L	1		9056A	Total/NA

Client Sample ID: FWGqc-015-TB — Lab Sample ID: 280-116538-5

No Detections.

Client Sample ID: FWIDW-181002-WW — Lab Sample ID: 280-116538-7

Analyte	Result	Qualifier	RL		MDL	Unit	Dil Fac	D	Method	Prep Type
Cyanide, Total	0.27		0.010	0.0050	0.0020	mg/L	1		9012B	Total/NA

This Detection Summary does not include radiochemical test results.

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Benzene	ND		0.010	0.0016	mg/L		11/23/18 13:45	1
2-Butanone (MEK)	ND		0.10	0.020	mg/L		11/23/18 13:45	1
Carbon tetrachloride	ND		0.010	0.0019	mg/L		11/23/18 13:45	1
Chlorobenzene	ND		0.010	0.0017	mg/L		11/23/18 13:45	1
Chloroform	ND		0.010	0.0016	mg/L		11/23/18 13:45	1
1,2-Dichloroethane	ND		0.010	0.0013	mg/L		11/23/18 13:45	1
1,1-Dichloroethene	ND		0.010	0.0023	mg/L		11/23/18 13:45	1
Tetrachloroethene	ND		0.010	0.0020	mg/L		11/23/18 13:45	1
Trichloroethene	ND		0.010	0.0016	mg/L		11/23/18 13:45	1
Vinyl chloride	ND		0.010	0.0010	mg/L		11/23/18 13:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*78 - 120*		*11/23/18 13:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*64 - 129*		*11/23/18 13:45*	*1*
4-Bromofluorobenzene (Surr)	*92*		*78 - 121*		*11/23/18 13:45*	*1*
Dibromofluoromethane (Surr)	*87*		*79 - 119*		*11/23/18 13:45*	*1*

Client Sample ID: FWGqc-015-TB **Lab Sample ID: 280-116538-5**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Benzene	ND		0.010	0.0016	mg/L		11/23/18 14:05	1
2-Butanone (MEK)	ND		0.10	0.020	mg/L		11/23/18 14:05	1
Carbon tetrachloride	ND		0.010	0.0019	mg/L		11/23/18 14:05	1
Chlorobenzene	ND		0.010	0.0017	mg/L		11/23/18 14:05	1
Chloroform	ND		0.010	0.0016	mg/L		11/23/18 14:05	1
1,2-Dichloroethane	ND		0.010	0.0013	mg/L		11/23/18 14:05	1
1,1-Dichloroethene	ND		0.010	0.0023	mg/L		11/23/18 14:05	1
Tetrachloroethene	ND		0.010	0.0020	mg/L		11/23/18 14:05	1
Trichloroethene	ND		0.010	0.0016	mg/L		11/23/18 14:05	1
Vinyl chloride	ND		0.010	0.0010	mg/L		11/23/18 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*78 - 120*		*11/23/18 14:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*89*		*64 - 129*		*11/23/18 14:05*	*1*
4-Bromofluorobenzene (Surr)	*98*		*78 - 121*		*11/23/18 14:05*	*1*
Dibromofluoromethane (Surr)	*89*		*79 - 119*		*11/23/18 14:05*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
2-Methylphenol	ND		0.050	0.0049	mg/L		11/16/18 01:29	1
3 & 4 Methylphenol	ND		0.050	0.0013	mg/L		11/16/18 01:29	1
1,4-Dichlorobenzene	ND		0.020	0.0016	mg/L		11/16/18 01:29	1
2,4-Dinitrotoluene	ND		0.050	0.0083	mg/L		11/16/18 01:29	1
Hexachlorobenzene	ND		0.050	0.0033	mg/L		11/16/18 01:29	1
Hexachlorobutadiene	ND		0.050	0.017	mg/L		11/16/18 01:29	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP (Continued)

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Hexachloroethane	ND		0.050	0.011	mg/L		11/16/18 01:29	1
Nitrobenzene	ND		0.050	0.0041	mg/L		11/16/18 01:29	1
Pentachlorophenol	ND		0.25	0.10	mg/L		11/16/18 01:29	1
Pyridine	ND		0.10	0.0057	mg/L		11/16/18 01:29	1
2,4,5-Trichlorophenol	ND		0.050	0.0022	mg/L		11/16/18 01:29	1
2,4,6-Trichlorophenol	ND		0.025	0.0014	mg/L		11/16/18 01:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*73*		*49 - 120*	*11/12/18 13:36*	*11/16/18 01:29*	*1*
2-Fluorophenol (Surr)	*60*		*50 - 120*	*11/12/18 13:36*	*11/16/18 01:29*	*1*
2,4,6-Tribromophenol (Surr)	*77*		*51 - 120*	*11/12/18 13:36*	*11/16/18 01:29*	*1*
Nitrobenzene-d5 (Surr)	*71*		*51 - 120*	*11/12/18 13:36*	*11/16/18 01:29*	*1*
Phenol-d5 (Surr)	*51*		*47 - 120*	*11/12/18 13:36*	*11/16/18 01:29*	*1*
Terphenyl-d14 (Surr)	*70*		*56 - 120*	*11/12/18 13:36*	*11/16/18 01:29*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Endrin	ND		0.00050	0.000079	mg/L		11/21/18 17:07	1
Heptachlor	ND		0.00050	0.000077	mg/L		11/21/18 17:07	1
Heptachlor epoxide	ND		0.00050	0.000075	mg/L		11/21/18 17:07	1
gamma-BHC (Lindane)	ND		0.00050	0.000069	mg/L		11/21/18 17:07	1
Methoxychlor	ND		0.0010	0.00013	mg/L		11/21/18 17:07	1
Toxaphene	ND		0.020	0.0037	mg/L		11/21/18 17:07	1
Chlordane (technical)	ND		0.0050	0.0014	mg/L		11/21/18 17:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*87*		*28 - 115*	*11/12/18 19:56*	*11/21/18 17:07*	*1*
DCB Decachlorobiphenyl	*87*		*34 - 122*	*11/12/18 19:56*	*11/21/18 17:07*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
PCB-1016	ND		1.1	0.14	ug/L		11/28/18 20:29	1
PCB-1221	ND		1.1	0.24	ug/L		11/28/18 20:29	1
PCB-1232	ND		1.1	0.18	ug/L		11/28/18 20:29	1
PCB-1242	ND		1.1	0.12	ug/L		11/28/18 20:29	1
PCB-1248	ND		1.1	0.10	ug/L		11/28/18 20:29	1
PCB-1254	ND		1.1	0.13	ug/L		11/28/18 20:29	1
PCB-1260	ND		1.1	0.18	ug/L		11/28/18 20:29	1
PCB-1262	ND		1.1	0.094	ug/L		11/28/18 20:29	1
PCB-1268	ND		1.1	0.40	ug/L		11/28/18 20:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*25 - 120*	*11/13/18 18:28*	*11/28/18 20:29*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*70*		*30 - 136*	*11/13/18 18:28*	*11/28/18 20:29*	*1*

Method: 8151A DOD - Herbicides (GC) - TCLP

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
2,4-D	ND		0.040	0.0021	mg/L		11/13/18 18:57	1
Silvex (2,4,5-TP)	ND		0.010	0.0017	mg/L		11/13/18 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*79*		*10 - 131*	*11/08/18 07:48*	*11/13/18 18:57*	*1*

Method: 6010C - Metals (ICP) - TCLP

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Arsenic	ND		0.50	0.022	mg/L		11/13/18 14:56	1
Barium	**0.015**	**J**	1.0	0.0040	mg/L		11/13/18 14:56	1
Cadmium	ND		0.10	0.0020	mg/L		11/13/18 14:56	1
Chromium	ND		0.50	0.0030	mg/L		11/13/18 14:56	1
Lead	ND		0.50	0.014	mg/L		11/13/18 14:56	1
Selenium	ND		0.10	0.032	mg/L		11/13/18 14:56	1
Silver	ND		0.50	0.0040	mg/L		11/13/18 14:56	1

Method: 7470A - Mercury (CVAA) - TCLP

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Mercury	ND		0.0020	0.000030	mg/L		11/15/18 15:55	1

General Chemistry

Client Sample ID: FWGIDW-181001-WW **Lab Sample ID: 280-116538-4**
Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Flashpoint	**>60**		1.00	1.00	Degrees C		11/16/18 01:31	1
Cyanide, Total	**0.63**		0.050	0.010	mg/L		11/15/18 19:28	5
Sulfide	ND		4.0	0.79	mg/L		11/07/18 20:06	1
pH adj. to 25 deg C	**7.8**	**HF**	0.1	0.1	SU		11/19/18 13:46	1
Temperature	**20.3**	**HF**	1.0	1.0	Degrees C		11/19/18 13:46	1
Nitrate as N	**14**		2.5	0.21	mg/L		11/03/18 16:36	5
Nitrite as N	**0.52**	**B**	0.50	0.049	mg/L		11/03/18 14:16	1

General Chemistry

Client Sample ID: FWIDW-181002-WW **Lab Sample ID: 280-116538-7**
Date Collected: 11/14/18 15:55 **Matrix: Water**
Date Received: 11/03/18 09:00

Analyte	Result	Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	**0.27**		0.010	0.0050	0.0020	mg/L		11/21/18 11:07	1

Default Detection Limits

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116538-2

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Leach: 1311

Analyte	RL	MDL	Units	Method
1,1-Dichloroethene	0.010	0.0023	mg/L	8260B
1,2-Dichloroethane	0.010	0.0013	mg/L	8260B
2-Butanone (MEK)	0.10	0.020	mg/L	8260B
Benzene	0.010	0.0016	mg/L	8260B
Carbon tetrachloride	0.010	0.0019	mg/L	8260B
Chlorobenzene	0.010	0.0017	mg/L	8260B
Chloroform	0.010	0.0016	mg/L	8260B
Tetrachloroethene	0.010	0.0020	mg/L	8260B
Trichloroethene	0.010	0.0016	mg/L	8260B
Vinyl chloride	0.010	0.0010	mg/L	8260B

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Prep: 3510C
Leach: 1311

Analyte	RL	MDL	Units	Method
1,4-Dichlorobenzene	0.020	0.0016	mg/L	8270D
2,4,5-Trichlorophenol	0.050	0.0022	mg/L	8270D
2,4,6-Trichlorophenol	0.025	0.0014	mg/L	8270D
2,4-Dinitrotoluene	0.050	0.0083	mg/L	8270D
2-Methylphenol	0.050	0.0049	mg/L	8270D
3 & 4 Methylphenol	0.050	0.0013	mg/L	8270D
Hexachlorobenzene	0.050	0.0033	mg/L	8270D
Hexachlorobutadiene	0.050	0.017	mg/L	8270D
Hexachloroethane	0.050	0.011	mg/L	8270D
Nitrobenzene	0.050	0.0041	mg/L	8270D
Pentachlorophenol	0.25	0.10	mg/L	8270D
Pyridine	0.10	0.0057	mg/L	8270D

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Prep: 3510C
Leach: 1311

Analyte	RL	MDL	Units	Method
Chlordane (technical)	0.0050	0.0014	mg/L	8081B
Endrin	0.00050	0.000079	mg/L	8081B
gamma-BHC (Lindane)	0.00050	0.000069	mg/L	8081B
Heptachlor	0.00050	0.000077	mg/L	8081B
Heptachlor epoxide	0.00050	0.000075	mg/L	8081B
Methoxychlor	0.0010	0.00013	mg/L	8081B
Toxaphene	0.020	0.0037	mg/L	8081B

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Prep: 3510C

Analyte	RL	MDL	Units	Method
PCB-1016	1.0	0.12	ug/L	8082A
PCB-1221	1.0	0.21	ug/L	8082A
PCB-1232	1.0	0.17	ug/L	8082A
PCB-1242	1.0	0.10	ug/L	8082A
PCB-1248	1.0	0.092	ug/L	8082A
PCB-1254	1.0	0.11	ug/L	8082A

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Prep: 3510C

Analyte	RL	MDL	Units	Method
PCB-1260	1.0	0.16	ug/L	8082A
PCB-1262	1.0	0.085	ug/L	8082A
PCB-1268	1.0	0.36	ug/L	8082A

Method: 8151A DOD - Herbicides (GC) - TCLP

Prep: 8151A
Leach: 1311

Analyte	RL	MDL	Units	Method
2,4-D	0.040	0.0021	mg/L	8151A DOD
Silvex (2,4,5-TP)	0.010	0.0017	mg/L	8151A DOD

Method: 6010C - Metals (ICP) - TCLP

Prep: 3010A
Leach: 1311

Analyte	RL	MDL	Units	Method
Arsenic	0.50	0.022	mg/L	6010C
Barium	1.0	0.0040	mg/L	6010C
Cadmium	0.10	0.0020	mg/L	6010C
Chromium	0.50	0.0030	mg/L	6010C
Lead	0.50	0.014	mg/L	6010C
Selenium	0.10	0.032	mg/L	6010C
Silver	0.50	0.0040	mg/L	6010C

Method: 7470A - Mercury (CVAA) - TCLP

Prep: 7470A
Leach: 1311

Analyte	RL	MDL	Units	Method
Mercury	0.0020	0.000030	mg/L	7470A

General Chemistry

Analyte	RL	MDL	Units	Method
Flashpoint	1.00	1.00	Degrees C	1010A
pH adj. to 25 deg C	0.1	0.1	SU	9040C
Temperature	1.0	1.0	Degrees C	9040C
Nitrate as N	0.50	0.042	mg/L	9056A
Nitrite as N	0.50	0.049	mg/L	9056A

General Chemistry

Prep: 9012B

Analyte	RL	MDL	Units	Method
Cyanide, Total	0.010	0.0020	mg/L	9012B

General Chemistry

Prep: 9030B

Analyte	RL	MDL	Units	Method
Sulfide	4.0	0.79	mg/L	9034

Surrogate Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116538-2

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)			
		TOL	DCA	BFB	DBFM
Lab Sample ID	Client Sample ID	(78-120)	(64-129)	(78-121)	(79-119)
280-116538-4	FWGIDW-181001-WW	99	90	92	87
280-116538-5	FWGqc-015-TB	99	89	98	89
LB3 280-437096/1-A	Method Blank	93	89	98	90
LCS 280-437096/2-A	Lab Control Sample	99	90	91	88

Surrogate Legend

TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	TBP	NBZ	PHL	TPHL
Lab Sample ID	Client Sample ID	(49-120)	(50-120)	(51-120)	(51-120)	(47-120)	(56-120)
280-116538-4	FWGIDW-181001-WW	73	60	77	71	51	70
280-116538-4 MS	FWGIDW-181001-WW	78	64	81	75	53	67
280-116538-4 MSD	FWGIDW-181001-WW	89	70	89	83	61	70
LB3 280-436732/1-G	Method Blank	84	69	78	77	57	88
LCS 280-436732/3-B	Lab Control Sample	86	73	83	80	59	88

Surrogate Legend

FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol (Surr)
TBP = 2,4,6-Tribromophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHL = Terphenyl-d14 (Surr)

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX2	DCBP2
Lab Sample ID	Client Sample ID	(28-115)	(34-122)
280-116538-4	FWGIDW-181001-WW	87	87
280-116538-4 MS	FWGIDW-181001-WW	89	92
280-116538-4 MS	FWGIDW-181001-WW	88	106
280-116538-4 MSD	FWGIDW-181001-WW	88	94
280-116538-4 MSD	FWGIDW-181001-WW	82	100
LB3 280-436732/1-I	Method Blank	88	101
LCS 280-436732/3-E	Lab Control Sample	90	103
LCS 280-436732/3-F	Lab Control Sample	89	115

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCBP = DCB Decachlorobiphenyl

Surrogate Summary

Client: Leidos, Inc.
TestAmerica Job ID: 280-116538-2
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	TCX2 (25-120)	DCBP2 (30-136)								
280-116538-4	FWGIDW-181001-WW	78	70								
LCS 280-437451/4-A	Lab Control Sample	86	93								
LCSD 280-437451/5-A	Lab Control Sample Dup	87	97								
MB 280-437451/1-A	Method Blank	85	94								

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCBP = DCB Decachlorobiphenyl

Method: 8151A DOD - Herbicides (GC)

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	DCPAA1 (10-131)									
280-116538-4	FWGIDW-181001-WW	79									
280-116538-4 MS	FWGIDW-181001-WW	83									
280-116538-4 MSD	FWGIDW-181001-WW	78									
LB3 280-436732/1-B	Method Blank	76									
LCS 280-436732/2-B	Lab Control Sample	78									

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 280-437096/1-A
Matrix: Water
Analysis Batch: 438589

Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB3 Result	LB3 Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Benzene	ND		0.010		0.0016	mg/L		11/23/18 13:07	1
2-Butanone (MEK)	ND		0.10		0.020	mg/L		11/23/18 13:07	1
Carbon tetrachloride	ND		0.010		0.0019	mg/L		11/23/18 13:07	1
Chlorobenzene	ND		0.010		0.0017	mg/L		11/23/18 13:07	1
Chloroform	ND		0.010		0.0016	mg/L		11/23/18 13:07	1
1,2-Dichloroethane	ND		0.010		0.0013	mg/L		11/23/18 13:07	1
1,1-Dichloroethene	ND		0.010		0.0023	mg/L		11/23/18 13:07	1
Tetrachloroethene	ND		0.010		0.0020	mg/L		11/23/18 13:07	1
Trichloroethene	ND		0.010		0.0016	mg/L		11/23/18 13:07	1
Vinyl chloride	ND		0.010		0.0010	mg/L		11/23/18 13:07	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*93*		*78 - 120*		*11/23/18 13:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*89*		*64 - 129*		*11/23/18 13:07*	*1*
4-Bromofluorobenzene (Surr)	*98*		*78 - 121*		*11/23/18 13:07*	*1*
Dibromofluoromethane (Surr)	*90*		*79 - 119*		*11/23/18 13:07*	*1*

Lab Sample ID: LCS 280-437096/2-A
Matrix: Water
Analysis Batch: 438589

Client Sample ID: Lab Control Sample
Prep Type: TCLP

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Benzene			0.0500	0.0496		mg/L		99	74 - 135		
2-Butanone (MEK)			0.200	0.170		mg/L		85	44 - 150		
Carbon tetrachloride			0.0500	0.0504		mg/L		101	67 - 135		
Chlorobenzene			0.0500	0.0488		mg/L		98	76 - 135		
Chloroform			0.0500	0.0503		mg/L		101	76 - 120		
1,2-Dichloroethane			0.0500	0.0469		mg/L		94	70 - 135		
1,1-Dichloroethene			0.0500	0.0498		mg/L		100	71 - 136		
Tetrachloroethene			0.0500	0.0520		mg/L		104	70 - 135		
Trichloroethene			0.0500	0.0498		mg/L		100	73 - 135		
Vinyl chloride			0.0500	0.0481		mg/L		96	40 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*99*		*78 - 120*
1,2-Dichloroethane-d4 (Surr)	*90*		*64 - 129*
4-Bromofluorobenzene (Surr)	*91*		*78 - 121*
Dibromofluoromethane (Surr)	*88*		*79 - 119*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 280-436732/1-G
Matrix: Water
Analysis Batch: 437797

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 437243

Analyte	LB3 Result	LB3 Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
2-Methylphenol	ND		0.050		0.0049	mg/L		11/15/18 19:52	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LB3 280-436732/1-G **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 437797 **Prep Batch: 437243**

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
3 & 4 Methylphenol	ND		0.050	0.0013	mg/L		11/15/18 19:52	1
1,4-Dichlorobenzene	ND		0.020	0.0016	mg/L		11/15/18 19:52	1
2,4-Dinitrotoluene	ND		0.050	0.0083	mg/L		11/15/18 19:52	1
Hexachlorobenzene	ND		0.050	0.0033	mg/L		11/15/18 19:52	1
Hexachlorobutadiene	ND		0.050	0.017	mg/L		11/15/18 19:52	1
Hexachloroethane	ND		0.050	0.011	mg/L		11/15/18 19:52	1
Nitrobenzene	ND		0.050	0.0041	mg/L		11/15/18 19:52	1
Pentachlorophenol	ND		0.25	0.10	mg/L		11/15/18 19:52	1
Pyridine	ND		0.10	0.0057	mg/L		11/15/18 19:52	1
2,4,5-Trichlorophenol	ND		0.050	0.0022	mg/L		11/15/18 19:52	1
2,4,6-Trichlorophenol	ND		0.025	0.0014	mg/L		11/15/18 19:52	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*84*		*49 - 120*	*11/12/18 13:36*	*11/15/18 19:52*	*1*
2-Fluorophenol (Surr)	*69*		*50 - 120*	*11/12/18 13:36*	*11/15/18 19:52*	*1*
2,4,6-Tribromophenol (Surr)	*78*		*51 - 120*	*11/12/18 13:36*	*11/15/18 19:52*	*1*
Nitrobenzene-d5 (Surr)	*77*		*51 - 120*	*11/12/18 13:36*	*11/15/18 19:52*	*1*
Phenol-d5 (Surr)	*57*		*47 - 120*	*11/12/18 13:36*	*11/15/18 19:52*	*1*
Terphenyl-d14 (Surr)	*88*		*56 - 120*	*11/12/18 13:36*	*11/15/18 19:52*	*1*

Lab Sample ID: LCS 280-436732/3-B **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 437797 **Prep Batch: 437243**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylphenol	0.250	0.176		mg/L		70	45 - 120
3 & 4 Methylphenol	0.500	0.350		mg/L		70	44 - 120
1,4-Dichlorobenzene	0.250	0.174		mg/L		69	36 - 120
2,4-Dinitrotoluene	0.100	0.0694		mg/L		69	36 - 120
Hexachlorobenzene	0.100	0.0778		mg/L		78	52 - 120
Hexachlorobutadiene	0.250	0.168		mg/L		67	35 - 120
Hexachloroethane	0.250	0.169		mg/L		68	35 - 120
Nitrobenzene	0.250	0.189		mg/L		75	50 - 120
Pentachlorophenol	0.500	0.256		mg/L		51	39 - 120
Pyridine	0.250	0.102		mg/L		41	10 - 121
2,4,5-Trichlorophenol	0.250	0.191		mg/L		76	46 - 120
2,4,6-Trichlorophenol	0.250	0.194		mg/L		77	43 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*86*		*49 - 120*
2-Fluorophenol (Surr)	*73*		*50 - 120*
2,4,6-Tribromophenol (Surr)	*83*		*51 - 120*
Nitrobenzene-d5 (Surr)	*80*		*51 - 120*
Phenol-d5 (Surr)	*59*		*47 - 120*
Terphenyl-d14 (Surr)	*88*		*56 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-116538-4 MS **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 437797 **Prep Batch: 437243**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylphenol	ND		0.250	0.160		mg/L		64	45 - 120
3 & 4 Methylphenol	ND		0.500	0.328		mg/L		66	44 - 120
1,4-Dichlorobenzene	ND		0.250	0.161		mg/L		64	36 - 120
2,4-Dinitrotoluene	ND		0.100	0.0693		mg/L		69	36 - 120
Hexachlorobenzene	ND		0.100	0.0676		mg/L		68	52 - 120
Hexachlorobutadiene	ND		0.250	0.152		mg/L		61	35 - 120
Hexachloroethane	ND		0.250	0.156		mg/L		62	35 - 120
Nitrobenzene	ND		0.250	0.177		mg/L		71	50 - 120
Pentachlorophenol	ND		0.500	0.299		mg/L		60	39 - 120
Pyridine	ND		0.250	0.127		mg/L		51	10 - 121
2,4,5-Trichlorophenol	ND		0.250	0.184		mg/L		74	46 - 120
2,4,6-Trichlorophenol	ND		0.250	0.179		mg/L		72	43 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl	*78*		*49 - 120*
2-Fluorophenol (Surr)	*64*		*50 - 120*
2,4,6-Tribromophenol (Surr)	*81*		*51 - 120*
Nitrobenzene-d5 (Surr)	*75*		*51 - 120*
Phenol-d5 (Surr)	*53*		*47 - 120*
Terphenyl-d14 (Surr)	*67*		*56 - 120*

Lab Sample ID: 280-116538-4 MSD **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 437797 **Prep Batch: 437243**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Methylphenol	ND		0.250	0.185		mg/L		74	45 - 120	15	30
3 & 4 Methylphenol	ND		0.500	0.374		mg/L		75	44 - 120	13	30
1,4-Dichlorobenzene	ND		0.250	0.174		mg/L		70	36 - 120	8	30
2,4-Dinitrotoluene	ND		0.100	0.0751		mg/L		75	36 - 120	8	30
Hexachlorobenzene	ND		0.100	0.0736		mg/L		74	52 - 120	9	30
Hexachlorobutadiene	ND		0.250	0.168		mg/L		67	35 - 120	10	30
Hexachloroethane	ND		0.250	0.167		mg/L		67	35 - 120	7	30
Nitrobenzene	ND		0.250	0.199		mg/L		80	50 - 120	11	30
Pentachlorophenol	ND		0.500	0.330		mg/L		66	39 - 120	10	30
Pyridine	ND		0.250	0.136		mg/L		54	10 - 121	7	30
2,4,5-Trichlorophenol	ND		0.250	0.204		mg/L		82	46 - 120	10	30
2,4,6-Trichlorophenol	ND		0.250	0.207		mg/L		83	43 - 120	15	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl	*89*		*49 - 120*
2-Fluorophenol (Surr)	*70*		*50 - 120*
2,4,6-Tribromophenol (Surr)	*89*		*51 - 120*
Nitrobenzene-d5 (Surr)	*83*		*51 - 120*
Phenol-d5 (Surr)	*61*		*47 - 120*
Terphenyl-d14 (Surr)	*70*		*56 - 120*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: LB3 280-436732/1-I
Matrix: Water
Analysis Batch: 438443

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 437290

Analyte	LB3 Result	LB3 Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Endrin	ND		0.00050		0.000079	mg/L		11/21/18 15:57	1
Heptachlor	ND		0.00050		0.000077	mg/L		11/21/18 15:57	1
Heptachlor epoxide	ND		0.00050		0.000075	mg/L		11/21/18 15:57	1
gamma-BHC (Lindane)	ND		0.00050		0.000069	mg/L		11/21/18 15:57	1
Methoxychlor	ND		0.0010		0.00013	mg/L		11/21/18 15:57	1
Toxaphene	ND		0.020		0.0037	mg/L		11/21/18 15:57	1
Chlordane (technical)	ND		0.0050		0.0014	mg/L		11/21/18 15:57	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*88*		*28 - 115*	*11/12/18 19:56*	*11/21/18 15:57*	*1*
DCB Decachlorobiphenyl	*101*		*34 - 122*	*11/12/18 19:56*	*11/21/18 15:57*	*1*

Lab Sample ID: LCS 280-436732/3-E
Matrix: Water
Analysis Batch: 438443

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 437290

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Endrin			0.00500	0.00514		mg/L		103	66 - 143		
Heptachlor			0.00500	0.00484		mg/L		97	59 - 143		
Heptachlor epoxide			0.00500	0.00481		mg/L		96	37 - 142		
gamma-BHC (Lindane)			0.00500	0.00474		mg/L		95	68 - 142		
Methoxychlor			0.00500	0.00560		mg/L		112	30 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*90*		*28 - 115*
DCB Decachlorobiphenyl	*103*		*34 - 122*

Lab Sample ID: LCS 280-436732/3-F
Matrix: Water
Analysis Batch: 438443

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 437290

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Toxaphene			0.200	0.219		mg/L		109	63 - 142		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*89*		*28 - 115*
DCB Decachlorobiphenyl	*115*		*34 - 122*

Lab Sample ID: 280-116538-4 MS
Matrix: Water
Analysis Batch: 438443

Client Sample ID: FWGIDW-181001-WW
Prep Type: TCLP
Prep Batch: 437290

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Endrin	ND		0.00500	0.00505		mg/L		101	66 - 143		
Heptachlor	ND		0.00500	0.00494		mg/L		99	59 - 143		
Heptachlor epoxide	ND		0.00500	0.00481		mg/L		96	37 - 142		
gamma-BHC (Lindane)	ND		0.00500	0.00484		mg/L		97	68 - 142		

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 280-116538-4 MS — **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 438443 — **Prep Batch: 437290**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methoxychlor	ND		0.00500	0.00532		mg/L		106	30 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*89*		*28 - 115*
DCB Decachlorobiphenyl	*92*		*34 - 122*

Lab Sample ID: 280-116538-4 MS — **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 438443 — **Prep Batch: 437290**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Toxaphene	ND		0.200	0.205		mg/L		102	63 - 142

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*88*		*28 - 115*
DCB Decachlorobiphenyl	*106*		*34 - 122*

Lab Sample ID: 280-116538-4 MSD — **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 438443 — **Prep Batch: 437290**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Endrin	ND		0.00500	0.00490		mg/L		98	66 - 143	3	30
Heptachlor	ND		0.00500	0.00489		mg/L		98	59 - 143	1	30
Heptachlor epoxide	ND		0.00500	0.00468		mg/L		94	37 - 142	3	30
gamma-BHC (Lindane)	ND		0.00500	0.00474		mg/L		95	68 - 142	2	30
Methoxychlor	ND		0.00500	0.00535		mg/L		107	30 - 150	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*88*		*28 - 115*
DCB Decachlorobiphenyl	*94*		*34 - 122*

Lab Sample ID: 280-116538-4 MSD — **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 438443 — **Prep Batch: 437290**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toxaphene	ND		0.200	0.200		mg/L		100	63 - 142	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*82*		*28 - 115*
DCB Decachlorobiphenyl	*100*		*34 - 122*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 280-437451/1-A
Matrix: Water
Analysis Batch: 439075

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 437451

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
PCB-1016	ND		1.0		0.12	ug/L		11/28/18 18:43	1
PCB-1221	ND		1.0		0.21	ug/L		11/28/18 18:43	1
PCB-1232	ND		1.0		0.17	ug/L		11/28/18 18:43	1
PCB-1242	ND		1.0		0.10	ug/L		11/28/18 18:43	1
PCB-1248	ND		1.0		0.092	ug/L		11/28/18 18:43	1
PCB-1254	ND		1.0		0.11	ug/L		11/28/18 18:43	1
PCB-1260	ND		1.0		0.16	ug/L		11/28/18 18:43	1
PCB-1262	ND		1.0		0.085	ug/L		11/28/18 18:43	1
PCB-1268	ND		1.0		0.36	ug/L		11/28/18 18:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*85*		*25 - 120*	*11/13/18 18:28*	*11/28/18 18:43*	*1*
DCB Decachlorobiphenyl	*94*		*30 - 136*	*11/13/18 18:28*	*11/28/18 18:43*	*1*

Lab Sample ID: LCS 280-437451/4-A
Matrix: Water
Analysis Batch: 439075

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437451

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
PCB-1016			2.00	2.12		ug/L		106	46 - 129		
PCB-1260			2.00	2.16		ug/L		108	45 - 134		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*86*		*25 - 120*
DCB Decachlorobiphenyl	*93*		*30 - 136*

Lab Sample ID: LCSD 280-437451/5-A
Matrix: Water
Analysis Batch: 439075

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 437451

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016			2.00	2.10		ug/L		105	46 - 129	1	30
PCB-1260			2.00	2.34		ug/L		117	45 - 134	8	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*87*		*25 - 120*
DCB Decachlorobiphenyl	*97*		*30 - 136*

Method: 8151A DOD - Herbicides (GC)

Lab Sample ID: LB3 280-436732/1-B
Matrix: Water
Analysis Batch: 437382

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 436773

Analyte	LB3 Result	LB3 Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
2,4-D	ND		0.040		0.0021	mg/L		11/13/18 18:24	1
Silvex (2,4,5-TP)	ND		0.010		0.0017	mg/L		11/13/18 18:24	1

Surrogate	LB3 %Recovery	LB3 Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	76		10 - 131	11/08/18 07:48	11/13/18 18:24	1

Lab Sample ID: LCS 280-436732/2-B — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 437382 — **Prep Batch: 436773**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.0500	0.0376	J	mg/L		75	13 - 115
Silvex (2,4,5-TP)	0.0500	0.0403		mg/L		81	10 - 158

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2,4-Dichlorophenylacetic acid	78		10 - 131

Lab Sample ID: 280-116538-4 MS — **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 437382 — **Prep Batch: 436773**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	ND		0.0500	0.0389	J	mg/L		78	13 - 115
Silvex (2,4,5-TP)	ND		0.0500	0.0392		mg/L		78	10 - 158

Surrogate	MS %Recovery	MS Qualifier	Limits
2,4-Dichlorophenylacetic acid	83		10 - 131

Lab Sample ID: 280-116538-4 MSD — **Client Sample ID: FWGIDW-181001-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 437382 — **Prep Batch: 436773**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4-D	ND		0.0500	0.0372	J	mg/L		74	13 - 115	5	30
Silvex (2,4,5-TP)	ND		0.0500	0.0374		mg/L		75	10 - 158	5	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2,4-Dichlorophenylacetic acid	78		10 - 131

Method: 6010C - Metals (ICP)

Lab Sample ID: LB3 280-436732/1-F — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 437502 — **Prep Batch: 437152**

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Arsenic	ND		0.50	0.022	mg/L		11/13/18 14:46	1
Barium	ND		1.0	0.0040	mg/L		11/13/18 14:46	1
Cadmium	ND		0.10	0.0020	mg/L		11/13/18 14:46	1
Chromium	ND		0.50	0.0030	mg/L		11/13/18 14:46	1
Lead	ND		0.50	0.014	mg/L		11/13/18 14:46	1
Selenium	ND		0.10	0.032	mg/L		11/13/18 14:46	1
Silver	ND		0.50	0.0040	mg/L		11/13/18 14:46	1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCS 280-436732/2-F
Matrix: Water
Analysis Batch: 437502

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 437152

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	4.00	3.57		mg/L		89	80 - 120
Barium	12.0	11.0		mg/L		92	80 - 120
Cadmium	1.10	1.01		mg/L		92	80 - 120
Chromium	5.20	4.80		mg/L		92	80 - 120
Lead	5.50	5.12		mg/L		93	80 - 120
Selenium	3.00	2.61		mg/L		87	80 - 120
Silver	1.05	0.940		mg/L		90	80 - 120

Lab Sample ID: LCSD 280-436732/13-B
Matrix: Water
Analysis Batch: 437502

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 437152

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	4.00	3.86		mg/L		97	80 - 120	8	20
Barium	12.0	11.9		mg/L		99	80 - 120	8	20
Cadmium	1.10	1.09		mg/L		99	80 - 120	7	20
Chromium	5.20	5.21		mg/L		100	80 - 120	8	20
Lead	5.50	5.53		mg/L		100	80 - 120	8	20
Selenium	3.00	2.82		mg/L		94	80 - 120	8	20
Silver	1.05	1.01		mg/L		96	80 - 120	7	20

Lab Sample ID: 280-116538-4 MS
Matrix: Water
Analysis Batch: 437502

Client Sample ID: FWGIDW-181001-WW
Prep Type: TCLP
Prep Batch: 437152

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		4.00	3.98		mg/L		99	80 - 120
Barium	0.015	J	12.0	12.2		mg/L		102	80 - 120
Cadmium	ND		1.10	1.09		mg/L		99	80 - 120
Chromium	ND		5.20	5.27		mg/L		101	80 - 120
Lead	ND		5.50	5.61		mg/L		102	80 - 120
Selenium	ND		3.00	2.88		mg/L		96	80 - 120
Silver	ND		1.05	1.06		mg/L		101	80 - 120

Lab Sample ID: 280-116538-4 MSD
Matrix: Water
Analysis Batch: 437502

Client Sample ID: FWGIDW-181001-WW
Prep Type: TCLP
Prep Batch: 437152

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		4.00	3.99		mg/L		100	80 - 120	0	20
Barium	0.015	J	12.0	12.1		mg/L		101	80 - 120	1	20
Cadmium	ND		1.10	1.11		mg/L		100	80 - 120	1	20
Chromium	ND		5.20	5.29		mg/L		102	80 - 120	0	20
Lead	ND		5.50	5.63		mg/L		102	80 - 120	0	20
Selenium	ND		3.00	2.90		mg/L		97	80 - 120	1	20
Silver	ND		1.05	1.04		mg/L		99	80 - 120	1	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LB3 280-436732/1-J
Matrix: Water
Analysis Batch: 437814

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 437496

Analyte	LB3 Result	LB3 Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Mercury	ND		0.0020		0.000030	mg/L		11/15/18 14:15	1

Lab Sample ID: LCS 280-436732/2-G
Matrix: Water
Analysis Batch: 437814

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 437496

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00500	0.00495		mg/L		99	90 - 116		

Lab Sample ID: LCSD 280-436732/13-D
Matrix: Water
Analysis Batch: 437814

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 437496

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.00500	0.00482		mg/L		96	90 - 116	3	10

Lab Sample ID: 280-116538-4 MS
Matrix: Water
Analysis Batch: 437814

Client Sample ID: FWGIDW-181001-WW
Prep Type: TCLP
Prep Batch: 437496

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.00500	0.00497		mg/L		99	90 - 116		

Lab Sample ID: 280-116538-4 MSD
Matrix: Water
Analysis Batch: 437814

Client Sample ID: FWGIDW-181001-WW
Prep Type: TCLP
Prep Batch: 437496

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00514		mg/L		103	90 - 116	3	10

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: MB 160-401121/1
Matrix: Water
Analysis Batch: 401121

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Flashpoint	>60		1.00		1.00	Degrees C		11/15/18 23:43	1

Lab Sample ID: LCS 160-401121/2
Matrix: Water
Analysis Batch: 401121

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Flashpoint			25.0	27.00		Degrees C		108	90 - 110		

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 280-437763/5-A
Matrix: Water
Analysis Batch: 437833

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 437763

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	ND		0.010		0.0020	mg/L		11/15/18 18:00	1

Lab Sample ID: HLCS 280-437763/1-A
Matrix: Water
Analysis Batch: 437833

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437763

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.350	0.342		mg/L		98	90 - 110		

Lab Sample ID: LCS 280-437763/3-A
Matrix: Water
Analysis Batch: 437833

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437763

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.100	0.102		mg/L		102	83 - 116		

Lab Sample ID: LCSD 280-437763/4-A
Matrix: Water
Analysis Batch: 437833

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 437763

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total			0.100	0.0973		mg/L		97	83 - 116	4	20

Lab Sample ID: LLCS 280-437763/2-A
Matrix: Water
Analysis Batch: 437833

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 437763

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.100	0.0970		mg/L		97	44 - 167		

Lab Sample ID: MB 280-438264/5-A
Matrix: Water
Analysis Batch: 438452

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 438264

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0050	U	0.010	0.0050	0.0020	mg/L		11/21/18 10:41	1

Lab Sample ID: HLCS 280-438264/1-A
Matrix: Water
Analysis Batch: 438452

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 438264

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.350	0.358		mg/L		102	90 - 110		

Lab Sample ID: LCS 280-438264/3-A
Matrix: Water
Analysis Batch: 438452

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 438264

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.100	0.110		mg/L		110	83 - 116		

Lab Sample ID: LCSD 280-438264/4-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 438452 **Prep Batch: 438264**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.100	0.105		mg/L		105	83 - 116	5	20

Lab Sample ID: LLCS 280-438264/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 438452 **Prep Batch: 438264**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.100	0.0979		mg/L		98	44 - 167

Method: 9034 - Sulfide, Acid Soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 280-436723/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 436735 **Prep Batch: 436723**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Sulfide	ND		4.0	0.79	mg/L		11/07/18 20:06	1

Lab Sample ID: LCS 280-436723/3-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 436735 **Prep Batch: 436723**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	22.3	16.0		mg/L		72	50 - 106

Method: 9040C - pH

Lab Sample ID: LCS 280-438182/4 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 438182

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-436181/6 **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 436181

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Nitrate as N	ND		0.50	0.042	mg/L		11/03/18 12:07	1
Nitrite as N	0.0961	J	0.50	0.049	mg/L		11/03/18 12:07	1

Lab Sample ID: LCS 280-436181/4 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 436181

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	5.00	4.96		mg/L		99	88 - 111
Nitrite as N	5.00	5.06		mg/L		101	87 - 111

Lab Sample ID: LCSD 280-436181/5
Matrix: Water
Analysis Batch: 436181

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N			5.00	4.97		mg/L		99	88 - 111	0	10
Nitrite as N			5.00	5.13		mg/L		103	87 - 111	1	10

Lab Sample ID: MRL 280-436181/3
Matrix: Water
Analysis Batch: 436181

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrate as N			0.200	0.241	J	mg/L		120	50 - 150		
Nitrite as N			0.200	0.234	J	mg/L		117	50 - 150		

GC/MS VOA

Leach Batch: 437096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	1311	
280-116538-5	FWGqc-015-TB	TCLP	Water	1311	
LB3 280-437096/1-A	Method Blank	TCLP	Water	1311	
LCS 280-437096/2-A	Lab Control Sample	TCLP	Water	1311	

Analysis Batch: 438589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	8260B	437096
280-116538-5	FWGqc-015-TB	TCLP	Water	8260B	437096
LB3 280-437096/1-A	Method Blank	TCLP	Water	8260B	437096
LCS 280-437096/2-A	Lab Control Sample	TCLP	Water	8260B	437096

GC/MS Semi VOA

Leach Batch: 436732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	1311	
LB3 280-436732/1-G	Method Blank	TCLP	Water	1311	
LCS 280-436732/3-B	Lab Control Sample	TCLP	Water	1311	
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	1311	
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	1311	

Prep Batch: 437243

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	3510C	436732
LB3 280-436732/1-G	Method Blank	TCLP	Water	3510C	436732
LCS 280-436732/3-B	Lab Control Sample	TCLP	Water	3510C	436732
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	3510C	436732
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	3510C	436732

Analysis Batch: 437797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	8270D	437243
LB3 280-436732/1-G	Method Blank	TCLP	Water	8270D	437243
LCS 280-436732/3-B	Lab Control Sample	TCLP	Water	8270D	437243
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	8270D	437243
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	8270D	437243

GC Semi VOA

Leach Batch: 436732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	1311	
LB3 280-436732/1-B	Method Blank	TCLP	Water	1311	
LB3 280-436732/1-I	Method Blank	TCLP	Water	1311	
LCS 280-436732/2-B	Lab Control Sample	TCLP	Water	1311	
LCS 280-436732/3-E	Lab Control Sample	TCLP	Water	1311	
LCS 280-436732/3-F	Lab Control Sample	TCLP	Water	1311	
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	1311	
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	1311	

GC Semi VOA (Continued)

Prep Batch: 436773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	8151A	436732
LB3 280-436732/1-B	Method Blank	TCLP	Water	8151A	436732
LCS 280-436732/2-B	Lab Control Sample	TCLP	Water	8151A	436732
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	8151A	436732
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	8151A	436732

Prep Batch: 437290

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	3510C	436732
LB3 280-436732/1-I	Method Blank	TCLP	Water	3510C	436732
LCS 280-436732/3-E	Lab Control Sample	TCLP	Water	3510C	436732
LCS 280-436732/3-F	Lab Control Sample	TCLP	Water	3510C	436732
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	3510C	436732
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	3510C	436732
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	3510C	436732
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	3510C	436732

Analysis Batch: 437382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	8151A DOD	436773
LB3 280-436732/1-B	Method Blank	TCLP	Water	8151A DOD	436773
LCS 280-436732/2-B	Lab Control Sample	TCLP	Water	8151A DOD	436773
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	8151A DOD	436773
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	8151A DOD	436773

Prep Batch: 437451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	3510C	
MB 280-437451/1-A	Method Blank	Total/NA	Water	3510C	
LCS 280-437451/4-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 280-437451/5-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 438443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	8081B	437290
LB3 280-436732/1-I	Method Blank	TCLP	Water	8081B	437290
LCS 280-436732/3-E	Lab Control Sample	TCLP	Water	8081B	437290
LCS 280-436732/3-F	Lab Control Sample	TCLP	Water	8081B	437290
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	8081B	437290
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	8081B	437290
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	8081B	437290
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	8081B	437290

Analysis Batch: 439075

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	8082A	437451
MB 280-437451/1-A	Method Blank	Total/NA	Water	8082A	437451
LCS 280-437451/4-A	Lab Control Sample	Total/NA	Water	8082A	437451
LCSD 280-437451/5-A	Lab Control Sample Dup	Total/NA	Water	8082A	437451

QC Association Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116538-2

Metals

Leach Batch: 436732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	1311	
LB3 280-436732/1-F	Method Blank	TCLP	Water	1311	
LB3 280-436732/1-J	Method Blank	TCLP	Water	1311	
LCS 280-436732/2-F	Lab Control Sample	TCLP	Water	1311	
LCS 280-436732/2-G	Lab Control Sample	TCLP	Water	1311	
LCSD 280-436732/13-B	Lab Control Sample Dup	TCLP	Water	1311	
LCSD 280-436732/13-D	Lab Control Sample Dup	TCLP	Water	1311	
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	1311	
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	1311	

Prep Batch: 437152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	3010A	436732
LB3 280-436732/1-F	Method Blank	TCLP	Water	3010A	436732
LCS 280-436732/2-F	Lab Control Sample	TCLP	Water	3010A	436732
LCSD 280-436732/13-B	Lab Control Sample Dup	TCLP	Water	3010A	436732
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	3010A	436732
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	3010A	436732

Prep Batch: 437496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	7470A	436732
LB3 280-436732/1-J	Method Blank	TCLP	Water	7470A	436732
LCS 280-436732/2-G	Lab Control Sample	TCLP	Water	7470A	436732
LCSD 280-436732/13-D	Lab Control Sample Dup	TCLP	Water	7470A	436732
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	7470A	436732
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	7470A	436732

Analysis Batch: 437502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	6010C	437152
LB3 280-436732/1-F	Method Blank	TCLP	Water	6010C	437152
LCS 280-436732/2-F	Lab Control Sample	TCLP	Water	6010C	437152
LCSD 280-436732/13-B	Lab Control Sample Dup	TCLP	Water	6010C	437152
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	6010C	437152
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	6010C	437152

Analysis Batch: 437814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	TCLP	Water	7470A	437496
LB3 280-436732/1-J	Method Blank	TCLP	Water	7470A	437496
LCS 280-436732/2-G	Lab Control Sample	TCLP	Water	7470A	437496
LCSD 280-436732/13-D	Lab Control Sample Dup	TCLP	Water	7470A	437496
280-116538-4 MS	FWGIDW-181001-WW	TCLP	Water	7470A	437496
280-116538-4 MSD	FWGIDW-181001-WW	TCLP	Water	7470A	437496

General Chemistry

Analysis Batch: 401121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	1010A	
MB 160-401121/1	Method Blank	Total/NA	Water	1010A	
LCS 160-401121/2	Lab Control Sample	Total/NA	Water	1010A	

Analysis Batch: 436181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	9056A	
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	9056A	
MB 280-436181/6	Method Blank	Total/NA	Water	9056A	
LCS 280-436181/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-436181/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-436181/3	Lab Control Sample	Total/NA	Water	9056A	

Prep Batch: 436723

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	9030B	
MB 280-436723/1-A	Method Blank	Total/NA	Water	9030B	
LCS 280-436723/3-A	Lab Control Sample	Total/NA	Water	9030B	

Analysis Batch: 436735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	9034	436723
MB 280-436723/1-A	Method Blank	Total/NA	Water	9034	436723
LCS 280-436723/3-A	Lab Control Sample	Total/NA	Water	9034	436723

Prep Batch: 437763

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	9012B	
MB 280-437763/5-A	Method Blank	Total/NA	Water	9012B	
HLCS 280-437763/1-A	Lab Control Sample	Total/NA	Water	9012B	
LCS 280-437763/3-A	Lab Control Sample	Total/NA	Water	9012B	
LCSD 280-437763/4-A	Lab Control Sample Dup	Total/NA	Water	9012B	
LLCS 280-437763/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 437833

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	9012B	437763
MB 280-437763/5-A	Method Blank	Total/NA	Water	9012B	437763
HLCS 280-437763/1-A	Lab Control Sample	Total/NA	Water	9012B	437763
LCS 280-437763/3-A	Lab Control Sample	Total/NA	Water	9012B	437763
LCSD 280-437763/4-A	Lab Control Sample Dup	Total/NA	Water	9012B	437763
LLCS 280-437763/2-A	Lab Control Sample	Total/NA	Water	9012B	437763

Analysis Batch: 438182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-4	FWGIDW-181001-WW	Total/NA	Water	9040C	
LCS 280-438182/4	Lab Control Sample	Total/NA	Water	9040C	

Prep Batch: 438264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-7	FWIDW-181002-WW	Total/NA	Water	9012B	

General Chemistry (Continued)

Prep Batch: 438264 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-438264/5-A	Method Blank	Total/NA	Water	9012B	
HLCS 280-438264/1-A	Lab Control Sample	Total/NA	Water	9012B	
LCS 280-438264/3-A	Lab Control Sample	Total/NA	Water	9012B	
LCSD 280-438264/4-A	Lab Control Sample Dup	Total/NA	Water	9012B	
LLCS 280-438264/2-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 438452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-116538-7	FWIDW-181002-WW	Total/NA	Water	9012B	438264
MB 280-438264/5-A	Method Blank	Total/NA	Water	9012B	438264
HLCS 280-438264/1-A	Lab Control Sample	Total/NA	Water	9012B	438264
LCS 280-438264/3-A	Lab Control Sample	Total/NA	Water	9012B	438264
LCSD 280-438264/4-A	Lab Control Sample Dup	Total/NA	Water	9012B	438264
LLCS 280-438264/2-A	Lab Control Sample	Total/NA	Water	9012B	438264

Client Sample ID: FWGIDW-181001-WW — Lab Sample ID: 280-116538-4

Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			1.0 g	1.0 mL	437096	11/09/18 15:44	DFB1	TAL DEN
TCLP	Analysis	8260B		1	2 mL	20 mL	438589	11/23/18 13:45	GPM	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436732	11/07/18 09:48	DFB1	TAL DEN
TCLP	Prep	3510C			200 mL	1 mL	437243	11/12/18 13:36	KJS	TAL DEN
TCLP	Analysis	8270D		1			437797	11/16/18 01:29	AFH	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436732	11/07/18 09:48	DFB1	TAL DEN
TCLP	Prep	3510C			100 mL	10 mL	437290	11/12/18 19:56	AJE	TAL DEN
TCLP	Analysis	8081B		1			438443	11/21/18 17:07	TEM	TAL DEN
Total/NA	Prep	3510C			897.7 mL	10 mL	437451	11/13/18 18:28	AJE	TAL DEN
Total/NA	Analysis	8082A		1			439075	11/28/18 20:29	BJP	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436732	11/07/18 09:48	DFB1	TAL DEN
TCLP	Prep	8151A			100 mL	10 mL	436773	11/08/18 07:48	JZ	TAL DEN
TCLP	Analysis	8151A DOD		1			437382	11/13/18 18:57	AMB1	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436732	11/07/18 09:48	DFB1	TAL DEN
TCLP	Prep	3010A			10 mL	50 mL	437152	11/13/18 07:00	LLB	TAL DEN
TCLP	Analysis	6010C		1			437502	11/13/18 14:56	CML	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	436732	11/07/18 09:48	DFB1	TAL DEN
TCLP	Prep	7470A			30 mL	50 mL	437496	11/14/18 12:30	THP	TAL DEN
TCLP	Analysis	7470A		1			437814	11/15/18 15:55	THP	TAL DEN
Total/NA	Analysis	1010A		1	70 mL	70 mL	401121	11/16/18 01:31	JCB	TAL SL
Total/NA	Prep	9012B			50 mL	50 mL	437763	11/15/18 11:37	RK	TAL DEN
Total/NA	Analysis	9012B		5	50 mL	50 mL	437833	11/15/18 19:28	RK	TAL DEN
Total/NA	Prep	9030B			50 mL	50 mL	436723	11/07/18 17:19	EC	TAL DEN
Total/NA	Analysis	9034		1			436735	11/07/18 20:06	EC	TAL DEN
Total/NA	Analysis	9040C		1			438182	11/19/18 13:46	SGB	TAL DEN
Total/NA	Analysis	9056A		1	5 mL	5 mL	436181	11/03/18 14:16	A1D	TAL DEN
Total/NA	Analysis	9056A		5	5 mL	5 mL	436181	11/03/18 16:36	A1D	TAL DEN

Client Sample ID: FWGqc-015-TB — Lab Sample ID: 280-116538-5

Date Collected: 11/02/18 15:30 **Matrix: Water**
Date Received: 11/03/18 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			1.0 g	1.0 mL	437096	11/09/18 15:44	DFB1	TAL DEN
TCLP	Analysis	8260B		1	2 mL	20 mL	438589	11/23/18 14:05	GPM	TAL DEN

Client Sample ID: FWIDW-181002-WW — Lab Sample ID: 280-116538-7

Date Collected: 11/14/18 15:55 **Matrix: Water**
Date Received: 11/03/18 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	9012B			50 mL	50 mL	438264	11/20/18 10:20	AML	TAL DEN
Total/NA	Analysis	9012B		1	50 mL	50 mL	438452	11/21/18 11:07	AJA	TAL DEN

Lab Chronicle

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

TestAmerica Job ID: 280-116538-2

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116538-2
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
9040C		Water	Temperature

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-19
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-19
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Leidos, Inc. TestAmerica Job ID: 280-116538-2
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL DEN
8081B	Organochlorine Pesticides (GC)	SW846	TAL DEN
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	SW846	TAL DEN
8151A DOD	Herbicides (GC)	SW846	TAL DEN
6010C	Metals (ICP)	SW846	TAL DEN
7470A	Mercury (CVAA)	SW846	TAL DEN
1010A	Ignitability, Pensky-Martens Closed-Cup Method	SW846	TAL SL
9012B	Cyanide, Total and/or Amenable	EPA	TAL DEN
9034	Sulfide, Acid Soluble and Insoluble (Titrimetric)	SW846	TAL DEN
9040C	pH	SW846	TAL DEN
9056A	Anions, Ion Chromatography	SW846	TAL DEN
1311	TCLP Extraction	SW846	TAL DEN
3010A	Preparation, Total Metals	SW846	TAL DEN
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL DEN
5030B	Purge and Trap	SW846	TAL DEN
7470A	Preparation, Mercury	SW846	TAL DEN
8151A	Extraction (Herbicides)	SW846	TAL DEN
9012B	Cyanide, Total and/or Amenable, Distillation	SW846	TAL DEN
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	TAL DEN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: Leidos, Inc.
TestAmerica Job ID: 280-116538-2
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-116538-4	FWGIDW-181001-WW	Water	11/02/18 15:30	11/03/18 09:00
280-116538-5	FWGqc-015-TB	Water	11/02/18 15:30	11/03/18 09:00
280-116538-7	FWIDW-181002-WW	Water	11/14/18 15:55	11/03/18 09:00

Shipping and Receiving Documents

leidos

Chain of Custody Record

COC No.: RVAAP-083

Page 1 of 1 Date: 11/2/2018

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event
Job/P.O. No.: P010216426

Sampler (Signature) (Printed Name)

Laboratory Name: Test America -Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-8396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Date	Time	Matrix	TCLP VOCs (1)(A)	TCLP SVOCs (2)(A), TCLP Pesticides (3)(A), TCLP Herbicides (5)(A), TCLP Metals (7)(A)	Total PCBs (12)(A) / (4)(A)	Ignitability (11)(A)	pH (10)(A) / (6)(A)	Total Sulfide (9)(A), Total Cyanide (8)(A), Nitrate, Nitrite (10)(A)	Total Cyanide (8)(D)	Total Sulfide (9)(E)	Nitrate and Nitrite (10)(A)					Temperature Blank	NO. OF CONTAINERS	
	~~FWGIDW-181001-WS~~			S	1	2	1	1	1	1									7	
	FWGIDW-181001-WW	11/2/18	1530	W	3	2	2	2	1		1	1	1						13	
	FWGqa-015-TB	11/2/18	1530	W	2														2	Trip Blank

Total Number of Containers: 20

Shipment Method: Courier

Relinquished by		Date	Time
[signature]	Test America	11/2/2018	1000
Signature			
Heather L. Adams	RC Robison		
Printed Name			
Leidos	Rick Robison		
Company			
Relinquished by: Test America	[signature]	Date: 11-03-18	Time: 0900
Signature: R Robison	Krista Dunlap		
Printed Name: Rick Robison	TADEN		
Company			

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 1311, 8260
2. SW 1311, 8270
3. SW 1311, 8081
4. SW 3510C/8082A (W)
5. SW 1311, 8151
6. SW 9040 (W)
7. SW 1311, 6010, 7470
8. SW 9012A
9. SW 9034
10. SW 9056
11. SW 1010
12. SW 3540C/8082A (S)
13. SW 9045 (S)

S=Soil / W=Water

Notes:

Temperature Blank
Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

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Chain of Custody Record

leidos

COC No.: RVAAP-084

Page 1 of 1 Date: 11/14/18

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Event
Job/P.O. No.: P010216426

Sampler (Signature) Jed Thomas (Printed Name) Jed Thomas

Requested Parameters

Laboratory No.	Sample ID	Date	Time	Matrix	TCLP VOCs (1)(A)	TCLP SVOCs (2)(A),TCLP Pesticides (3)(A), TCLP Herbicides (5)(A), TCLP Metals (7)(A)	Total PCBs (12)(A) / (4)(A)	Ignitability (11)(A)	pH (13)(A) / (6)(A)	Total Sulfide (9)(A), Total Cyanide (8)(A), Nitrate, Nitrite (10)(A)	Total Cyanide (8)(D)	Total Sulfide (8)(E)	Nitrate and Nitrite (10)(A)	Temperature Blank	NO. OF CONTAINERS
	FWGIDW-181002-WW	11/14/18	1555	W							1				1

280-116538 Chain of Custody

Laboratory Name: Test America -Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

10-day TAT

OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS

Total Number of Containers: 1

Relinquished by: Jed Thomas — Signature: Jed Thomas — Printed Name: Jed Thomas — Company: Leidos — Date: 11/15/18 — Time: 1345 — to UPS Shipping

Relinquished by — Signature — Printed Name — Company — Date — Time — See above

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

1. SW 1311, 8260
2. SW 1311, 8270
3. SW 1311, 8081
4. SW 3510C/8082A (W)
5. SW 1311, 8151
6. SW 9040 (W)
7. SW 1311, 6010, 7470
8. SW 9012A
9. SW 9034
10. SW 9056
11. SW 1010
12. SW 3540C/8082A (S)
13. SW 9045 (S)

S=Soil / W=Water

Notes:

Shipment Method: Courier

Temperature Blank
Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

Amp re TA DEN 11/16/18 0920
1.6 5 +1.0 by AP 11/16/18

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TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Rydberg, Donna R	Carrier Tracking No(s):	COC No: 280-461228.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: donna.rydberg@testamericainc.com	State of Origin: Ohio	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): DoD ELAP - A2LA		Job #: 280-116538-2
Address: 13715 Rider Trail North, ,	Due Date Requested: 11/21/2018			
City: Earth City	TAT Requested (days):			
State, Zip: MO, 63045				
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:			
Email:	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1010A	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
FWGIDW-181001-WW (280-116538-4)	11/2/18	15:30 Eastern		Water			X	1	Q5.0

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Jamie Castro	11-5-18 1545	TA Den	Received by: Michael Allen	11/6/18 0900	TA-STL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 280-116538-2

Login Number: 116538
List Number: 1
Creator: Dunlap, Krista M

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 280-116538-2

Login Number: 116538
List Number: 4
Creator: Paul, Amanda E

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Login Sample Receipt Checklist

Client: Leidos, Inc.

Job Number: 280-116538-2

Login Number: 116538
List Number: 2
Creator: Hellm, Michael

List Source: TestAmerica St. Louis
List Creation: 11/06/18 03:12 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ATTACHMENT 2.
Waste Material Profile Sheet
Clean Harbors Profile No. CH1784679

WASTE MATERIAL PROFILE SHEET

Clean Harbors Profile No. CH1784679

A. GENERAL INFORMATION

GENERATOR EPA ID #/REGISTRATION # *OH5210020736* GENERATOR NAME: *Former Ravenna Army Ammunition Plant*

GENERATOR CODE (Assigned by Clean Harbors) *FO23255* CITY *Ravenna* STATE/PROVINCE *OH* ZIP/POSTAL CODE *44266*

ADDRESS *8451 State Route 5* PHONE: *(614) 336-6136*

CUSTOMER CODE (Assigned by Clean Harbors) *LE18366* CUSTOMER NAME: *Leidos*

ADDRESS *8866 Commons Boulevard* CITY *Twinsburg* STATE/PROVINCE *OH* ZIP/POSTAL CODE *44087*

B. WASTE DESCRIPTION

WASTE DESCRIPTION: *Groundwater Sampling - Liquid IDW*

PROCESS GENERATING WASTE: **Environmental Sampling**

IS THIS WASTE CONTAINED IN SMALL PACKAGING CONTAINED WITHIN A LARGER SHIPPING CONTAINER ? **No**

C. PHYSICAL PROPERTIES (at 25C or 77F)

PHYSICAL STATE
- SOLID WITHOUT FREE LIQUID
- POWDER
- MONOLITHIC SOLID
- [x] LIQUID WITH NO SOLIDS
- LIQUID/SOLID MIXTURE
- % FREE LIQUID
- % SETTLED SOLID
- % TOTAL SUSPENDED SOLID
- SLUDGE
- GAS/AEROSOL

NUMBER OF PHASES/LAYERS

[x] 1 2 3

% BY VOLUME (Approx.)

TOP *0.00*

MIDDLE *0.00*

BOTTOM *0.00*

VISCOSITY (If liquid present)
- [x] 1 - 100 (e.g. Water)
- 101 - 500 (e.g. Motor Oil)
- 501 - 10,000 (e.g. Molasses)
- > 10,000

COLOR

Cloudy/Brown

ODOR
- [x] NONE
- MILD
- STRONG

Describe:

BOILING POINT °F (°C)
- <= 95 (<=35)
- 95 - 100 (35-38)
- 101 - 129 (38-54)
- [x] >= 130 (>54)

MELTING POINT °F (°C)
- < 140 (<60)
- 140-200 (60-93)
- > 200 (>93)

TOTAL ORGANIC CARBON
- [x] <= 1%
- 1-9%
- >= 10%

FLASH POINT °F (°C)
- < 73 (<23)
- 73 - 100 (23-38)
- 101 -140 (38-60)
- 141 -200 (60-93)
- > 200 (>93)

pH
- <= 2
- 2.1 - 6.9
- 7 (Neutral)
- [x] 7.1 - 12.4
- >= 12.5

SPECIFIC GRAVITY
- < 0.8 (e.g. Gasoline)
- 0.8-1.0 (e.g. Ethanol)
- [x] 1.0 (e.g. Water)
- 1.0-1.2 (e.g. Antifreeze)
- > 1.2 (e.g. Methylene Chloride)

ASH
- < 0.1
- 0.1 - 1.0
- 1.1 - 5.0
- 5.1 - 20.0
- > 20
- [x] Unknown

BTU/LB (MJ/kg)
- [x] < 2,000 (<4.6)
- 2,000-5,000 (4.6-11.6)
- 5,000-10,000 (11.6-23.2)
- > 10,000 (>23.2)

Actual:

D. COMPOSITION (List the complete composition of the waste, include any inert components and/or debris. Ranges for individual components are acceptable. If a trade name is used, please supply an MSDS. Please do not use abbreviations.)

CHEMICAL	MIN	--	MAX	UOM
DEIONIZED WATER	0.2500000	--	0.5000000	%
GROUNDWATER	99.0000000	--	100.0000000	%
ISOPROPYL ALCOHOL	0.2500000	--	0.5000000	%
NITRIC ACID	0.2500000	--	0.5000000	%
SOAP	0.2500000	--	0.5000000	%

DOES THIS WASTE CONTAIN ANY HEAVY GAUGE METAL DEBRIS OR OTHER LARGE OBJECTS (EX., METAL PLATE OR PIPING >1/4" THICK OR >12" LONG, METAL REINFORCED HOSE >12" LONG, METAL WIRE >12" LONG, METAL VALVES, PIPE FITTINGS, CONCRETE REINFORCING BAR OR PIECES OF CONCRETE >3")? YES NO

If yes, describe, including dimensions:

DOES THIS WASTE CONTAIN ANY METALS IN POWDERED OR OTHER FINELY DIVIDED FORM? YES [x] NO

DOES THIS WASTE CONTAIN OR HAS IT CONTACTED ANY OF THE FOLLOWING; ANIMAL WASTES, HUMAN BLOOD, BLOOD PRODUCTS, BODY FLUIDS, MICROBIOLOGICAL WASTE, PATHOLOGICAL WASTE, HUMAN OR ANIMAL DERIVED SERUMS OR PROTEINS OR ANY OTHER POTENTIALLY INFECTIOUS MATERIAL? YES [x] NO

I acknowledge that this waste material is neither infectious nor does it contain any organism known to be a threat to human health. This certification is based on my knowledge of the material. Select the answer below that applies:

The waste was never exposed to potentially infectious material. YES NO

Chemical disinfection or some other form of sterilization has been applied to the waste. YES NO

I ACKNOWLEDGE THAT THIS PROFILE MEETS THE CLEAN HARBORS BATTERY PACKAGING REQUIREMENTS. YES NO

I ACKNOWLEDGE THAT MY FRIABLE ASBESTOS WASTE IS DOUBLE BAGGED AND WETTED. YES NO

SPECIFY THE SOURCE CODE ASSOCIATED WITH THE WASTE. *G09*

SPECIFY THE FORM CODE ASSOCIATED WITH THE WASTE. *W113*

E. CONSTITUENTS

Are these values based on testing or knowledge? Knowledge ☑ Testing

If constituent concentrations are based on analytical testing, analysis must be provided. Please attach document(s) using the link on the Submit tab.

Please indicate which constituents below apply. Concentrations must be entered when applicable to assist in accurate review and expedited approval of your waste profile. Please note that the total regulated metals and other constituents sections require answers.

RCRA	REGULATED METALS	REGULATORY LEVEL (mg/l)	TCLP mg/l	TOTAL	UOM	NOT APPLICABLE
D004	ARSENIC	5.0	*0.0000*			
D005	BARIUM	100.0	*0.0150*			
D006	CADMIUM	1.0	*0.0000*			
D007	CHROMIUM	5.0	*0.0000*			
D008	LEAD	5.0	*0.0000*			
D009	MERCURY	0.2	*0.0000*			
D010	SELENIUM	1.0	*0.0000*			
D011	SILVER	5.0	*0.0000*			
	VOLATILE COMPOUNDS					
D018	BENZENE	0.5	*0*			
D019	CARBON TETRACHLORIDE	0.5	*0*			
D021	CHLOROBENZENE	100.0	*0*			
D022	CHLOROFORM	6.0	*0*			
D028	1,2-DICHLOROETHANE	0.5	*0*			
D029	1,1-DICHLOROETHYLENE	0.7	*0*			
D035	METHYL ETHYL KETONE	200.0	*0*			
D039	TETRACHLOROETHYLENE	0.7	*0*			
D040	TRICHLOROETHYLENE	0.5	*0*			
D043	VINYL CHLORIDE	0.2	*0*			
	SEMI-VOLATILE COMPOUNDS					
D023	o-CRESOL	200.0	*0*			
D024	m-CRESOL	200.0	*0*			
D025	p-CRESOL	200.0	*0*			
D026	CRESOL (TOTAL)	200.0	*0*			
D027	1,4-DICHLOROBENZENE	7.5	*0*			
D030	2,4-DINITROTOLUENE	0.13	*0*			
D032	HEXACHLOROBENZENE	0.13	*0*			
D033	HEXACHLOROBUTADIENE	0.5	*0*			
D034	HEXACHLOROETHANE	3.0	*0*			
D036	NITROBENZENE	2.0	*0*			
D037	PENTACHLOROPHENOL	100.0	*0*			
D038	PYRIDINE	5.0	*0*			
D041	2,4,5-TRICHLOROPHENOL	400.0	*0*			
D042	2,4,6-TRICHLOROPHENOL	2.0	*0*			
	PESTICIDES AND HERBICIDES					
D012	ENDRIN	0.02	*0*			
D013	LINDANE	0.4	*0*			
D014	METHOXYCHLOR	10.0	*0*			
D015	TOXAPHENE	0.5	*0*			
D016	2,4-D	10.0	*0*			
D017	2,4,5-TP (SILVEX)	1.0	*0*			
D020	CHLORDANE	0.03	*0*			
D031	HEPTACHLOR (AND ITS EPOXIDE)	0.008	*0*			

OTHER CONSTITUENTS	MAX	UOM	NOT APPLICABLE
BROMINE			☑
CHLORINE			☑
FLUORINE			☑
IODINE			☑
SULFUR			☑
POTASSIUM			☑
SODIUM			☑
AMMONIA			☑
CYANIDE AMENABLE			☑
CYANIDE REACTIVE			☑
CYANIDE TOTAL	*0.2700*	*PPM*	
SULFIDE REACTIVE			☑

HOCs

☑ NONE
< 1000 PPM
>= 1000 PPM

PCBs

☑ NONE
< 50 PPM
>=50 PPM

IF PCBS ARE PRESENT, IS THE WASTE REGULATED BY TSCA 40 CFR 761?

YES ☑ NO

ADDITIONAL HAZARDS

DOES THIS WASTE HAVE ANY UNDISCLOSED HAZARDS OR PRIOR INCIDENTS ASSOCIATED WITH IT, WHICH COULD AFFECT THE WAY IT SHOULD BE HANDLED?

YES ☑ NO (If yes, explain)

CHOOSE ALL THAT APPLY

DEA REGULATED SUBSTANCES	EXPLOSIVE	FUMING	OSHA REGULATED CARCINOGENS
POLYMERIZABLE	RADIOACTIVE	REACTIVE MATERIAL	☑ NONE OF THE ABOVE

F. REGULATORY STATUS

YES ☑ NO USEPA HAZARDOUS WASTE?

YES ☑ NO DO ANY STATE WASTE CODES APPLY?

Texas Waste Code

YES ☑ NO DO ANY CANADIAN PROVINCIAL WASTE CODES APPLY?

YES ☑ NO IS THIS WASTE PROHIBITED FROM LAND DISPOSAL WITHOUT FURTHER TREATMENT PER 40 CFR PART 268?

LDR CATEGORY: ***Not subject to LDR***
VARIANCE INFO:

YES ☑ NO IS THIS A UNIVERSAL WASTE?

YES ☑ NO IS THE GENERATOR OF THE WASTE CLASSIFIED AS VERY SMALL QUANTITY GENERATOR (VSQG) OR A STATE EQUIVALENT DESIGNATION?

YES NO IS THIS MATERIAL GOING TO BE MANAGED AS A RCRA EXEMPT COMMERCIAL PRODUCT, WHICH IS FUEL (40 CFR 261.2 (C)(2)(II))?

YES ☑ NO DOES TREATMENT OF THIS WASTE GENERATE A F006 OR F019 SLUDGE?

YES NO IS THIS WASTE STREAM SUBJECT TO THE INORGANIC METAL BEARING WASTE PROHIBITION FOUND AT 40 CFR 268.3(C)?

YES ☑ NO DOES THIS WASTE CONTAIN VOC'S IN CONCENTRATIONS >=500 PPM?

YES NO DOES THE WASTE CONTAIN GREATER THAN 20% OF ORGANIC CONSTITUENTS WITH A VAPOR PRESSURE >= .3KPA (.044 PSIA)?

YES ☑ NO DOES THIS WASTE CONTAIN AN ORGANIC CONSTITUENT WHICH IN ITS PURE FORM HAS A VAPOR PRESSURE > 77 KPA (11.2 PSIA)?

☑ YES NO IS THIS CERCLA REGULATED (SUPERFUND) WASTE ?

YES ☑ NO IS THE WASTE SUBJECT TO ONE OF THE FOLLOWING NESHAP RULES?

Hazardous Organic NESHAP (HON) rule (subpart G) Pharmaceuticals production (subpart GGG)

YES NO IF THIS IS A US EPA HAZARDOUS WASTE, DOES THIS WASTE STREAM CONTAIN BENZENE?

YES NO Does the waste stream come from a facility with one of the SIC codes listed under benzene NESHAP or is this waste regulated under the benzene NESHAP rules because the original source of the waste is from a chemical manufacturing, coke by-product recovery, or petroleum refinery process?

YES NO Is the generating source of this waste stream a facility with Total Annual Benzene (TAB) >10 Mg/year?

What is the TAB quantity for your facility? Megagram/year (1 Mg = 2,200 lbs)

The basis for this determination is: Knowledge of the Waste Or Test Data Knowledge Testing

Describe the knowledge :

G. DOT/TDG INFORMATION

DOT/TDG PROPER SHIPPING NAME:

NON DOT REGULATED MATERIAL, LIQUID IDW

H. TRANSPORTATION REQUIREMENTS

ESTIMATED SHIPMENT FREQUENCY ☑ ONE TIME WEEKLY MONTHLY QUARTERLY YEARLY OTHER

☑ **CONTAINERIZED**

11-15 CONTAINERS/SHIPMENT

STORAGE CAPACITY:
CONTAINER TYPE:

PORTABLE TOTE TANK BOX|CARTON|CASE
CUBIC YARD BOX ☑ DRUM
OTHER: DRUM SIZE:

BULK LIQUID

GALLONS/SHIPMENT: ***0 Min -0 Max*** GAL.

BULK SOLID

SHIPMENT UOM: TON YARD

TONS/YARDS/SHIPMENT: ***0 Min - 0 Max***

I. SPECIAL REQUEST

COMMENTS OR REQUESTS:

GENERATOR'S CERTIFICATION

I certify that I am authorized to execute this document as an authorized agent. I hereby certify that all information submitted in this and attached documents is correct to the best of my knowledge.I also certify that any samples submitted are representative of the actual waste.If Clean Harbors discovers a discrepancy during the approval process, Generator grants Clean Harbors the authority to amend the profile, as Clean Harbors deems necessary, to reflect the discrepancy.

AUTHORIZED SIGNATURE	NAME (PRINT)	TITLE	DATE
Kathryn S Tait	Kathryn S. Tait	Envntl Specialist 2	28 January 2019

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E.2 Straight Bill of Lading

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Site Address : 8451 State Route 5
Ravenna,OH 44266

SC PPW 3/12/2019

WORK ORDER NO. DS1902838047

DOCUMENT NO. 682328

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 5701

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

DESIGNATED FACILITY			SHIPPER		
Spring Grove Resource Recovery Inc.			ATTN:Katie Tait Former Ravenna Army Ammunition Plant		
FACILITY EPA ID #			SHIPPER EPA ID #		
OHD000816629			OH5210020736		
ADDRESS			ADDRESS		
4879 Spring Grove Avenue			1438 State Route 534 SW		
CITY	STATE	ZIP	CITY	STATE	ZIP
Cincinnati	OH	45232	Newton Falls	OH	44444

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
4X55	DM		A NON DOT REGULATED MATERIAL, LIQUID IDW	1765	P
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS A.CH1784679 EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Former Ravenna Army Ammunition Plant

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Kathryn S Tait	Kathryn S Tait	6/13/2019
TRANSPORTER 1	ALEX VASU	VAS	06/13/19
TRANSPORTER 2			
RECEIVED BY	Brandy Prowitt	[signature]	06/20/19

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APPENDIX F

Laboratory Analytical Results and Screening

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F.1 Spring 2019 Analytical Results

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Appendix F.1 Spring 2019 Analytical Results

Station		CBPmw-008	CBPmw-009	DA2mw-115	DA2mw-115	DET-3	DET-3	DET-4	EBGmw-125	EBGmw-131	FBQmw-171	FBQmw-172	FBQmw-172
Sample Id		CBPmw-008-190401-GW	CBPmw-009-190401-GW	DA2mw-115-190402-GW	DA2mw-115-190401-GW	DET-003-190402-GW	DET-003-190401-GW	DET-004-190401-GW	EBGmw-125-190401-GW	EBGmw-131-190401-GW	FBQmw-171-190401-GW	FBQmw-172-190402-GW	FBQmw-172-190401-GW
Date		05/08/19	05/09/19	04/29/19	04/29/19	04/29/19	04/29/19	04/29/19	05/07/19	05/07/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	FD	GR	FD	GR	GR	GR	GR	GR	FD	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Homewood	Homewood	Homewood
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	NA	NA	<0.07 U	0.021 J	<0.07 U	<0.07 U	<0.07 U	NA	NA	NA	NA	NA
Antimony	7440-36-0	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA
Arsenic	7440-38-2	NA	NA	<0.001 U	0.0017 J	0.0093	0.0092	<0.001 U	NA	NA	NA	NA	NA
Barium	7440-39-3	NA	NA	<0.00095 U	0.023	0.042	0.043	0.058	NA	NA	NA	NA	NA
Beryllium	7440-41-7	NA	NA	0.00018 J	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	NA	NA	NA	NA	NA
Cadmium	7440-43-9	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA
Calcium	7440-70-2	NA	NA	100	100	91	90	120	NA	NA	NA	NA	NA
Chromium	7440-47-3	NA	NA	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	0.00055 J	NA	NA	NA	NA	NA
Cobalt	7440-48-4	NA	NA	<0.0002 U	<0.0002 U	0.00024 J	0.00029 J	<0.0002 U	NA	NA	NA	NA	NA
Copper	7440-50-8	NA	NA	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	0.0015 J	NA	NA	NA	NA	NA
Iron	7439-89-6	NA	NA	0.82	0.84	1.9	1.9	<0.085 U	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	NA	<0.0007 U	<0.0007 U	<0.0007 U	<0.0007 U	<0.0007 U	NA	NA	NA	NA	NA
Magnesium	7439-95-4	NA	NA	28	28	33	33	24	NA	NA	NA	NA	NA
Manganese	7439-96-5	NA	NA	<0.00095 U	0.099	0.24	0.24	0.00063 J	NA	NA	NA	NA	NA
Mercury	7439-97-6	NA	NA	<0.00008 U	<0.00008 UJ	<0.00008 U	<0.00008 U	<0.00008 U	NA	NA	NA	NA	NA
Nickel	7440-02-0	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA
Potassium	7440-09-7	NA	NA	3.4	3.3	1.9 J	1.9 J	1.2 J	NA	NA	NA	NA	NA
Selenium	7782-49-2	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA
Silver	7440-22-4	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA	NA	NA
Sodium	7440-23-5	NA	NA	12	12	12	12	2.2 J	NA	NA	NA	NA	NA
Thallium	7440-28-0	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	<0.008 U	<0.008 U	<0.008 U	<0.008 U	0.014 J	NA	NA	NA	NA	NA
Anions													
Nitrate	14797-55-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.33 J	NA	NA
Nitrite	14797-65-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 UJ	NA	NA
Sulfate	14808-79-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	24	NA	NA
Sulfide	18496-25-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.9 U	NA	NA
Miscellaneous													
Alkalinity	N33	NA	NA	NA	NA	NA	NA	NA	NA	NA	41	NA	NA
Chromium, hexavalent	18540-29-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	<0.01 U	<0.01 U	NA	NA	<0.01 U	<0.01 U	<0.01 U	0.011	<0.01 U	<0.01 U	<0.01 U	<0.01 U
Perchlorate	14797-73-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus as P	7723-14-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	NA	NA	NA	NA	<0.00044 U	<0.00045 U	<0.00041 U	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	99-65-0	NA	NA	NA	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene	118-96-7	NA	NA	NA	NA	<0.00044 U	<0.00045 U	<0.00041 U	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA	NA	NA	NA	NA
2-Amino-4,6-Dinitrotoluene	35572-78-2	NA	NA	NA	NA	<0.00013 U	<0.00013 U	<0.00012 U	NA	NA	NA	NA	NA
2-Nitrotoluene	88-72-2	NA	NA	NA	NA	<0.00022 UJ	<0.00022 UJ	<0.00021 UJ	NA	NA	NA	NA	NA
3-Nitrotoluene	99-08-1	NA	NA	NA	NA	<0.00044 U	<0.00045 UJ	<0.00041 U	NA	NA	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	19406-51-0	NA	NA	NA	NA	<0.00013 U	<0.00013 U	<0.00012 U	NA	NA	NA	NA	NA
4-Nitrotoluene	99-99-0	NA	NA	NA	NA	<0.00044 U	<0.00045 U	<0.00041 U	NA	NA	NA	NA	NA

Station		CBPmw-008	CBPmw-009	DA2mw-115	DA2mw-115	DET-3	DET-3	DET-4	EBGmw-125	EBGmw-131	FBQmw-171	FBQmw-172	FBQmw-172
Sample Id		CBPmw-008-190401-GW	CBPmw-009-190401-GW	DA2mw-115-190402-GW	DA2mw-115-190401-GW	DET-003-190402-GW	DET-003-190401-GW	DET-004-190401-GW	EBGmw-125-190401-GW	EBGmw-131-190401-GW	FBQmw-171-190401-GW	FBQmw-172-190402-GW	FBQmw-172-190401-GW
Date		05/08/19	05/09/19	04/29/19	04/29/19	04/29/19	04/29/19	04/29/19	05/07/19	05/07/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	FD	GR	FD	GR	GR	GR	GR	GR	FD	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Homewood	Homewood	Homewood
Analyte (mg/L)	CAS Number												
HMX	2691-41-0	NA	NA	NA	NA	<0.00022 U	<0.00022 U	0.0016	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA	NA	NA	NA	NA
Nitrocellulose	9004-70-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerin	55-63-0	NA	NA	NA	NA	<0.0022 U	<0.0022 U	<0.0021 U	NA	NA	NA	NA	NA
Nitroguanidine	556-88-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETN	78-11-5	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0041 U	NA	NA	NA	NA	NA
RDX	121-82-4	NA	NA	NA	NA	<0.00044 U	<0.00045 U	0.0014	NA	NA	NA	NA	NA
Tetryl	479-45-8	NA	NA	NA	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA	NA	NA	NA	NA
SVOCs													
1,2,4-Trichlorobenzene	120-82-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	<0.0044 U	<0.0044 U	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	<0.001 U	<0.00099 U	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	<0.03 U	<0.03 U	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0044 U	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0044 U	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	<0.0044 U	<0.0044 U	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	<0.0089 U	<0.0087 U	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	<0.00006 U	<0.00005 U	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	NA	NA	NA	NA	NA
2-Nitrobenzenamine	88-74-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	<0.001 U	<0.00099 U	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrobenzenamine	99-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	<0.0051 U	<0.0049 U	NA	NA	NA	NA	NA
4-Chlorobenzenamine	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrobenzenamine	100-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	<0.004 U	<0.004 U	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	NA	NA	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Benzenemethanol	100-51-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	<0.00006 U	<0.00005 U	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	<0.00006 U	<0.00005 U	NA	NA	NA	NA	NA

Station		CBPmw-008	CBPmw-009	DA2mw-115	DA2mw-115	DET-3	DET-3	DET-4	EBGmw-125	EBGmw-131	FBQmw-171	FBQmw-172	FBQmw-172
Sample Id		CBPmw-008-190401-GW	CBPmw-009-190401-GW	DA2mw-115-190402-GW	DA2mw-115-190401-GW	DET-003-190402-GW	DET-003-190401-GW	DET-004-190401-GW	EBGmw-125-190401-GW	EBGmw-131-190401-GW	FBQmw-171-190401-GW	FBQmw-172-190402-GW	FBQmw-172-190401-GW
Date		05/08/19	05/09/19	04/29/19	04/29/19	04/29/19	04/29/19	04/29/19	05/07/19	05/07/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	FD	GR	FD	GR	GR	GR	GR	GR	FD	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Homewood	Homewood	Homewood
Analyte (mg/L)	CAS Number												
Benzoic acid	65-85-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	111-44-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	NA	NA	NA	NA	NA
Carbazole	86-74-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0044 U	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	<0.001 U	<0.00099 U	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	<0.001 U	<0.00099 U	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	<0.00051 U	<0.00049 U	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Isophorone	78-59-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	621-64-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	<0.00006 U	<0.00005 U	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	<0.061 U	<0.059 U	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0044 U	NA	NA	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	<0.00011 U	<0.00011 U	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	<0.00051 U	<0.00049 U	NA	NA	NA	NA	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	<0.00044 U	<0.00043 U	<0.0004 U	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	<0.00028 U	<0.00027 U	<0.00025 U	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	<0.00067 U	<0.00065 U	<0.0006 U	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	<0.0011 U	<0.0011 U	<0.001 U	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	<0.00033 U	<0.00032 U	<0.0003 U	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	<0.00028 U	<0.00027 U	<0.00025 U	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	<0.00044 U	<0.00043 U	<0.0004 U	NA	NA	NA	NA	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	<0.00006 U	<0.00005 U	<0.00005 U	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA

Station		CBPmw-008	CBPmw-009	DA2mw-115	DA2mw-115	DET-3	DET-3	DET-4	EBGmw-125	EBGmw-131	FBQmw-171	FBQmw-172	FBQmw-172
Sample Id		CBPmw-008-190401-GW	CBPmw-009-190401-GW	DA2mw-115-190402-GW	DA2mw-115-190401-GW	DET-003-190402-GW	DET-003-190401-GW	DET-004-190401-GW	EBGmw-125-190401-GW	EBGmw-131-190401-GW	FBQmw-171-190401-GW	FBQmw-172-190402-GW	FBQmw-172-190401-GW
Date		05/08/19	05/09/19	04/29/19	04/29/19	04/29/19	04/29/19	04/29/19	05/07/19	05/07/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	FD	GR	FD	GR	GR	GR	GR	GR	FD	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Homewood	Homewood	Homewood
Analyte (mg/L)	CAS Number												
Endosulfan II	33213-65-9	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	<0.00006 U	<0.00005 U	<0.00005 U	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	<0.00089 U	<0.00086 U	<0.0008 U	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA	NA	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
2-Butanone	78-93-3	NA	NA	NA	NA	<0.004 U	<0.004 U	<0.004 U	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	<0.004 U	<0.004 U	<0.004 U	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	<0.0032 U	<0.0032 U	<0.0032 U	NA	NA	NA	NA	NA
Acetone	67-64-1	NA	NA	NA	NA	0.0024 J	0.0028 J	0.0051 J	NA	NA	NA	NA	NA
Benzene	71-43-2	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Bromoform	75-25-2	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA
Bromomethane	74-83-9	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Chloroethane	75-00-3	NA	NA	NA	NA	<0.0016 U	<0.0016 U	<0.0016 U	NA	NA	NA	NA	NA
Chloroform	67-66-3	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Chloromethane	74-87-3	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	NA	NA	NA	NA	<0.002 U	<0.002 U	<0.002 U	NA	NA	NA	NA	NA
Styrene	100-42-5	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA

Station		CBPmw-008	CBPmw-009	DA2mw-115	DA2mw-115	DET-3	DET-3	DET-4	EBGmw-125	EBGmw-131	FBQmw-171	FBQmw-172	FBQmw-172
Sample Id		CBPmw-008-190401-GW	CBPmw-009-190401-GW	DA2mw-115-190402-GW	DA2mw-115-190401-GW	DET-003-190402-GW	DET-003-190401-GW	DET-004-190401-GW	EBGmw-125-190401-GW	EBGmw-131-190401-GW	FBQmw-171-190401-GW	FBQmw-172-190402-GW	FBQmw-172-190401-GW
Date		05/08/19	05/09/19	04/29/19	04/29/19	04/29/19	04/29/19	04/29/19	05/07/19	05/07/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	FD	GR	FD	GR	GR	GR	GR	GR	FD	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Homewood	Homewood	Homewood
Analyte (mg/L)	CAS Number												
Toluene	108-88-3	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA	NA	NA

Station		FBQmw-174	FBQmw-175	FBQmw-175	FBQmw-176	FWGmw-004	FWGmw-007	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-019
Sample Id		FBQmw-174-190401-GW	FBQmw-175-190402-GW	FBQmw-175-190401-GW	FBQmw-176-190401-GW	FWGmw-004-190401-GW	FWGmw-007-190401-GW	FWGmw-011-190401-GW	FWGmw-012-190401-GW	FWGmw-015-190401-GW	FWGmw-016-190401-GW	FWGmw-018-190401-GW	FWGmw-019-190401-GW
Date		04/30/19	05/07/19	05/07/19	05/07/19	05/08/19	04/30/19	05/07/19	05/07/19	05/08/19	04/29/19	05/09/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	NA	NA	NA	NA	0.023 J	0.032 J	0.55	<0.07 U	<0.07 U	<0.07 U	<0.07 U	NA
Antimony	7440-36-0	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	0.00041 J	NA
Arsenic	7440-38-2	NA	NA	NA	NA	<0.001 U	<0.001 U	0.0042 J	0.0011 J	0.00038 J	0.0045 J	0.02	NA
Barium	7440-39-3	NA	NA	NA	NA	0.022 J	0.02	0.029 J	0.026 J	0.01 J	0.059	0.07	NA
Beryllium	7440-41-7	NA	NA	NA	NA	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	NA
Cadmium	7440-43-9	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA
Calcium	7440-70-2	NA	NA	NA	NA	96	130	50	25	280	110	82	NA
Chromium	7440-47-3	NA	NA	NA	NA	<0.0018 U	0.00051 J	0.0009 J	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	NA
Cobalt	7440-48-4	NA	NA	NA	NA	<0.0002 U	<0.00042 U	0.0015	0.0015	0.00007 J	<0.0002 U	0.0023	NA
Copper	7440-50-8	NA	NA	NA	NA	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	0.00087 J	<0.0018 U	<0.0018 U	NA
Iron	7439-89-6	NA	NA	NA	NA	0.05 J	0.16	8.2	2.4	0.045 J	0.63	0.44	NA
Lead	7439-92-1	NA	NA	NA	NA	<0.0007 U	0.00022 J	0.00037 J	<0.0007 U	<0.0007 U	<0.0007 U	<0.0007 U	NA
Magnesium	7439-95-4	NA	NA	NA	NA	50	66	12	5.8	290	28	25	NA
Manganese	7439-96-5	NA	NA	NA	NA	<0.0031 U	0.13	0.29	0.1	0.07	0.22	0.15	NA
Mercury	7439-97-6	NA	NA	NA	NA	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	NA
Nickel	7440-02-0	NA	NA	NA	NA	0.00043 J	0.0012 J	0.0015 J	0.0011 J	0.00097 J	<0.001 U	0.0037	NA
Potassium	7440-09-7	NA	NA	NA	NA	0.7 J	2.5 J	1.2 J	3.6	3.5	2.4 J	1.9 J	NA
Selenium	7782-49-2	NA	NA	NA	NA	0.0011 J	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA
Silver	7440-22-4	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	NA
Sodium	7440-23-5	NA	NA	NA	NA	4.6 J	11	5.7 J	6.7 J	44 J	11	15	NA
Thallium	7440-28-0	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA
Vanadium	7440-62-2	NA	NA	NA	NA	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	NA
Zinc	7440-66-6	NA	NA	NA	NA	<0.008 U	0.0027 J	0.0039 J	<0.008 U	0.0039 J	<0.008 U	<0.008 U	NA
Anions													
Nitrate	14797-55-8	1.2	1.6	1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	14797-65-0	<0.1 U	<0.1 U	<0.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	14808-79-8	15	18	20	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	18496-25-8	<1.9 U	<1.9 U	<1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous													
Alkalinity	N33	4.8 J	12	13	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, hexavalent	18540-29-9	NA	<0.003 U	<0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA	<0.01 U	NA	NA	NA	NA	NA	NA	0.0065 J	NA
Perchlorate	14797-73-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus as P	7723-14-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	<0.00042 U	NA	NA	NA	<0.0004 U	<0.00044 U	<0.00042 U	<0.00042 U	<0.00044 U	<0.0004 U	NA	NA
1,3-Dinitrobenzene	99-65-0	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00021 U	<0.00022 U	<0.0002 U	NA	NA
2,4,6-Trinitrotoluene	118-96-7	0.01	NA	NA	NA	<0.0004 U	<0.00044 U	<0.00042 U	<0.00042 U	<0.00044 U	<0.0004 U	NA	NA
2,4-Dinitrotoluene	121-14-2	0.00067	NA	NA	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00021 U	<0.00022 U	<0.0002 U	NA	NA
2,6-Dinitrotoluene	606-20-2	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00021 U	<0.00022 U	<0.0002 U	NA	NA
2-Amino-4,6-Dinitrotoluene	35572-78-2	0.015	NA	NA	NA	<0.00012 U	<0.00013 U	<0.00012 U	<0.00013 U	<0.00013 U	<0.00012 U	NA	NA
2-Nitrotoluene	88-72-2	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00022 UJ	<0.00021 U	<0.00021 U	<0.00022 U	<0.0002 UJ	NA	NA
3-Nitrotoluene	99-08-1	<0.00042 U	NA	NA	NA	<0.0004 U	<0.00044 U	<0.00042 U	<0.00042 U	<0.00044 U	<0.0004 U	NA	NA
4-Amino-2,6-Dinitrotoluene	19406-51-0	0.014	NA	NA	NA	<0.00012 U	<0.00013 U	<0.00012 U	<0.00013 U	<0.00013 U	<0.00012 U	NA	NA
4-Nitrotoluene	99-99-0	<0.00042 U	NA	NA	NA	<0.0004 U	<0.00044 U	<0.00042 U	<0.00042 U	<0.00044 U	<0.0004 U	NA	NA

Station		FBQmw-174	FBQmw-175	FBQmw-175	FBQmw-176	FWGmw-004	FWGmw-007	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-019
Sample Id		FBQmw-174-190401-GW	FBQmw-175-190402-GW	FBQmw-175-190401-GW	FBQmw-176-190401-GW	FWGmw-004-190401-GW	FWGmw-007-190401-GW	FWGmw-011-190401-GW	FWGmw-012-190401-GW	FWGmw-015-190401-GW	FWGmw-016-190401-GW	FWGmw-018-190401-GW	FWGmw-019-190401-GW
Date		04/30/19	05/07/19	05/07/19	05/07/19	05/08/19	04/30/19	05/07/19	05/07/19	05/08/19	04/29/19	05/09/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
Analyte (mg/L)	CAS Number												
HMX	2691-41-0	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00021 U	<0.00022 U	<0.0002 U	NA	NA
Nitrobenzene	98-95-3	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00021 U	<0.00022 U	<0.0002 U	NA	NA
Nitrocellulose	9004-70-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1 U
Nitroglycerin	55-63-0	<0.0021 U	NA	NA	NA	<0.002 U	<0.0022 U	<0.0021 U	<0.0021 U	<0.0022 U	<0.002 U	NA	NA
Nitroguanidine	556-88-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.006 U
PETN	78-11-5	<0.0042 U	NA	NA	NA	<0.004 U	<0.0044 U	<0.0042 U	<0.0042 U	<0.0044 U	<0.004 U	NA	NA
RDX	121-82-4	0.0012 J	NA	NA	NA	<0.0004 U	<0.00044 U	<0.00042 U	<0.00042 U	<0.00044 U	<0.0004 U	NA	NA
Tetryl	479-45-8	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00021 U	<0.00022 U	<0.0002 U	NA	NA
SVOCs													
1,2,4-Trichlorobenzene	120-82-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrobenzenamine	88-74-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrobenzenamine	99-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorobenzenamine	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrobenzenamine	100-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzenemethanol	100-51-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		FBQmw-174	FBQmw-175	FBQmw-175	FBQmw-176	FWGmw-004	FWGmw-007	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-019
Sample Id		FBQmw-174-190401-GW	FBQmw-175-190402-GW	FBQmw-175-190401-GW	FBQmw-176-190401-GW	FWGmw-004-190401-GW	FWGmw-007-190401-GW	FWGmw-011-190401-GW	FWGmw-012-190401-GW	FWGmw-015-190401-GW	FWGmw-016-190401-GW	FWGmw-018-190401-GW	FWGmw-019-190401-GW
Date		04/30/19	05/07/19	05/07/19	05/07/19	05/08/19	04/30/19	05/07/19	05/07/19	05/08/19	04/29/19	05/09/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
Analyte (mg/L)	CAS Number												
Benzoic acid	65-85-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	111-44-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	78-59-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	621-64-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		FBQmw-174	FBQmw-175	FBQmw-175	FBQmw-176	FWGmw-004	FWGmw-007	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-019
Sample Id		FBQmw-174-190401-GW	FBQmw-175-190402-GW	FBQmw-175-190401-GW	FBQmw-176-190401-GW	FWGmw-004-190401-GW	FWGmw-007-190401-GW	FWGmw-011-190401-GW	FWGmw-012-190401-GW	FWGmw-015-190401-GW	FWGmw-016-190401-GW	FWGmw-018-190401-GW	FWGmw-019-190401-GW
Date		04/30/19	05/07/19	05/07/19	05/07/19	05/08/19	04/30/19	05/07/19	05/07/19	05/08/19	04/29/19	05/09/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
Analyte (mg/L)	CAS Number												
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
2-Butanone	78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.004 U	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.004 U	NA
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0032 U	NA
Acetone	67-64-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0064 U	NA
Benzene	71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002 U	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Bromoform	75-25-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	NA
Bromomethane	74-83-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
Carbon tetrachloride	56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Chloroethane	75-00-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0016 U	NA
Chloroform	67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Chloromethane	74-87-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Methylene chloride	75-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002 U	NA
Styrene	100-42-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA

Station		FBQmw-174	FBQmw-175	FBQmw-175	FBQmw-176	FWGmw-004	FWGmw-007	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-019
Sample Id		FBQmw-174-190401-GW	FBQmw-175-190402-GW	FBQmw-175-190401-GW	FBQmw-176-190401-GW	FWGmw-004-190401-GW	FWGmw-007-190401-GW	FWGmw-011-190401-GW	FWGmw-012-190401-GW	FWGmw-015-190401-GW	FWGmw-016-190401-GW	FWGmw-018-190401-GW	FWGmw-019-190401-GW
Date		04/30/19	05/07/19	05/07/19	05/07/19	05/08/19	04/30/19	05/07/19	05/07/19	05/08/19	04/29/19	05/09/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
Analyte (mg/L)	CAS Number												
Toluene	108-88-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002 U	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	NA

Station		FWGmw-020	FWGmw-021	FWGmw-021	FWGmw-022	FWGmw-023	FWGmw-024	L10mw-003	L10mw-003	L10mw-005	L12mw-183	L12mw-185	L12mw-187
Sample Id		FWGmw-020-190401-GW	FWGmw-021-190402-GW	FWGmw-021-190401-GW	FWGmw-022-190401-GW	FWGmw-023-190401-GW	FWGmw-024-190401-GW	LL10mw-003-190402-GW	LL10mw-003-190401-GW	LL10mw-005-190401-GW	LL12mw-183-190401-GW	LL12mw-185-190401-GW	LL12mw-187-190401-GW
Date		05/13/19	05/09/19	05/09/19	05/02/19	05/01/19	05/09/19	05/01/19	05/01/19	05/01/19	05/01/19	05/01/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	0.031 J	<0.07 U	<0.07 U	NA	NA	<0.07 U	NA	NA	<0.07 U	NA	NA	<0.07 U
Antimony	7440-36-0	<0.001 U	0.00099 J	0.00051 J	NA	NA	0.0007 J	NA	NA	<0.001 U	NA	NA	<0.001 U
Arsenic	7440-38-2	0.023	0.00066 J	0.00057 J	NA	NA	0.0021 J	NA	NA	<0.001 U	NA	NA	0.00056 J
Barium	7440-39-3	0.084 J	0.016	0.016	NA	NA	0.0093	NA	NA	0.0088	NA	NA	0.28
Beryllium	7440-41-7	<0.0003 U	0.00052 J	<0.0003 U	NA	NA	0.00011 J	NA	NA	<0.0003 U	NA	NA	<0.0003 U
Cadmium	7440-43-9	<0.001 U	<0.001 U	<0.001 U	NA	NA	<0.001 U	NA	NA	<0.001 U	NA	NA	<0.001 U
Calcium	7440-70-2	110	20	21	NA	NA	59	NA	NA	59	NA	NA	1000
Chromium	7440-47-3	<0.0018 U	0.00082 J	0.00076 J	NA	NA	<0.0018 U	NA	NA	<0.0018 U	NA	NA	<0.0018 U
Cobalt	7440-48-4	0.0041	0.00018 J	<0.0002 U	NA	NA	0.0009 J	NA	NA	<0.0002 U	NA	NA	0.011
Copper	7440-50-8	<0.0018 U	0.0011 J	0.0012 J	NA	NA	<0.0018 U	NA	NA	<0.0018 U	NA	NA	0.001 J
Iron	7439-89-6	0.9	0.66	0.63 J	NA	NA	1.6 J	NA	NA	0.025 J	NA	NA	<0.085 U
Lead	7439-92-1	<0.0007 U	0.00023 J	<0.0007 U	NA	NA	<0.0007 U	NA	NA	<0.0007 U	NA	NA	0.0002 J
Magnesium	7439-95-4	36	6.8	6.9	NA	NA	18	NA	NA	14	NA	NA	320 J
Manganese	7439-96-5	0.066	0.0094	0.0099	NA	NA	0.33	NA	NA	<0.68 U	NA	NA	2.9
Mercury	7439-97-6	<0.00008 U	<0.00008 U	<0.00008 U	NA	NA	<0.00008 U	NA	NA	<0.00008 U	NA	NA	<0.00008 U
Nickel	7440-02-0	0.0041	0.0016 J	0.0018 J	NA	NA	0.0034	NA	NA	0.00057 J	NA	NA	0.015
Potassium	7440-09-7	4.6	1.2 J	1.2 J	NA	NA	0.81 J	NA	NA	<0.63 U	NA	NA	58
Selenium	7782-49-2	<0.001 U	0.00072 J	<0.001 U	NA	NA	<0.001 U	NA	NA	<0.001 U	NA	NA	<0.001 U
Silver	7440-22-4	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	<0.0001 U	NA	NA	<0.0001 U	NA	NA	<0.0001 U
Sodium	7440-23-5	16 J	2.9 J	3 J	NA	NA	4.9 J	NA	NA	3.5 J	NA	NA	44 J
Thallium	7440-28-0	<0.0002 U	0.00011 J	<0.0002 U	NA	NA	<0.0002 U	NA	NA	<0.0002 U	NA	NA	0.00075 J
Vanadium	7440-62-2	<0.003 U	<0.003 U	<0.003 U	NA	NA	<0.003 U	NA	NA	<0.003 U	NA	NA	<0.003 U
Zinc	7440-66-6	0.0035 J	0.0052 J	0.0055 J	NA	NA	<0.008 U	NA	NA	<0.008 U	NA	NA	0.0063 J
Anions													
Nitrate	14797-55-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	1600
Nitrite	14797-65-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	14808-79-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	18496-25-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous													
Alkalinity	N33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, hexavalent	18540-29-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	0.011	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	NA	NA
Perchlorate	14797-73-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus as P	7723-14-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	NA	<0.00041 U	<0.00043 U	NA	NA	<0.00042 U	NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	99-65-0	NA	<0.0002 U	<0.00021 U	NA	NA	<0.00021 U	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene	118-96-7	NA	<0.00041 U	<0.00043 UJ	NA	NA	<0.00042 U	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	<0.0002 U	<0.00021 U	NA	NA	<0.00021 U	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	<0.0002 U	<0.00021 U	NA	NA	<0.00021 U	NA	NA	NA	NA	NA	NA
2-Amino-4,6-Dinitrotoluene	35572-78-2	NA	0.00038	0.00031 J	NA	NA	<0.00013 U	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	88-72-2	NA	<0.0002 U	<0.00021 UJ	NA	NA	<0.00021 U	NA	NA	NA	NA	NA	NA
3-Nitrotoluene	99-08-1	NA	<0.00041 U	<0.00043 UJ	NA	NA	<0.00042 U	NA	NA	NA	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	19406-51-0	NA	0.00031	0.00028 J	NA	NA	<0.00013 U	NA	NA	NA	NA	NA	NA
4-Nitrotoluene	99-99-0	NA	<0.00041 U	<0.00043 UJ	NA	NA	<0.00042 U	NA	NA	NA	NA	NA	NA

Station		FWGmw-020	FWGmw-021	FWGmw-021	FWGmw-022	FWGmw-023	FWGmw-024	L10mw-003	L10mw-003	L10mw-005	L12mw-183	L12mw-185	L12mw-187
Sample Id		FWGmw-020-190401-GW	FWGmw-021-190402-GW	FWGmw-021-190401-GW	FWGmw-022-190401-GW	FWGmw-023-190401-GW	FWGmw-024-190401-GW	LL10mw-003-190402-GW	LL10mw-003-190401-GW	LL10mw-005-190401-GW	LL12mw-183-190401-GW	LL12mw-185-190401-GW	LL12mw-187-190401-GW
Date		05/13/19	05/09/19	05/09/19	05/02/19	05/01/19	05/09/19	05/01/19	05/01/19	05/01/19	05/01/19	05/01/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	CAS Number												
HMX	2691-41-0	NA	<0.0002 U	<0.00021 U	NA	NA	<0.00021 U	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	<0.0002 U	<0.00021 U	NA	NA	<0.00021 U	NA	NA	NA	NA	NA	NA
Nitrocellulose	9004-70-0	NA	NA	NA	<1 U	<1 U	NA	NA	NA	NA	NA	NA	NA
Nitroglycerin	55-63-0	NA	<0.002 U	<0.0021 U	NA	NA	<0.0021 U	NA	NA	NA	NA	NA	NA
Nitroguanidine	556-88-7	NA	NA	NA	<0.006 U	<0.006 U	NA	NA	NA	NA	NA	NA	NA
PETN	78-11-5	NA	<0.0041 U	<0.0043 U	NA	NA	<0.0042 U	NA	NA	NA	NA	NA	NA
RDX	121-82-4	NA	<0.00041 U	<0.00043 U	NA	NA	<0.00042 U	NA	NA	NA	NA	NA	NA
Tetryl	479-45-8	NA	<0.0002 U	<0.00021 U	NA	NA	<0.00021 U	NA	NA	NA	NA	NA	NA
SVOCs													
1,2,4-Trichlorobenzene	120-82-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrobenzenamine	88-74-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrobenzenamine	99-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorobenzenamine	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrobenzenamine	100-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzenemethanol	100-51-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		FWGmw-020	FWGmw-021	FWGmw-021	FWGmw-022	FWGmw-023	FWGmw-024	L10mw-003	L10mw-003	L10mw-005	L12mw-183	L12mw-185	L12mw-187
Sample Id		FWGmw-020-190401-GW	FWGmw-021-190402-GW	FWGmw-021-190401-GW	FWGmw-022-190401-GW	FWGmw-023-190401-GW	FWGmw-024-190401-GW	LL10mw-003-190402-GW	LL10mw-003-190401-GW	LL10mw-005-190401-GW	LL12mw-183-190401-GW	LL12mw-185-190401-GW	LL12mw-187-190401-GW
Date		05/13/19	05/09/19	05/09/19	05/02/19	05/01/19	05/09/19	05/01/19	05/01/19	05/01/19	05/01/19	05/01/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	CAS Number												
Benzoic acid	65-85-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	111-44-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	78-59-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	621-64-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		FWGmw-020	FWGmw-021	FWGmw-021	FWGmw-022	FWGmw-023	FWGmw-024	L10mw-003	L10mw-003	L10mw-005	L12mw-183	L12mw-185	L12mw-187
Sample Id		FWGmw-020-190401-GW	FWGmw-021-190402-GW	FWGmw-021-190401-GW	FWGmw-022-190401-GW	FWGmw-023-190401-GW	FWGmw-024-190401-GW	LL10mw-003-190402-GW	LL10mw-003-190401-GW	LL10mw-005-190401-GW	LL12mw-183-190401-GW	LL12mw-185-190401-GW	LL12mw-187-190401-GW
Date		05/13/19	05/09/19	05/09/19	05/02/19	05/01/19	05/09/19	05/01/19	05/01/19	05/01/19	05/01/19	05/01/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	CAS Number												
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
1,2-Dichloroethene	540-59-0	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
2-Butanone	78-93-3	<0.004 U	NA	NA	NA	NA	NA	<0.004 U	<0.004 U	NA	NA	NA	NA
2-Hexanone	591-78-6	<0.004 U	NA	NA	NA	NA	NA	<0.004 U	<0.004 U	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	<0.0032 U	NA	NA	NA	NA	NA	<0.0032 U	<0.0032 U	NA	NA	NA	NA
Acetone	67-64-1	<0.0058 U	NA	NA	NA	NA	NA	0.0042 J	0.0036 J	NA	NA	NA	NA
Benzene	71-43-2	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Bromobenzene	108-86-1	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Bromochloromethane	74-97-5	<0.0002 U	NA	NA	NA	NA	NA	<0.0002 U	<0.0002 U	NA	NA	NA	NA
Bromodichloromethane	75-27-4	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Bromoform	75-25-2	<0.001 U	NA	NA	NA	NA	NA	<0.001 U	<0.001 U	NA	NA	NA	NA
Bromomethane	74-83-9	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
Carbon disulfide	75-15-0	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	<0.0004 U	NA	NA	NA	NA	NA	0.00086 J	0.00063 J	NA	NA	NA	NA
Chlorobenzene	108-90-7	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Chloroethane	75-00-3	<0.0016 U	NA	NA	NA	NA	NA	<0.0016 U	<0.0016 U	NA	NA	NA	NA
Chloroform	67-66-3	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Chloromethane	74-87-3	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
Dibromochloromethane	124-48-1	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Ethylbenzene	100-41-4	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Methylene chloride	75-09-2	<0.002 U	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	NA	NA	NA	NA
Styrene	100-42-5	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
Tetrachloroethene	127-18-4	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA

Station		FWGmw-020	FWGmw-021	FWGmw-021	FWGmw-022	FWGmw-023	FWGmw-024	L10mw-003	L10mw-003	L10mw-005	L12mw-183	L12mw-185	L12mw-187
Sample Id		FWGmw-020-190401-GW	FWGmw-021-190402-GW	FWGmw-021-190401-GW	FWGmw-022-190401-GW	FWGmw-023-190401-GW	FWGmw-024-190401-GW	LL10mw-003-190402-GW	LL10mw-003-190401-GW	LL10mw-005-190401-GW	LL12mw-183-190401-GW	LL12mw-185-190401-GW	LL12mw-187-190401-GW
Date		05/13/19	05/09/19	05/09/19	05/02/19	05/01/19	05/09/19	05/01/19	05/01/19	05/01/19	05/01/19	05/01/19	05/02/19
Sample Type		GR	FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	CAS Number												
Toluene	108-88-3	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Trichloroethene	79-01-6	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
Vinyl chloride	75-01-4	<0.0002 U	NA	NA	NA	NA	NA	<0.0002 U	<0.0002 U	NA	NA	NA	NA
Xylenes, total	1330-20-7	<0.0008 U	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	<0.0004 U	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	NA	NA	NA	NA

Station		L12mw-242	L12mw-242	L12mw-245	L12mw-247	LL11mw-005	LL1mw-064	LL1mw-065	LL1mw-080	LL1mw-081	LL1mw-083	LL1mw-084	LL1mw-086
Sample Id		LL12mw-242-190401-GW	LL12mw-242-190401-GW	LL12mw-245-190401-GW	LL12mw-247-190401-GW	LL11mw-005-190401-GW	LL1mw-064-190401-GW	LL1mw-065-190401-GW	LL1mw-080-190401-GW	LL1mw-081-190401-GW	LL1mw-083-190401-GW	LL1mw-084-190401-GW	LL1mw-086-190401-GW
Date		05/01/19	05/01/19	05/02/19	05/01/19	05/01/19	05/07/19	05/07/19	05/07/19	05/06/19	05/06/19	05/06/19	05/07/19
Sample Type		GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Dissolved	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Dissolved
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	NA	1.5	0.031 J	0.49	NA	<0.07 U	<0.07 U	NA	NA	NA	0.023 J	0.053 J
Antimony	7440-36-0	0.00087 J	<0.001 U	<0.001 U	<0.001 U	NA	<0.001 U	<0.001 U	NA	NA	NA	0.00076 J	0.00095 J
Arsenic	7440-38-2	0.013 J	0.022	0.012	0.009	NA	0.0049 J	<0.001 U	NA	NA	NA	<0.001 U	0.0016 J
Barium	7440-39-3	0.034 J	0.037	0.028	0.029	NA	0.054	0.051	NA	NA	NA	0.003 J	0.045
Beryllium	7440-41-7	0.00011 J	0.00009 J	<0.0003 U	<0.0003 U	NA	<0.0003 U	<0.0003 U	NA	NA	NA	<0.0003 U	<0.0003 U
Cadmium	7440-43-9	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	<0.001 U	<0.001 U	NA	NA	NA	<0.001 U	<0.001 U
Calcium	7440-70-2	66	66	140	99	NA	63	86	NA	NA	NA	29	32
Chromium	7440-47-3	0.0024 J	0.0031 J	<0.0018 U	0.0011 J	NA	0.00058 J	<0.0018 U	NA	NA	NA	<0.0018 U	<0.0018 U
Cobalt	7440-48-4	0.00096 J	0.002	0.0013	<0.00075 U	NA	<0.0002 U	<0.0002 U	NA	NA	NA	0.00035 J	0.00056 J
Copper	7440-50-8	<0.0011 U	0.0026	0.0013 J	0.00059 J	NA	<0.0018 U	<0.0018 U	NA	NA	NA	<0.0018 U	<0.0018 U
Iron	7439-89-6	2	3.8	0.75	1.6	NA	1.5	<0.085 U	NA	NA	NA	0.082 J	0.12
Lead	7439-92-1	0.00067 J	0.0017 J	0.00032 J	0.00038 J	NA	<0.0007 U	<0.0007 U	NA	NA	NA	<0.0007 U	<0.0007 U
Magnesium	7439-95-4	41	40	67	52	NA	11	29	NA	NA	NA	13	28
Manganese	7439-96-5	0.074 J	NA	<0.11 U	0.16	NA	0.12	0.036	NA	NA	NA	0.083	0.041
Mercury	7439-97-6	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	NA	<0.00008 U	<0.00008 U	NA	NA	NA	<0.00008 U	<0.00008 U
Nickel	7440-02-0	0.0021 J	0.0043	0.0014 J	<0.0011 U	NA	<0.001 U	<0.001 U	NA	NA	NA	0.0039	0.0018 J
Potassium	7440-09-7	3.1	<2.3 U	<3.4 U	2.6 J	NA	0.92 J	1.4 J	NA	NA	NA	0.88 J	21 J
Selenium	7782-49-2	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	<0.001 U	<0.001 U	NA	NA	NA	<0.001 U	<0.001 U
Silver	7440-22-4	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	<0.0001 U	<0.0001 U	NA	NA	NA	<0.0001 U	<0.0001 U
Sodium	7440-23-5	26	29 J	25 J	22	NA	5.5 J	15 J	NA	NA	NA	3.4 J	13
Thallium	7440-28-0	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA	<0.0002 U	<0.0002 U	NA	NA	NA	<0.0002 U	NA
Vanadium	7440-62-2	0.0032 J	0.0015 J	<0.003 U	<0.003 U	NA	<0.003 U	<0.003 U	NA	NA	NA	<0.003 U	<0.003 U
Zinc	7440-66-6	<0.0056 U	0.0093 J	0.0047 J	0.0063 J	NA	<0.008 U	<0.008 U	NA	NA	NA	0.0022 J	<0.008 U
Anions													
Nitrate	14797-55-8	NA	<0.1 U	0.12 J	<0.1 U	NA	NA	NA	NA	NA	0.44	0.33	NA
Nitrite	14797-65-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	<0.1 U	NA
Sulfate	14808-79-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	120 J	140 J	NA
Sulfide	18496-25-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.9 U	0.8 J	NA
Miscellaneous													
Alkalinity	N33	NA	NA	NA	NA	NA	NA	NA	NA	NA	44	<10 U	NA
Chromium, hexavalent	18540-29-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA	NA	<0.01 U	NA	NA	NA	<0.01 U	NA	NA	NA
Perchlorate	14797-73-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus as P	7723-14-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	NA	NA	<0.00042 U	NA	NA	NA	<0.00041 U	<0.00045 U	<0.00041 U	0.0048	0.0014	NA
1,3-Dinitrobenzene	99-65-0	NA	NA	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00023 U	<0.00021 U	0.002	0.0024	NA
2,4,6-Trinitrotoluene	118-96-7	NA	NA	0.00046 J	NA	NA	NA	<0.00041 U	<0.00045 U	<0.00041 U	0.0019	0.0033	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00023 U	<0.00021 U	0.0028	0.00087	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00023 U	<0.00021 U	<0.0002 U	<0.0002 U	NA
2-Amino-4,6-Dinitrotoluene	35572-78-2	NA	NA	<0.00013 U	NA	NA	NA	<0.00012 U	0.0012	0.00032	0.011	0.0079	NA
2-Nitrotoluene	88-72-2	NA	NA	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00023 U	<0.00021 U	<0.0002 U	<0.0002 U	NA
3-Nitrotoluene	99-08-1	NA	NA	<0.00042 U	NA	NA	NA	<0.00041 U	<0.00045 U	<0.00041 U	<0.00041 U	<0.0004 U	NA
4-Amino-2,6-Dinitrotoluene	19406-51-0	NA	NA	<0.00013 U	NA	NA	NA	<0.00012 U	0.0024	0.0003	0.014	0.018	NA
4-Nitrotoluene	99-99-0	NA	NA	<0.00042 U	NA	NA	NA	<0.00041 U	<0.00045 U	<0.00041 U	<0.00041 U	<0.0004 U	NA

Station		L12mw-242	L12mw-242	L12mw-245	L12mw-247	LL11mw-005	LL1mw-064	LL1mw-065	LL1mw-080	LL1mw-081	LL1mw-083	LL1mw-084	LL1mw-086
Sample Id		LL12mw-242-190401-GW	LL12mw-242-190401-GW	LL12mw-245-190401-GW	LL12mw-247-190401-GW	LL11mw-005-190401-GW	LL1mw-064-190401-GW	LL1mw-065-190401-GW	LL1mw-080-190401-GW	LL1mw-081-190401-GW	LL1mw-083-190401-GW	LL1mw-084-190401-GW	LL1mw-086-190401-GW
Date		05/01/19	05/01/19	05/02/19	05/01/19	05/01/19	05/07/19	05/07/19	05/07/19	05/06/19	05/06/19	05/06/19	05/07/19
Sample Type		GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Dissolved	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Dissolved
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated
Analyte (mg/L)	CAS Number												
HMX	2691-41-0	NA	NA	<0.00021 U	NA	NA	NA	<0.0002 U	0.0023	<0.00021 U	0.0019	<0.0002 U	NA
Nitrobenzene	98-95-3	NA	NA	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00023 U	<0.00021 U	<0.0002 U	<0.0002 U	NA
Nitrocellulose	9004-70-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerin	55-63-0	NA	NA	<0.0021 U	NA	NA	NA	<0.002 U	<0.0023 U	<0.0021 U	<0.002 U	<0.002 U	NA
Nitroguanidine	556-88-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETN	78-11-5	NA	NA	<0.0042 U	NA	NA	NA	<0.0041 U	<0.0045 U	<0.0041 U	<0.0041 U	<0.004 U	NA
RDX	121-82-4	NA	NA	0.00072 J	NA	NA	NA	<0.00041 U	0.013	0.00016 J	<0.00041 U	0.002	NA
Tetryl	479-45-8	NA	NA	<0.00021 U	NA	NA	NA	<0.0002 U	<0.00023 U	<0.00021 U	<0.0002 U	<0.0002 U	NA
SVOCs													
1,2,4-Trichlorobenzene	120-82-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrobenzenamine	88-74-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrobenzenamine	99-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorobenzenamine	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrobenzenamine	100-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzenemethanol	100-51-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		L12mw-242	L12mw-242	L12mw-245	L12mw-247	LL11mw-005	LL1mw-064	LL1mw-065	LL1mw-080	LL1mw-081	LL1mw-083	LL1mw-084	LL1mw-086
Sample Id		LL12mw-242-190401-GW	LL12mw-242-190401-GW	LL12mw-245-190401-GW	LL12mw-247-190401-GW	LL11mw-005-190401-GW	LL1mw-064-190401-GW	LL1mw-065-190401-GW	LL1mw-080-190401-GW	LL1mw-081-190401-GW	LL1mw-083-190401-GW	LL1mw-084-190401-GW	LL1mw-086-190401-GW
Date		05/01/19	05/01/19	05/02/19	05/01/19	05/01/19	05/07/19	05/07/19	05/07/19	05/06/19	05/06/19	05/06/19	05/07/19
Sample Type		GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Dissolved	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Dissolved
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated
Analyte (mg/L)	CAS Number												
Benzoic acid	65-85-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	111-44-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	78-59-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	621-64-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		L12mw-242	L12mw-242	L12mw-245	L12mw-247	LL11mw-005	LL1mw-064	LL1mw-065	LL1mw-080	LL1mw-081	LL1mw-083	LL1mw-084	LL1mw-086
Sample Id		LL12mw-242-190401-GW	LL12mw-242-190401-GW	LL12mw-245-190401-GW	LL12mw-247-190401-GW	LL11mw-005-190401-GW	LL1mw-064-190401-GW	LL1mw-065-190401-GW	LL1mw-080-190401-GW	LL1mw-081-190401-GW	LL1mw-083-190401-GW	LL1mw-084-190401-GW	LL1mw-086-190401-GW
Date		05/01/19	05/01/19	05/02/19	05/01/19	05/01/19	05/07/19	05/07/19	05/07/19	05/06/19	05/06/19	05/06/19	05/07/19
Sample Type		GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Dissolved	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Dissolved
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated
Analyte (mg/L)	CAS Number												
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		L12mw-242	L12mw-242	L12mw-245	L12mw-247	LL11mw-005	LL1mw-064	LL1mw-065	LL1mw-080	LL1mw-081	LL1mw-083	LL1mw-084	LL1mw-086
Sample Id		LL12mw-242-190401-GW	LL12mw-242-190401-GW	LL12mw-245-190401-GW	LL12mw-247-190401-GW	LL11mw-005-190401-GW	LL1mw-064-190401-GW	LL1mw-065-190401-GW	LL1mw-080-190401-GW	LL1mw-081-190401-GW	LL1mw-083-190401-GW	LL1mw-084-190401-GW	LL1mw-086-190401-GW
Date		05/01/19	05/01/19	05/02/19	05/01/19	05/01/19	05/07/19	05/07/19	05/07/19	05/06/19	05/06/19	05/06/19	05/07/19
Sample Type		GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Dissolved	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Dissolved
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated
Analyte (mg/L)	CAS Number												
Toluene	108-88-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		LL1mw-086	LL1mw-087	LL1mw-088	LL1mw-089	LL1mw-089	LL2mw-059	LL2mw-264	LL2mw-267	LL2mw-272	LL3mw-234	LL3mw-237	LL3mw-244
Sample Id		LL1mw-086-190401-GW	LL1mw-087-190401-GW	LL1mw-088-190401-GW	LL1mw-089-190402-GW	LL1mw-089-190401-GW	LL2mw-059-190401-GW	LL2mw-264-190401-GW	LL2mw-267-190401-GW	LL2mw-272-190401-GW	LL3mw-234-190401-GW	LL3mw-237-190401-GW	LL3mw-244-190401-GW
Date		05/07/19	05/02/19	05/08/19	05/07/19	05/07/19	05/06/19	05/02/19	05/02/19	05/06/19	05/06/19	05/06/19	05/06/19
Sample Type		GR	GR	GR	FD	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	3.1	0.087 J	0.31	NA	NA	0.033 J	NA	0.1 J	NA	NA	NA	0.24 J
Antimony	7440-36-0	<0.001 U	<0.001 U	<0.001 U	NA	NA	0.00061 J	NA	<0.001 U	NA	NA	NA	<0.001 U
Arsenic	7440-38-2	0.0042 J	0.00036 J	0.028	NA	NA	<0.001 U	NA	0.0021 J	NA	NA	NA	<0.001 U
Barium	7440-39-3	0.14	0.018	0.039	NA	NA	0.015 J	NA	0.017	NA	NA	NA	0.014 J
Beryllium	7440-41-7	0.0001 J	<0.0003 U	<0.0003 U	NA	NA	<0.0003 U	NA	<0.0003 U	NA	NA	NA	0.00012 J
Cadmium	7440-43-9	<0.001 U	<0.001 U	<0.001 U	NA	NA	<0.001 U	NA	<0.001 U	NA	NA	NA	0.0012
Calcium	7440-70-2	71	79	75	NA	NA	24	NA	28	NA	NA	NA	60
Chromium	7440-47-3	0.0028 J	<0.0018 U	0.0005 J	NA	NA	<0.0018 U	NA	0.00079 J	NA	NA	NA	<0.0018 U
Cobalt	7440-48-4	0.0026	0.00018 J	0.00019 J	NA	NA	<0.0002 U	NA	0.0044	NA	NA	NA	0.0088
Copper	7440-50-8	0.004	0.00094 J	<0.0018 U	NA	NA	<0.0018 U	NA	<0.0018 U	NA	NA	NA	0.0035
Iron	7439-89-6	7.1	0.22	1.7 J	NA	NA	0.046 J	NA	2.5	NA	NA	NA	<0.085 U
Lead	7439-92-1	0.0022 J	<0.0007 U	0.00018 J	NA	NA	<0.0007 U	NA	<0.0007 U	NA	NA	NA	0.00033 J
Magnesium	7439-95-4	39	19	33	NA	NA	7.9	NA	12	NA	NA	NA	3.1
Manganese	7439-96-5	0.36	<0.037 U	0.052	NA	NA	<0.0012 U	NA	<0.59 U	NA	NA	NA	0.085
Mercury	7439-97-6	<0.00008 U	<0.00008 U	<0.00008 U	NA	NA	<0.00008 U	NA	<0.00008 U	NA	NA	NA	<0.00008 U
Nickel	7440-02-0	0.006	0.00092 J	0.00039 J	NA	NA	0.0014 J	NA	0.0031	NA	NA	NA	0.017
Potassium	7440-09-7	26	0.9 J	2.4 J	NA	NA	1.4 J	NA	0.79 J	NA	NA	NA	3.1
Selenium	7782-49-2	<0.001 U	<0.001 U	<0.001 U	NA	NA	<0.001 U	NA	<0.001 U	NA	NA	NA	0.0023 J
Silver	7440-22-4	<0.0001 UJ	<0.0001 U	<0.0001 U	NA	NA	<0.0001 U	NA	<0.0001 U	NA	NA	NA	<0.0001 U
Sodium	7440-23-5	16 J	10 J	23 J	NA	NA	3.3 J	NA	8.1 J	NA	NA	NA	<2.8 UJ
Thallium	7440-28-0	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	<0.0002 U	NA	<0.0002 U	NA	NA	NA	0.00027 J
Vanadium	7440-62-2	0.0012 J	<0.003 U	<0.003 U	NA	NA	<0.003 U	NA	<0.003 U	NA	NA	NA	<0.003 U
Zinc	7440-66-6	0.0093 J	<0.008 U	<0.008 U	NA	NA	0.0021 J	NA	0.0023 J	NA	NA	NA	0.038
Anions													
Nitrate	14797-55-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	14797-65-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	14808-79-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	18496-25-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous													
Alkalinity	N33	110	NA	290	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, hexavalent	18540-29-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	<0.01 U	NA	NA	NA	NA	NA	0.006 J	NA	<0.01 U	0.0087 J	NA	NA
Perchlorate	14797-73-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus as P	7723-14-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	NA	<0.00041 U	<0.00044 U	<0.00042 U	<0.00047 U	0.0023	NA	<0.0004 U	NA	NA	<0.00041 U	<0.00044 U
1,3-Dinitrobenzene	99-65-0	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00024 U	0.00027 J	NA	<0.0002 U	NA	NA	<0.0002 U	<0.00022 U
2,4,6-Trinitrotoluene	118-96-7	NA	<0.00041 U	<0.00044 U	<0.00042 U	<0.00047 U	<0.00044 U	NA	<0.0004 U	NA	NA	0.00042	<0.00044 U
2,4-Dinitrotoluene	121-14-2	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00024 U	0.00052	NA	<0.0002 U	NA	NA	<0.0002 U	<0.00022 U
2,6-Dinitrotoluene	606-20-2	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00024 U	<0.00022 U	NA	<0.0002 U	NA	NA	<0.0002 U	<0.00022 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	NA	<0.00012 U	<0.00013 U	<0.00013 U	<0.00014 U	0.00062	NA	0.00026	NA	NA	0.0023	0.0004
2-Nitrotoluene	88-72-2	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00024 U	<0.00022 U	NA	<0.0002 U	NA	NA	<0.0002 U	<0.00022 U
3-Nitrotoluene	99-08-1	NA	<0.00041 U	<0.00044 U	<0.00042 U	<0.00047 U	<0.00044 U	NA	<0.0004 U	NA	NA	<0.00041 U	<0.00044 U
4-Amino-2,6-Dinitrotoluene	19406-51-0	NA	<0.00012 U	<0.00013 U	<0.00013 U	<0.00014 U	0.00057	NA	0.00023	NA	NA	0.004	0.00035
4-Nitrotoluene	99-99-0	NA	<0.00041 U	<0.00044 U	<0.00042 U	<0.00047 U	<0.00044 U	NA	<0.0004 U	NA	NA	<0.00041 U	<0.00044 U

Station		LL1mw-086	LL1mw-087	LL1mw-088	LL1mw-089	LL1mw-089	LL2mw-059	LL2mw-264	LL2mw-267	LL2mw-272	LL3mw-234	LL3mw-237	LL3mw-244
Sample Id		LL1mw-086-190401-GW	LL1mw-087-190401-GW	LL1mw-088-190401-GW	LL1mw-089-190402-GW	LL1mw-089-190401-GW	LL2mw-059-190401-GW	LL2mw-264-190401-GW	LL2mw-267-190401-GW	LL2mw-272-190401-GW	LL3mw-234-190401-GW	LL3mw-237-190401-GW	LL3mw-244-190401-GW
Date		05/07/19	05/02/19	05/08/19	05/07/19	05/07/19	05/06/19	05/02/19	05/02/19	05/06/19	05/06/19	05/06/19	05/06/19
Sample Type		GR	GR	GR	FD	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
HMX	2691-41-0	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00024 U	<0.00022 U	NA	0.00057	NA	NA	<0.0002 U	<0.00022 U
Nitrobenzene	98-95-3	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00024 U	<0.00022 U	NA	<0.0002 U	NA	NA	<0.0002 U	<0.00022 U
Nitrocellulose	9004-70-0	NA	NA	NA	0.63 J	<1 U	NA	NA	NA	NA	NA	NA	NA
Nitroglycerin	55-63-0	NA	<0.002 U	<0.0022 U	<0.0021 U	<0.0024 U	<0.0022 U	NA	<0.002 U	NA	NA	<0.002 U	<0.0022 U
Nitroguanidine	556-88-7	NA	NA	NA	<0.006 U	<0.006 U	NA	NA	NA	NA	NA	NA	NA
PETN	78-11-5	NA	<0.0041 U	<0.0044 U	<0.0042 U	<0.0047 U	<0.0044 U	NA	<0.004 U	NA	NA	<0.0041 U	<0.0044 U
RDX	121-82-4	NA	<0.00041 U	<0.00044 U	<0.00042 U	<0.00047 U	<0.00044 U	NA	0.00029 J	NA	NA	<0.00041 U	<0.00044 U
Tetryl	479-45-8	NA	<0.0002 U	<0.00022 U	<0.00021 U	<0.00024 U	<0.00022 U	NA	<0.0002 U	NA	NA	<0.0002 U	<0.00022 U
SVOCs													
1,2,4-Trichlorobenzene	120-82-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrobenzenamine	88-74-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrobenzenamine	99-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorobenzenamine	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrobenzenamine	100-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzenemethanol	100-51-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		LL1mw-086	LL1mw-087	LL1mw-088	LL1mw-089	LL1mw-089	LL2mw-059	LL2mw-264	LL2mw-267	LL2mw-272	LL3mw-234	LL3mw-237	LL3mw-244
Sample Id		LL1mw-086-190401-GW	LL1mw-087-190401-GW	LL1mw-088-190401-GW	LL1mw-089-190402-GW	LL1mw-089-190401-GW	LL2mw-059-190401-GW	LL2mw-264-190401-GW	LL2mw-267-190401-GW	LL2mw-272-190401-GW	LL3mw-234-190401-GW	LL3mw-237-190401-GW	LL3mw-244-190401-GW
Date		05/07/19	05/02/19	05/08/19	05/07/19	05/07/19	05/06/19	05/02/19	05/02/19	05/06/19	05/06/19	05/06/19	05/06/19
Sample Type		GR	GR	GR	FD	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Benzoic acid	65-85-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	111-44-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	78-59-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	621-64-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		LL1mw-086	LL1mw-087	LL1mw-088	LL1mw-089	LL1mw-089	LL2mw-059	LL2mw-264	LL2mw-267	LL2mw-272	LL3mw-234	LL3mw-237	LL3mw-244
Sample Id		LL1mw-086-190401-GW	LL1mw-087-190401-GW	LL1mw-088-190401-GW	LL1mw-089-190402-GW	LL1mw-089-190401-GW	LL2mw-059-190401-GW	LL2mw-264-190401-GW	LL2mw-267-190401-GW	LL2mw-272-190401-GW	LL3mw-234-190401-GW	LL3mw-237-190401-GW	LL3mw-244-190401-GW
Date		05/07/19	05/02/19	05/08/19	05/07/19	05/07/19	05/06/19	05/02/19	05/02/19	05/06/19	05/06/19	05/06/19	05/06/19
Sample Type		GR	GR	GR	FD	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		LL1mw-086	LL1mw-087	LL1mw-088	LL1mw-089	LL1mw-089	LL2mw-059	LL2mw-264	LL2mw-267	LL2mw-272	LL3mw-234	LL3mw-237	LL3mw-244
Sample Id		LL1mw-086-190401-GW	LL1mw-087-190401-GW	LL1mw-088-190401-GW	LL1mw-089-190402-GW	LL1mw-089-190401-GW	LL2mw-059-190401-GW	LL2mw-264-190401-GW	LL2mw-267-190401-GW	LL2mw-272-190401-GW	LL3mw-234-190401-GW	LL3mw-237-190401-GW	LL3mw-244-190401-GW
Date		05/07/19	05/02/19	05/08/19	05/07/19	05/07/19	05/06/19	05/02/19	05/02/19	05/06/19	05/06/19	05/06/19	05/06/19
Sample Type		GR	GR	GR	FD	GR	GR	GR	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Toluene	108-88-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Station		LL3mw-246	LL3mw-246	LL4mw-200	LL7mw-001	LL7mw-006	NTAmw-119	NTAmw-119	NTAmw-120	RQLmw-007	RQLmw-008	RQLmw-009	RQLmw-011
Sample Id		LL3mw-246-190402-GW	LL3mw-246-190401-GW	LL4mw-200-190401-GW	LL7mw-001-190401-GW	LL7mw-006-190401-GW	NTAmw-119-190402-GW	NTAmw-119-190401-GW	NTAmw-120-190401-GW	RQLmw-007-190401-GW	RQLmw-008-190401-GW	RQLmw-009-190401-GW	RQLmw-011-190402-GW
Date		05/09/19	05/09/19	05/02/19	05/01/19	05/01/19	04/30/19	04/30/19	04/30/19	05/09/19	05/09/19	05/09/19	05/09/19
Sample Type		FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR	FD
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Unconsolidated	Homewood	Homewood	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	<0.07 U	<0.07 U	NA	<0.07 U	NA	NA	0.032 J	NA	0.019 J	0.025 J	0.053 J	NA
Antimony	7440-36-0	0.00056 J	0.00059 J	NA	<0.001 U	NA	NA	<0.001 U	NA	<0.001 U	<0.001 U	<0.001 U	NA
Arsenic	7440-38-2	<0.001 U	<0.001 U	NA	0.0017 J	NA	NA	0.006	NA	0.0007 J	0.011	0.0017 J	NA
Barium	7440-39-3	0.015	0.015	NA	0.022	NA	NA	0.083	NA	0.025	0.057	0.021	NA
Beryllium	7440-41-7	<0.0003 U	<0.0003 U	NA	<0.0003 U	NA	NA	<0.0003 U	NA	<0.0003 U	<0.0003 U	<0.0003 U	NA
Cadmium	7440-43-9	<0.001 U	<0.001 U	NA	<0.001 U	NA	NA	<0.001 U	NA	<0.001 U	<0.001 U	<0.001 U	NA
Calcium	7440-70-2	20	20	NA	38	NA	NA	85	NA	58	41	18	NA
Chromium	7440-47-3	<0.0018 U	<0.0018 U	NA	<0.0018 U	NA	NA	<0.0018 U	NA	<0.0018 U	<0.0018 U	<0.0018 U	NA
Cobalt	7440-48-4	<0.0002 U	<0.0002 U	NA	0.0061	NA	NA	<0.0002 U	NA	0.0025	0.0024	0.00087 J	NA
Copper	7440-50-8	<0.0018 U	<0.0018 U	NA	<0.0018 U	NA	NA	<0.0018 U	NA	0.003	<0.0018 U	0.002	NA
Iron	7439-89-6	<0.085 U	0.022 J	NA	8.6	NA	NA	0.97	NA	<0.075 U	28	1.7	NA
Lead	7439-92-1	<0.0007 U	<0.0007 U	NA	<0.0007 U	NA	NA	<0.0007 U	NA	0.00028 J	<0.0007 U	0.0014 J	NA
Magnesium	7439-95-4	6.6	6.7	NA	12	NA	NA	21	NA	38	74	10	NA
Manganese	7439-96-5	<0.0012 U	<0.0015 U	NA	0.47	NA	NA	0.33	NA	0.49	0.46	0.3	NA
Mercury	7439-97-6	<0.00008 U	<0.00008 U	NA	<0.00008 U	NA	NA	<0.00008 U	NA	<0.00008 U	<0.00008 U	<0.00008 U	NA
Nickel	7440-02-0	0.0014 J	0.0016 J	NA	0.0088	NA	NA	<0.001 U	NA	0.032	0.004	0.0016 J	NA
Potassium	7440-09-7	1.1 J	1.2 J	NA	1.1 J	NA	NA	1.4 J	NA	2.9 J	2.1 J	2.8 J	NA
Selenium	7782-49-2	<0.001 U	<0.001 U	NA	<0.001 U	NA	NA	<0.001 U	NA	<0.001 U	<0.001 U	<0.001 U	NA
Silver	7440-22-4	<0.0001 U	<0.0001 U	NA	<0.0001 U	NA	NA	<0.0001 U	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA
Sodium	7440-23-5	2.7 J	2.8 J	NA	5.4	NA	NA	6.4	NA	<1.8 U	<2.2 U	<1.4 U	NA
Thallium	7440-28-0	<0.0002 U	<0.0002 U	NA	0.00011 J	NA	NA	<0.0002 U	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA
Vanadium	7440-62-2	<0.003 U	<0.003 U	NA	<0.003 U	NA	NA	<0.003 U	NA	<0.003 U	<0.003 U	<0.003 U	NA
Zinc	7440-66-6	0.002 J	0.0025 J	NA	0.05	NA	NA	<0.008 U	NA	0.027	0.011 J	0.0037 J	NA
Anions													
Nitrate	14797-55-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U
Nitrite	14797-65-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U
Sulfate	14808-79-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	130 J
Sulfide	18496-25-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1.9 U
Miscellaneous													
Alkalinity	N33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10 U
Chromium, hexavalent	18540-29-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	<0.01 U	<0.01 U	NA	NA	NA	NA	<0.01 U	0.0053 J	0.013 J	NA
Perchlorate	14797-73-0	0.00006 J	0.00005 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Phosphorus as P	7723-14-0	NA	NA	NA	NA	NA	NA	NA	NA	<0.05 U	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	<0.00042 U	<0.00042 U	NA	NA	<0.0004 U	<0.00043 U	<0.00043 U	NA	<0.00045 U	<0.00045 U	<0.00042 U	NA
1,3-Dinitrobenzene	99-65-0	<0.00021 U	<0.00021 U	NA	NA	<0.0002 U	<0.00021 U	<0.00022 U	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA
2,4,6-Trinitrotoluene	118-96-7	<0.00042 U	<0.00042 U	NA	NA	<0.0004 U	<0.00043 U	<0.00043 U	NA	<0.00045 U	<0.00045 U	<0.00042 U	NA
2,4-Dinitrotoluene	121-14-2	<0.00021 U	<0.00021 U	NA	NA	<0.0002 U	<0.00021 U	<0.00022 U	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA
2,6-Dinitrotoluene	606-20-2	<0.00021 U	<0.00021 U	NA	NA	<0.0002 U	<0.00021 U	<0.00022 U	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA
2-Amino-4,6-Dinitrotoluene	35572-78-2	0.0003	0.00031	NA	NA	<0.00012 U	<0.00013 U	<0.00013 U	NA	<0.00013 U	<0.00013 U	<0.00013 U	NA
2-Nitrotoluene	88-72-2	<0.00021 U	<0.00021 U	NA	NA	<0.0002 U	<0.00021 UJ	<0.00022 UJ	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA
3-Nitrotoluene	99-08-1	<0.00042 U	<0.00042 U	NA	NA	<0.0004 U	<0.00043 U	<0.00043 UJ	NA	<0.00045 U	<0.00045 U	<0.00042 U	NA
4-Amino-2,6-Dinitrotoluene	19406-51-0	0.00026	0.00027	NA	NA	<0.00012 U	<0.00013 U	<0.00013 U	NA	<0.00013 U	<0.00013 U	<0.00013 U	NA
4-Nitrotoluene	99-99-0	<0.00042 U	<0.00042 U	NA	NA	<0.0004 U	<0.00043 U	<0.00043 UJ	NA	<0.00045 U	<0.00045 U	<0.00042 U	NA

Station		LL3mw-246	LL3mw-246	LL4mw-200	LL7mw-001	LL7mw-006	NTAmw-119	NTAmw-119	NTAmw-120	RQLmw-007	RQLmw-008	RQLmw-009	RQLmw-011
Sample Id		LL3mw-246-190402-GW	LL3mw-246-190401-GW	LL4mw-200-190401-GW	LL7mw-001-190401-GW	LL7mw-006-190401-GW	NTAmw-119-190402-GW	NTAmw-119-190401-GW	NTAmw-120-190401-GW	RQLmw-007-190401-GW	RQLmw-008-190401-GW	RQLmw-009-190401-GW	RQLmw-011-190402-GW
Date		05/09/19	05/09/19	05/02/19	05/01/19	05/01/19	04/30/19	04/30/19	04/30/19	05/09/19	05/09/19	05/09/19	05/09/19
Sample Type		FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR	FD
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Unconsolidated	Homewood	Homewood	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
HMX	2691-41-0	<0.00021 U	<0.00021 U	NA	NA	0.00017 J	<0.00021 U	<0.00022 U	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA
Nitrobenzene	98-95-3	<0.00021 U	<0.00021 U	NA	NA	<0.0002 U	<0.00021 U	<0.00022 U	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA
Nitrocellulose	9004-70-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitroglycerin	55-63-0	<0.0021 U	<0.0021 U	NA	NA	<0.002 U	<0.0021 U	<0.0022 U	NA	<0.0022 U	<0.0022 U	<0.0021 U	NA
Nitroguanidine	556-88-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PETN	78-11-5	<0.0042 U	<0.0042 U	NA	NA	<0.004 U	<0.0043 U	<0.0043 U	NA	<0.0045 U	<0.0045 U	<0.0042 U	NA
RDX	121-82-4	<0.00042 U	<0.00042 U	NA	NA	0.00042	<0.00043 U	<0.00043 U	NA	<0.00045 U	<0.00045 U	<0.00042 U	NA
Tetryl	479-45-8	<0.00021 U	<0.00021 U	NA	NA	<0.0002 U	<0.00021 U	<0.00022 U	NA	<0.00022 U	<0.00022 U	<0.00021 U	NA
SVOCs													
1,2,4-Trichlorobenzene	120-82-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA	<0.00004 U	NA	<0.00004 U	<0.00004 U	<0.00004 U	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.0046 U	<0.0046 U	<0.0048 U	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011 U	<0.001 U	<0.0011 U	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021 U	<0.0021 U	<0.0022 U	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021 U	<0.0021 U	<0.0022 U	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.032 U	<0.031 U	<0.033 U	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	NA	NA	<0.0046 U	<0.0046 U	<0.0048 U	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	NA	NA	NA	<0.0093 U	<0.0092 U	<0.0096 U	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	<0.00006 U	NA	<0.00006 U	<0.00005 U	<0.00005 U	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021 U	<0.0021 U	<0.0022 U	NA
2-Nitrobenzenamine	88-74-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011 U	<0.001 U	<0.0011 U	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrobenzenamine	99-09-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.0053 U	<0.0052 U	<0.0055 U	NA
4-Chlorobenzenamine	106-47-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrobenzenamine	100-01-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.0042 U	<0.0042 U	<0.0044 U	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	NA	<0.00004 U	NA	<0.00004 U	<0.00004 U	<0.00004 U	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA	<0.00004 U	NA	<0.00004 U	<0.00004 U	<0.00004 U	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Benzenemethanol	100-51-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA	<0.00006 U	NA	<0.00006 U	<0.00005 U	<0.00005 U	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	NA	<0.00006 U	NA	<0.00006 U	<0.00005 U	<0.00005 U	NA

Station		LL3mw-246	LL3mw-246	LL4mw-200	LL7mw-001	LL7mw-006	NTAmw-119	NTAmw-119	NTAmw-120	RQLmw-007	RQLmw-008	RQLmw-009	RQLmw-011
Sample Id		LL3mw-246-190402-GW	LL3mw-246-190401-GW	LL4mw-200-190401-GW	LL7mw-001-190401-GW	LL7mw-006-190401-GW	NTAmw-119-190402-GW	NTAmw-119-190401-GW	NTAmw-120-190401-GW	RQLmw-007-190401-GW	RQLmw-008-190401-GW	RQLmw-009-190401-GW	RQLmw-011-190402-GW
Date		05/09/19	05/09/19	05/02/19	05/01/19	05/01/19	04/30/19	04/30/19	04/30/19	05/09/19	05/09/19	05/09/19	05/09/19
Sample Type		FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR	FD
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Unconsolidated	Homewood	Homewood	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Benzoic acid	65-85-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl) ether	111-44-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021 U	<0.0021 U	<0.0022 U	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.0021 U	<0.0021 U	<0.0022 U	NA
Carbazole	86-74-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0046 U	<0.0046 U	<0.0048 U	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011 U	<0.001 U	<0.0011 U	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Dibenzofuran	132-64-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011 U	<0.001 U	<0.0011 U	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.00053 U	<0.00052 U	<0.00055 U	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	NA	<0.00004 U	NA	<0.00004 U	<0.00004 U	<0.00004 U	NA
Hexachlorobenzene	118-74-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	NA	NA	NA	NA	NA	NA	NA	<0.0098 U	NA	NA	NA	NA
Hexachloroethane	67-72-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Isophorone	78-59-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	621-64-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA	<0.00006 U	NA	<0.00006 U	<0.00005 U	<0.00005 U	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.063 U	<0.062 U	<0.065 U	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0046 U	<0.0046 U	<0.0048 U	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	NA	<0.00011 U	NA	<0.00011 U	<0.00011 U	<0.0001 U	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.00053 U	<0.00052 U	<0.00055 U	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.00042 U	<0.00043 U	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.00025 U	<0.00026 U	<0.00027 U	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.00061 U	<0.00063 U	<0.00065 U	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.0011 U	<0.0011 U	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	NA	NA	NA	<0.0003 U	<0.00032 U	<0.00032 U	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	NA	NA	NA	<0.00025 U	<0.00026 U	<0.00027 U	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.00042 U	<0.00043 U	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 UJ	<0.00002 UJ	<0.00002 UJ	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 UJ	<0.00002 UJ	<0.00002 UJ	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA

Station		LL3mw-246	LL3mw-246	LL4mw-200	LL7mw-001	LL7mw-006	NTAmw-119	NTAmw-119	NTAmw-120	RQLmw-007	RQLmw-008	RQLmw-009	RQLmw-011
Sample Id		LL3mw-246-190402-GW	LL3mw-246-190401-GW	LL4mw-200-190401-GW	LL7mw-001-190401-GW	LL7mw-006-190401-GW	NTAmw-119-190402-GW	NTAmw-119-190401-GW	NTAmw-120-190401-GW	RQLmw-007-190401-GW	RQLmw-008-190401-GW	RQLmw-009-190401-GW	RQLmw-011-190402-GW
Date		05/09/19	05/09/19	05/02/19	05/01/19	05/01/19	04/30/19	04/30/19	04/30/19	05/09/19	05/09/19	05/09/19	05/09/19
Sample Type		FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR	FD
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Unconsolidated	Homewood	Homewood	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.00081 U	<0.00084 U	<0.00086 U	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 UJ	<0.00002 UJ	<0.00002 UJ	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.00002 UJ	<0.00002 UJ	<0.00002 UJ	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
2-Butanone	78-93-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.004 U	<0.004 U	<0.004 U	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	NA	NA	NA	<0.004 U	<0.004 U	<0.004 U	NA
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	NA	NA	NA	<0.0032 U	<0.0032 U	<0.0032 U	NA
Acetone	67-64-1	NA	NA	NA	NA	NA	NA	NA	NA	<0.0064 U	<0.0026 U	<0.0064 U	NA
Benzene	71-43-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Bromoform	75-25-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	NA
Bromomethane	74-83-9	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
Carbon tetrachloride	56-23-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Chloroethane	75-00-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.0016 U	<0.0016 U	<0.0016 U	NA
Chloroform	67-66-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Chloromethane	74-87-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Methylene chloride	75-09-2	NA	NA	NA	NA	NA	NA	NA	NA	<0.002 U	<0.002 U	<0.002 U	NA
Styrene	100-42-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA

Station		LL3mw-246	LL3mw-246	LL4mw-200	LL7mw-001	LL7mw-006	NTAmw-119	NTAmw-119	NTAmw-120	RQLmw-007	RQLmw-008	RQLmw-009	RQLmw-011
Sample Id		LL3mw-246-190402-GW	LL3mw-246-190401-GW	LL4mw-200-190401-GW	LL7mw-001-190401-GW	LL7mw-006-190401-GW	NTAmw-119-190402-GW	NTAmw-119-190401-GW	NTAmw-120-190401-GW	RQLmw-007-190401-GW	RQLmw-008-190401-GW	RQLmw-009-190401-GW	RQLmw-011-190402-GW
Date		05/09/19	05/09/19	05/02/19	05/01/19	05/01/19	04/30/19	04/30/19	04/30/19	05/09/19	05/09/19	05/09/19	05/09/19
Sample Type		FD	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR	FD
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Unconsolidated	Homewood	Homewood	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	CAS Number												
Toluene	108-88-3	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA

Station		RQLmw-011	RQLmw-012	RQLmw-013	RQLmw-016	SCFmw-004	SCLmw-001	SCLmw-002	SCLmw-002	SCLmw-003	WBGmw-006	WBGmw-009	WBGmw-020
Sample Id		RQLmw-011-190401-GW	RQLmw-012-190401-GW	RQLmw-013-190401-GW	RQLmw-016-190401-GW	SCFmw-004-190401-GW	SCLmw-001-190401-GW	SCLmw-002-190402-GW	SCLmw-002-190401-GW	SCLmw-003-190401-GW	WBGmw-006-190401-GW	WBGmw-009-190401-GW	WBGmw-020-190401-GW
Date		05/09/19	05/09/19	05/09/19	05/09/19	05/02/19	05/08/19	05/08/19	05/08/19	05/08/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	NA	NA	NA	NA	<0.07 U	0.037 J	0.018 J	0.019 J	<0.07 U	0.019 J	0.019 J	<0.07 U
Antimony	7440-36-0	NA	NA	NA	NA	<0.001 U	0.00053 J	0.00059 J	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
Arsenic	7440-38-2	NA	NA	NA	NA	<0.001 U	0.0034 J	0.001 J	0.00086 J	0.0046 J	<0.001 U	<0.001 U	0.0012 J
Barium	7440-39-3	NA	NA	NA	NA	0.059	0.053 J	0.051 J	0.051 J	0.021 J	0.021	0.03	0.015
Beryllium	7440-41-7	NA	NA	NA	NA	<0.0003 U	<0.0003 U	0.00056 J	<0.0003 U	<0.0003 U	<0.0003 U	<0.0003 U	0.00008 J
Cadmium	7440-43-9	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
Calcium	7440-70-2	NA	NA	NA	NA	150	130	190	190	160	79	49	31
Chromium	7440-47-3	NA	NA	NA	NA	0.0013 J	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U
Cobalt	7440-48-4	NA	NA	NA	NA	0.00014 J	0.00067 J	0.00011 J	0.00006 J	0.0027	<0.00029 U	<0.00062 U	<0.00038 U
Copper	7440-50-8	NA	NA	NA	NA	0.028	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U	<0.0018 U
Iron	7439-89-6	NA	NA	NA	NA	0.081 J	1.3	10	10	0.21	0.046 J	0.058 J	3.4
Lead	7439-92-1	NA	NA	NA	NA	0.0083	0.00021 J	<0.0007 U	<0.0007 U	<0.0007 U	<0.0007 U	<0.0007 U	<0.0007 U
Magnesium	7439-95-4	NA	NA	NA	NA	58	42	16	16	67	26	12	10
Manganese	7439-96-5	NA	NA	NA	NA	<0.84 U	0.31	1	1.1	0.23	0.099	0.18	0.22
Mercury	7439-97-6	NA	NA	NA	NA	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
Nickel	7440-02-0	NA	NA	NA	NA	0.01	0.00071 J	<0.001 U	<0.001 U	0.0029 J	0.00033 J	0.0027 J	0.0022 J
Potassium	7440-09-7	NA	NA	NA	NA	2.9 J	3.8	4	4	6	0.86 J	0.61 J	0.8 J
Selenium	7782-49-2	NA	NA	NA	NA	<0.001 U	<0.001 U	0.00048 J	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
Silver	7440-22-4	NA	NA	NA	NA	<0.0001 U	0.00018 J	0.00004 J	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
Sodium	7440-23-5	NA	NA	NA	NA	13 J	19	3.3 J	3.3 J	38 J	5.5	3.3 J	3.9 J
Thallium	7440-28-0	NA	NA	NA	NA	<0.0002 U	<0.0002 U	0.00009 J	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Vanadium	7440-62-2	NA	NA	NA	NA	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U
Zinc	7440-66-6	NA	NA	NA	NA	0.39	0.0022 J	0.002 J	0.002 J	0.0022 J	<0.008 U	<0.008 U	<0.008 U
Anions													
Nitrate	14797-55-8	<0.1 U	0.61	<0.1 U	NA	NA	<0.1 U	NA	<0.1 U	<0.1 U	NA	NA	NA
Nitrite	14797-65-0	<0.1 U	<0.1 UJ	<0.1 R	NA	NA	<0.1 U	NA	<0.1 U	<0.1 U	NA	NA	NA
Sulfate	14808-79-8	130 J	110 J	160 J	NA	NA	160	NA	190	240	NA	NA	NA
Sulfide	18496-25-8	<1.9 U	<1.9 U	<1.9 U	NA	NA	<1.9 U	NA	<1.9 U	<1.9 U	NA	NA	NA
Miscellaneous													
Alkalinity	N33	<10 U	9.9 J	<10 U	NA	NA	320	NA	300	390	NA	NA	NA
Chromium, hexavalent	18540-29-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	0.04 J	NA	<0.01 U	NA	0.015 J	0.0052 J	<0.01 U	<0.01 U	NA	NA	NA
Perchlorate	14797-73-0	NA	NA	NA	NA	NA	<0.00001 U	NA	<0.00001 U	<0.00001 U	NA	NA	NA
Total Phosphorus as P	7723-14-0	NA	NA	NA	NA	NA	0.018 J	0.11 J	0.1 J	<0.05 U	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	NA	NA	NA	NA	NA	<0.00042 U	NA	<0.00042 U	<0.00043 U	<0.00039 U	<0.00042 U	<0.00039 U
1,3-Dinitrobenzene	99-65-0	NA	NA	NA	NA	NA	<0.00021 U	NA	<0.00021 U	<0.00022 U	<0.0002 U	<0.00021 U	<0.00019 U
2,4,6-Trinitrotoluene	118-96-7	NA	NA	NA	NA	NA	<0.00042 U	NA	<0.00042 U	<0.00043 U	<0.00039 U	<0.00042 U	<0.00039 U
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	<0.00021 U	NA	<0.00021 U	<0.00022 U	<0.0002 U	<0.00021 U	<0.00019 U
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	<0.00021 U	NA	<0.00021 U	<0.00022 U	<0.0002 U	<0.00021 U	<0.00019 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	NA	NA	NA	NA	NA	<0.00013 U	NA	<0.00013 U	<0.00013 U	<0.00012 U	<0.00013 U	<0.00012 U
2-Nitrotoluene	88-72-2	NA	NA	NA	NA	NA	<0.00021 U	NA	<0.00021 U	<0.00022 U	<0.0002 UJ	<0.00021 UJ	<0.00019 UJ
3-Nitrotoluene	99-08-1	NA	NA	NA	NA	NA	<0.00042 U	NA	<0.00042 U	<0.00043 U	<0.00039 U	<0.00042 U	<0.00039 U
4-Amino-2,6-Dinitrotoluene	19406-51-0	NA	NA	NA	NA	NA	<0.00013 U	NA	<0.00013 U	<0.00013 U	<0.00012 U	<0.00013 U	<0.00012 U
4-Nitrotoluene	99-99-0	NA	NA	NA	NA	NA	<0.00042 U	NA	<0.00042 U	<0.00043 U	<0.00039 U	<0.00042 U	<0.00039 U

Station		RQLmw-011	RQLmw-012	RQLmw-013	RQLmw-016	SCFmw-004	SCLmw-001	SCLmw-002	SCLmw-002	SCLmw-003	WBGmw-006	WBGmw-009	WBGmw-020
Sample Id		RQLmw-011-190401-GW	RQLmw-012-190401-GW	RQLmw-013-190401-GW	RQLmw-016-190401-GW	SCFmw-004-190401-GW	SCLmw-001-190401-GW	SCLmw-002-190402-GW	SCLmw-002-190401-GW	SCLmw-003-190401-GW	WBGmw-006-190401-GW	WBGmw-009-190401-GW	WBGmw-020-190401-GW
Date		05/09/19	05/09/19	05/09/19	05/09/19	05/02/19	05/08/19	05/08/19	05/08/19	05/08/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon
Analyte (mg/L)	CAS Number												
HMX	2691-41-0	NA	NA	NA	NA	NA	<0.00021 U	NA	<0.00021 U	<0.00022 U	0.0034	0.00067	<0.00019 U
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	<0.00021 U	NA	<0.00021 U	<0.00022 U	<0.0002 U	<0.00021 U	<0.00019 U
Nitrocellulose	9004-70-0	NA	NA	NA	NA	NA	<1 U	NA	<1 U	<1 U	NA	NA	NA
Nitroglycerin	55-63-0	NA	NA	NA	NA	NA	<0.0021 U	NA	<0.0021 U	<0.0022 U	<0.002 U	<0.0021 U	<0.0019 U
Nitroguanidine	556-88-7	NA	NA	NA	NA	NA	<0.006 U	NA	<0.006 U	<0.006 U	NA	NA	NA
PETN	78-11-5	NA	NA	NA	NA	NA	<0.0042 U	NA	<0.0042 U	<0.0043 U	<0.0039 U	<0.0042 U	<0.0039 U
RDX	121-82-4	NA	NA	NA	NA	NA	<0.00042 U	NA	<0.00042 U	<0.00043 U	0.011	0.0016	<0.00039 U
Tetryl	479-45-8	NA	NA	NA	NA	NA	<0.00021 U	NA	<0.00021 U	<0.00022 U	<0.0002 U	<0.00021 U	<0.00019 U
SVOCs													
1,2,4-Trichlorobenzene	120-82-1	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	NA	NA	NA	NA	NA	<0.0005 U	<0.00052 U	<0.00051 U	<0.00051 U	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	NA	NA	NA	NA	NA	<0.004 U	<0.0041 U	<0.0041 U	<0.0041 U	NA	NA	NA
1,4-Dioxane	123-91-1	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	<0.00004 U	<0.00004 U	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	<0.03 U	<0.031 U	<0.03 U	<0.031 U	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
2-Chloronaphthalene	91-58-7	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	<0.0087 U	<0.0091 U	<0.0089 U	<0.009 U	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
2-Nitrobenzenamine	88-74-4	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
3-Nitrobenzenamine	99-09-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	<0.005 U	<0.0052 U	<0.0051 U	<0.0051 U	NA	NA	NA
4-Chlorobenzenamine	106-47-8	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
4-Nitrobenzenamine	100-01-6	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	<0.004 U	<0.0041 U	<0.0041 U	<0.0041 U	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	<0.00004 U	<0.00004 U	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	<0.00004 U	<0.00004 U	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benzenemethanol	100-51-6	NA	NA	NA	NA	NA	<0.0005 U	<0.00052 U	<0.00051 U	<0.00051 U	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA

Station		RQLmw-011	RQLmw-012	RQLmw-013	RQLmw-016	SCFmw-004	SCLmw-001	SCLmw-002	SCLmw-002	SCLmw-003	WBGmw-006	WBGmw-009	WBGmw-020
Sample Id		RQLmw-011-190401-GW	RQLmw-012-190401-GW	RQLmw-013-190401-GW	RQLmw-016-190401-GW	SCFmw-004-190401-GW	SCLmw-001-190401-GW	SCLmw-002-190402-GW	SCLmw-002-190401-GW	SCLmw-003-190401-GW	WBGmw-006-190401-GW	WBGmw-009-190401-GW	WBGmw-020-190401-GW
Date		05/09/19	05/09/19	05/09/19	05/09/19	05/02/19	05/08/19	05/08/19	05/08/19	05/08/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon
Analyte (mg/L)	CAS Number												
Benzoic acid	65-85-0	NA	NA	NA	NA	NA	<0.03 UJ	<0.031 UJ	<0.03 UJ	<0.031 UJ	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
Bis(2-chloroethyl) ether	111-44-4	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
Carbazole	86-74-8	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Dibenzofuran	132-64-9	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	<0.0005 U	<0.00052 U	<0.00051 U	<0.00051 U	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	<0.00004 U	<0.00004 U	NA	NA	NA
Hexachlorobenzene	118-74-1	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
Hexachlorobutadiene	87-68-3	NA	NA	NA	NA	NA	<0.0099 U	<0.01 U	<0.01 U	<0.01 U	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	NA	NA	NA	NA	NA	<0.0099 UJ	<0.01 UJ	<0.01 UJ	<0.01 UJ	NA	NA	NA
Hexachloroethane	67-72-1	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Isophorone	78-59-1	NA	NA	NA	NA	NA	<0.0005 U	<0.00052 U	<0.00051 U	<0.00051 U	NA	NA	NA
N-Nitroso-di-n-propylamine	621-64-7	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	NA	NA	NA	NA	NA	<0.00099 U	<0.001 U	<0.001 UJ	<0.001 U	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	<0.002 U	<0.0021 U	<0.002 U	<0.0021 U	NA	NA	NA
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	<0.06 U	<0.062 U	<0.061 U	<0.062 U	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	<0.0044 U	<0.0045 U	<0.0045 U	<0.0045 U	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	<0.0005 U	<0.00052 U	<0.00051 U	<0.00051 U	NA	NA	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	<0.00041 U	NA	<0.00044 U	<0.00042 U	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	<0.00026 U	NA	<0.00027 U	<0.00026 U	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	<0.00062 U	NA	<0.00065 U	<0.00063 U	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	<0.001 U	NA	<0.0011 U	<0.0011 U	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	<0.00031 U	NA	<0.00033 U	<0.00032 U	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	<0.00026 U	NA	<0.00027 U	<0.00026 U	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	<0.00041 U	NA	<0.00044 U	<0.00042 U	NA	NA	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	<0.00002 UJ	NA	<0.00002 UJ	<0.00002 UJ	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	<0.00005 U	NA	<0.00005 U	<0.00005 U	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	<0.00002 UJ	NA	<0.00002 UJ	<0.00002 UJ	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA

Station		RQLmw-011	RQLmw-012	RQLmw-013	RQLmw-016	SCFmw-004	SCLmw-001	SCLmw-002	SCLmw-002	SCLmw-003	WBGmw-006	WBGmw-009	WBGmw-020
Sample Id		RQLmw-011-190401-GW	RQLmw-012-190401-GW	RQLmw-013-190401-GW	RQLmw-016-190401-GW	SCFmw-004-190401-GW	SCLmw-001-190401-GW	SCLmw-002-190402-GW	SCLmw-002-190401-GW	SCLmw-003-190401-GW	WBGmw-006-190401-GW	WBGmw-009-190401-GW	WBGmw-020-190401-GW
Date		05/09/19	05/09/19	05/09/19	05/09/19	05/02/19	05/08/19	05/08/19	05/08/19	05/08/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon
Analyte (mg/L)	CAS Number												
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	<0.00005 U	NA	<0.00005 U	<0.00005 U	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	<0.00083 U	NA	<0.00087 U	<0.00085 U	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	<0.00002 UJ	NA	<0.00002 UJ	<0.00002 UJ	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	<0.00002 U	NA	<0.00002 U	<0.00002 U	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	<0.00002 UJ	NA	<0.00002 UJ	<0.00002 UJ	NA	NA	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	NA	<0.00015 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
2-Butanone	78-93-3	NA	NA	NA	NA	NA	<0.004 UJ	NA	<0.004 U	<0.004 UJ	NA	NA	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	<0.004 UJ	NA	<0.004 U	<0.004 UJ	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	<0.0032 UJ	NA	<0.0032 U	<0.0032 UJ	NA	NA	NA
Acetone	67-64-1	NA	NA	NA	NA	NA	<0.0064 UJ	NA	0.0021 J	0.0021 J	NA	NA	NA
Benzene	71-43-2	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	NA	<0.0002 UJ	NA	<0.0002 U	<0.0002 UJ	NA	NA	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Bromoform	75-25-2	NA	NA	NA	NA	NA	<0.001 UJ	NA	<0.001 U	<0.001 UJ	NA	NA	NA
Bromomethane	74-83-9	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.00043 UJ	NA	NA	NA
Carbon tetrachloride	56-23-5	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Chloroethane	75-00-3	NA	NA	NA	NA	NA	<0.0016 UJ	NA	<0.0016 U	<0.0016 UJ	NA	NA	NA
Chloroform	67-66-3	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Chloromethane	74-87-3	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Methylene chloride	75-09-2	NA	NA	NA	NA	NA	<0.002 UJ	NA	<0.002 U	<0.002 UJ	NA	NA	NA
Styrene	100-42-5	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA

Station		RQLmw-011	RQLmw-012	RQLmw-013	RQLmw-016	SCFmw-004	SCLmw-001	SCLmw-002	SCLmw-002	SCLmw-003	WBGmw-006	WBGmw-009	WBGmw-020
Sample Id		RQLmw-011-190401-GW	RQLmw-012-190401-GW	RQLmw-013-190401-GW	RQLmw-016-190401-GW	SCFmw-004-190401-GW	SCLmw-001-190401-GW	SCLmw-002-190402-GW	SCLmw-002-190401-GW	SCLmw-003-190401-GW	WBGmw-006-190401-GW	WBGmw-009-190401-GW	WBGmw-020-190401-GW
Date		05/09/19	05/09/19	05/09/19	05/09/19	05/02/19	05/08/19	05/08/19	05/08/19	05/08/19	04/30/19	04/30/19	04/30/19
Sample Type		GR	GR	GR	GR	GR	GR	FD	GR	GR	GR	GR	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon
Analyte (mg/L)	CAS Number												
Toluene	108-88-3	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	NA	<0.0002 UJ	NA	<0.0002 U	<0.0002 UJ	NA	NA	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	NA	<0.0008 UJ	NA	<0.0008 U	<0.0008 UJ	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	NA	<0.0004 UJ	NA	<0.0004 U	<0.0004 UJ	NA	NA	NA

Station		WBGmw-021
Sample Id		WBGmw-021-190401-GW
Date		04/30/19
Sample Type		GR
Filter Status		Total
Aquifer		Upper Sharon
Analyte (mg/L)	CAS Number	
Metals		
Aluminum	7429-90-5	<0.07 U
Antimony	7440-36-0	<0.001 U
Arsenic	7440-38-2	0.0068
Barium	7440-39-3	0.062
Beryllium	7440-41-7	<0.0003 U
Cadmium	7440-43-9	<0.001 U
Calcium	7440-70-2	77
Chromium	7440-47-3	<0.0018 U
Cobalt	7440-48-4	<0.0002 U
Copper	7440-50-8	<0.0018 U
Iron	7439-89-6	0.82
Lead	7439-92-1	<0.0007 U
Magnesium	7439-95-4	19
Manganese	7439-96-5	0.37
Mercury	7439-97-6	<0.00008 U
Nickel	7440-02-0	0.00036 J
Potassium	7440-09-7	1.4 J
Selenium	7782-49-2	<0.001 U
Silver	7440-22-4	<0.0001 U
Sodium	7440-23-5	4.8 J
Thallium	7440-28-0	<0.0002 U
Vanadium	7440-62-2	<0.003 U
Zinc	7440-66-6	<0.008 U
Anions		
Nitrate	14797-55-8	NA
Nitrite	14797-65-0	NA
Sulfate	14808-79-8	NA
Sulfide	18496-25-8	NA
Miscellaneous		
Alkalinity	N33	NA
Chromium, hexavalent	18540-29-9	NA
Cyanide	57-12-5	NA
Perchlorate	14797-73-0	NA
Total Phosphorus as P	7723-14-0	NA
Explosives/Propellants		
1,3,5-Trinitrobenzene	99-35-4	<0.00044 U
1,3-Dinitrobenzene	99-65-0	<0.00022 U
2,4,6-Trinitrotoluene	118-96-7	<0.00044 U
2,4-Dinitrotoluene	121-14-2	<0.00022 U
2,6-Dinitrotoluene	606-20-2	<0.00022 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	<0.00013 U
2-Nitrotoluene	88-72-2	<0.00022 UJ
3-Nitrotoluene	99-08-1	<0.00044 U
4-Amino-2,6-Dinitrotoluene	19406-51-0	<0.00013 U
4-Nitrotoluene	99-99-0	<0.00044 U

Station		WBGmw-021
Sample Id		WBGmw-021-190401-GW
Date		04/30/19
Sample Type		GR
Filter Status		Total
Aquifer		Upper Sharon
Analyte (mg/L)	CAS Number	
HMX	2691-41-0	<0.00022 U
Nitrobenzene	98-95-3	<0.00022 U
Nitrocellulose	9004-70-0	NA
Nitroglycerin	55-63-0	<0.0022 U
Nitroguanidine	556-88-7	NA
PETN	78-11-5	<0.0044 U
RDX	121-82-4	<0.00044 U
Tetryl	479-45-8	<0.00022 U
SVOCs		
1,2,4-Trichlorobenzene	120-82-1	NA
1,2-Dichlorobenzene	95-50-1	NA
1,3-Dichlorobenzene	541-73-1	NA
1,4-Dichlorobenzene	106-46-7	NA
1,4-Dioxane	123-91-1	NA
1-Methylnaphthalene	90-12-0	NA
2,4,5-Trichlorophenol	95-95-4	NA
2,4,6-Trichlorophenol	88-06-2	NA
2,4-Dichlorophenol	120-83-2	NA
2,4-Dimethylphenol	105-67-9	NA
2,4-Dinitrophenol	51-28-5	NA
2,4-Dinitrotoluene	121-14-2	NA
2,6-Dinitrotoluene	606-20-2	NA
2-Chloronaphthalene	91-58-7	NA
2-Chlorophenol	95-57-8	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA
2-Methylnaphthalene	91-57-6	NA
2-Methylphenol	95-48-7	NA
2-Nitrobenzenamine	88-74-4	NA
2-Nitrophenol	88-75-5	NA
3,3'-Dichlorobenzidine	91-94-1	NA
3-Nitrobenzenamine	99-09-2	NA
4-Bromophenyl phenyl ether	101-55-3	NA
4-Chloro-3-methylphenol	59-50-7	NA
4-Chlorobenzenamine	106-47-8	NA
4-Chlorophenyl phenyl ether	7005-72-3	NA
4-Nitrobenzenamine	100-01-6	NA
4-Nitrophenol	100-02-7	NA
Acenaphthene	83-32-9	NA
Acenaphthylene	208-96-8	NA
Anthracene	120-12-7	NA
Benz(a)anthracene	56-55-3	NA
Benzenemethanol	100-51-6	NA
Benzo(a)pyrene	50-32-8	NA
Benzo(b)fluoranthene	205-99-2	NA
Benzo(ghi)perylene	191-24-2	NA
Benzo(k)fluoranthene	207-08-9	NA

	Station	WBGmw-021
	Sample Id	WBGmw-021-190401-GW
	Date	04/30/19
	Sample Type	GR
	Filter Status	Total
	Aquifer	Upper Sharon
Analyte (mg/L)	CAS Number	
Benzoic acid	65-85-0	NA
Bis(2-chloroethoxy)methane	111-91-1	NA
Bis(2-chloroethyl) ether	111-44-4	NA
Bis(2-chloroisopropyl) ether	108-60-1	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA
Butyl benzyl phthalate	85-68-7	NA
Carbazole	86-74-8	NA
Chrysene	218-01-9	NA
Di-n-butyl phthalate	84-74-2	NA
Di-n-octylphthalate	117-84-0	NA
Dibenz(a,h)anthracene	53-70-3	NA
Dibenzofuran	132-64-9	NA
Diethyl phthalate	84-66-2	NA
Dimethyl phthalate	131-11-3	NA
Fluoranthene	206-44-0	NA
Fluorene	86-73-7	NA
Hexachlorobenzene	118-74-1	NA
Hexachlorobutadiene	87-68-3	NA
Hexachlorocyclopentadiene	77-47-4	NA
Hexachloroethane	67-72-1	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA
Isophorone	78-59-1	NA
N-Nitroso-di-n-propylamine	621-64-7	NA
N-Nitrosodiphenylamine	86-30-6	NA
Naphthalene	91-20-3	NA
Nitrobenzene	98-95-3	NA
Pentachlorophenol	87-86-5	NA
Phenanthrene	85-01-8	NA
Phenol	108-95-2	NA
Pyrene	129-00-0	NA
Total Cresols	1319-77-3	NA
PCBs		
PCB-1016	12674-11-2	NA
PCB-1221	11104-28-2	NA
PCB-1232	11141-16-5	NA
PCB-1242	53469-21-9	NA
PCB-1248	12672-29-6	NA
PCB-1254	11097-69-1	NA
PCB-1260	11096-82-5	NA
Pesticides		
4,4'-DDD	72-54-8	NA
4,4'-DDE	72-55-9	NA
4,4'-DDT	50-29-3	NA
Aldrin	309-00-2	NA
Dieldrin	60-57-1	NA
Endosulfan I	959-98-8	NA

	Station	WBGmw-021
	Sample Id	WBGmw-021-190401-GW
	Date	04/30/19
	Sample Type	GR
	Filter Status	Total
	Aquifer	Upper Sharon
Analyte (mg/L)	CAS Number	
Endosulfan II	33213-65-9	NA
Endosulfan sulfate	1031-07-8	NA
Endrin	72-20-8	NA
Endrin aldehyde	7421-93-4	NA
Endrin ketone	53494-70-5	NA
Heptachlor	76-44-8	NA
Heptachlor epoxide	1024-57-3	NA
Lindane	58-89-9	NA
Methoxychlor	72-43-5	NA
Toxaphene	8001-35-2	NA
alpha-BHC	319-84-6	NA
alpha-Chlordane	5103-71-9	NA
beta-BHC	319-85-7	NA
delta-BHC	319-86-8	NA
gamma-Chlordane	5103-74-2	NA
VOCs		
1,1,1-Trichloroethane	71-55-6	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA
1,1,2-Trichloroethane	79-00-5	NA
1,1-Dichloroethane	75-34-3	NA
1,1-Dichloroethene	75-35-4	NA
1,2-Dibromoethane	106-93-4	NA
1,2-Dichloroethane	107-06-2	NA
1,2-Dichloroethene	540-59-0	NA
1,2-Dichloropropane	78-87-5	NA
2-Butanone	78-93-3	NA
2-Hexanone	591-78-6	NA
4-Methyl-2-pentanone	108-10-1	NA
Acetone	67-64-1	NA
Benzene	71-43-2	NA
Bromobenzene	108-86-1	NA
Bromochloromethane	74-97-5	NA
Bromodichloromethane	75-27-4	NA
Bromoform	75-25-2	NA
Bromomethane	74-83-9	NA
Carbon disulfide	75-15-0	NA
Carbon tetrachloride	56-23-5	NA
Chlorobenzene	108-90-7	NA
Chloroethane	75-00-3	NA
Chloroform	67-66-3	NA
Chloromethane	74-87-3	NA
Dibromochloromethane	124-48-1	NA
Ethylbenzene	100-41-4	NA
Methylene chloride	75-09-2	NA
Styrene	100-42-5	NA
Tetrachloroethene	127-18-4	NA

Station		WBGmw-021
Sample Id		WBGmw-021-190401-GW
Date		04/30/19
Sample Type		GR
Filter Status		Total
Aquifer		Upper Sharon
Analyte (mg/L)	CAS Number	
Toluene	108-88-3	NA
Trichloroethene	79-01-6	NA
Vinyl chloride	75-01-4	NA
Xylenes, total	1330-20-7	NA
cis-1,3-Dichloropropene	10061-01-5	NA
trans-1,3-Dichloropropene	10061-02-6	NA

F.2 Chemical-Specific Screening Criteria

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Appendix F.2 Chemical-Specific Screening Criteria

			Screening Criteria (mg/L)				Selected Screening Criteria		Background Concentration (mg/L)			
Analysis Type	Chemical	CAS No	NGT CUG	Resident CUG	MCL	Tapwater RSL	Criteria (mg/L)	Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
Anions	Nitrate	14797-55-8	52.283	1.666	10	3.2	10	MCL	---	---	---	---
Anions	Nitrite	14797-65-0	---	---	1	0.2	1	MCL	---	---	---	---
Anions	Sulfate	14808-79-8	---	---	---	---	---	---	---	---	---	---
Anions	Sulfide	18496-25-8	---	---	---	---	---	---	---	---	---	---
Explosives/Propellants	1,3,5-Trinitrobenzene	99-35-4	---	---	---	0.059	0.059	RSL	---	---	---	---
Explosives/Propellants	1,3-Dinitrobenzene	99-65-0	0.00328	0.000104	---	0.0002	0.0002	RSL	---	---	---	---
Explosives/Propellants	2,4,6-Trinitrotoluene	118-96-7	0.0164	0.000521	---	0.00098	0.00098	RSL	---	---	---	---
Explosives/Propellants	2,4-Dinitrotoluene	121-14-2	0.00129	0.00012	---	0.00024	0.00024	RSL	---	---	---	---
Explosives/Propellants	2,6-Dinitrotoluene	606-20-2	0.00131	0.000122	---	0.000049	0.000122	RA	---	---	---	---
Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	35572-78-2	0.00655	0.000209	---	0.0039	0.0039	RSL	---	---	---	---
Explosives/Propellants	2-Nitrotoluene	88-72-2	0.00399	0.00037	---	0.00031	0.00037	RA	---	---	---	---
Explosives/Propellants	3-Nitrotoluene	99-08-1	---	---	---	0.00017	0.00017	RSL	---	---	---	---
Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	19406-51-0	0.00655	0.000209	---	0.0039	0.0039	RSL	---	---	---	---
Explosives/Propellants	4-Nitrotoluene	99-99-0	0.054	0.00501	---	0.0043	0.00501	RA	---	---	---	---
Explosives/Propellants	HMX	2691-41-0	---	---	---	0.1	0.1	RSL	---	---	---	---
Explosives/Propellants	Nitrobenzene	98-95-3	0.0164	0.000521	---	0.00014	0.000521	RC	---	---	---	---
Explosives/Propellants	Nitrocellulose	9004-70-0	---	---	---	6000	6000	RSL	---	---	---	---
Explosives/Propellants	Nitroglycerin	55-63-0	0.054	0.00501	---	0.0002	0.00501	RA	---	---	---	---
Explosives/Propellants	Nitroguanidine	556-88-7	---	---	---	0.2	0.2	RSL	---	---	---	---
Explosives/Propellants	PETN	78-11-5	---	---	---	0.0039	0.0039	RSL	---	---	---	---
Explosives/Propellants	RDX	121-82-4	0.00834	0.000774	---	0.00097	0.00097	RSL	---	---	---	---
Explosives/Propellants	Tetryl	479-45-8	---	---	---	0.0039	0.0039	RSL	---	---	---	---
Metals, Filtered	Aluminum	7429-90-5	31.981	1.028	---	2	2	RSL	0.386	0.43	0.038	0.049
Metals, Filtered	Antimony	7440-36-0	0.0117	0.000389	0.006	0.00078	0.006	MCL	0	0	0	0.0006
Metals, Filtered	Arsenic	7440-38-2	0.000608	0.000056	0.01	0.000052	0.01	MCL	0.003	0.008	0.003	0.048
Metals, Filtered	Barium	7440-39-3	6.332	0.204	2	0.38	2	MCL	0.034	0.177	0.035	0.145
Metals, Filtered	Beryllium	7440-41-7	---	---	0.004	0.0025	0.004	MCL	0	0	0	0.00023
Metals, Filtered	Cadmium	7440-43-9	0.0132	0.000456	0.005	0.00092	0.005	MCL	0	0	0	0
Metals, Filtered	Calcium	7440-70-2	---	---	---	---	---	---	107	143	118	93
Metals, Filtered	Chromium	7440-47-3	33.087	1.214	0.1	2.2	0.1	MCL	0.002	0.007	0	0.00074
Metals, Filtered	Cobalt	7440-48-4	0.654	0.0208	---	0.0006	0.0208	RC	0.00083	0.003	0.001	0.005
Metals, Filtered	Copper	7440-50-8	---	---	1.3	0.08	1.3	MCL	0.005	0.002	0.001	0.00069
Metals, Filtered	Iron	7439-89-6	9.671	0.31	---	1.4	1.4	RSL	1.91	22.3	2.08	2.56
Metals, Filtered	Lead	7439-92-1	---	---	0.015	0.015	0.015	MCL	0.00099	0.00032	0.002	0.00022
Metals, Filtered	Magnesium	7439-95-4	---	---	---	---	---	---	55.3	37.5	38.9	30
Metals, Filtered	Manganese	7439-96-5	1.421	0.0463	---	0.043	0.0463	RC	0.075	0.56	0.198	1.03
Metals, Filtered	Mercury	7439-97-6	---	---	0.002	0.000063	0.002	MCL	0	0	0	0
Metals, Filtered	Nickel	7440-02-0	0.654	0.0208	---	0.039	0.039	RSL	0.002	0.005	0.002	0.014
Metals, Filtered	Potassium	7440-09-7	---	---	---	---	---	---	4.84	2.01	3.38	2.9
Metals, Filtered	Selenium	7782-49-2	---	---	0.05	0.01	0.05	MCL	0.00099	0	0.001	0
Metals, Filtered	Silver	7440-22-4	---	---	---	0.0094	0.0094	RSL	0	0	0	0
Metals, Filtered	Sodium	7440-23-5	---	---	---	---	---	---	18.2	21	129	15.3
Metals, Filtered	Thallium	7440-28-0	0.00261	0.000083	0.002	0.00002	0.002	MCL	0	0	0	0.000097
Metals, Filtered	Vanadium	7440-62-2	0.185	0.00638	---	0.0086	0.0086	RSL	0.0005	0.0007	0.00085	0
Metals, Filtered	Zinc	7440-66-6	9.756	0.312	---	0.6	0.6	RSL	0.005	0.011	0.009	0.003
Metals, Total	Aluminum	7429-90-5	31.981	1.028	---	2	2	RSL	0.386	0.43	0.038	0.049
Metals, Total	Antimony	7440-36-0	0.0117	0.000389	0.006	0.00078	0.006	MCL	0	0	0	0.0006
Metals, Total	Arsenic	7440-38-2	0.000608	0.000056	0.01	0.000052	0.01	MCL	0.003	0.008	0.003	0.048
Metals, Total	Barium	7440-39-3	6.332	0.204	2	0.38	2	MCL	0.034	0.177	0.035	0.145
Metals, Total	Beryllium	7440-41-7	---	---	0.004	0.0025	0.004	MCL	0	0	0	0.00023
Metals, Total	Cadmium	7440-43-9	0.0132	0.000456	0.005	0.00092	0.005	MCL	0	0	0	0
Metals, Total	Calcium	7440-70-2	---	---	---	---	---	---	107	143	118	93
Metals, Total	Chromium	7440-47-3	33.087	1.214	0.1	2.2	0.1	MCL	0.002	0.007	0	0.00074

Appendix F.2 Chemical-Specific Screening Criteria (continued)

			Screening Criteria (mg/L)				Selected Screening Criteria		Background Concentration (mg/L)			
Analysis Type	Chemical	CAS No	NGT CUG	Resident CUG	MCL	Tapwater RSL	Criteria (mg/L)	Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
Metals, Total	Cobalt	7440-48-4	0.654	0.0208	---	0.0006	0.0208	RC	0.00083	0.003	0.001	0.005
Metals, Total	Copper	7440-50-8	---	---	1.3	0.08	1.3	MCL	0.005	0.002	0.001	0.00069
Metals, Total	Iron	7439-89-6	9.671	0.31	---	1.4	1.4	RSL	1.91	22.3	2.08	2.56
Metals, Total	Lead	7439-92-1	---	---	0.015	0.015	0.015	MCL	0.00099	0.00032	0.002	0.00022
Metals, Total	Magnesium	7439-95-4	---	---	---	---	---	---	55.3	37.5	38.9	30
Metals, Total	Manganese	7439-96-5	1.421	0.0463	---	0.043	0.0463	RC	0.075	0.56	0.198	1.03
Metals, Total	Mercury	7439-97-6	---	---	0.002	0.000063	0.002	MCL	0	0	0	0
Metals, Total	Nickel	7440-02-0	0.654	0.0208	---	0.039	0.039	RSL	0.002	0.005	0.002	0.014
Metals, Total	Potassium	7440-09-7	---	---	---	---	---	---	4.84	2.01	3.38	2.9
Metals, Total	Selenium	7782-49-2	---	---	0.05	0.01	0.05	MCL	0.00099	0	0.001	0
Metals, Total	Silver	7440-22-4	---	---	---	0.0094	0.0094	RSL	0	0	0	0
Metals, Total	Sodium	7440-23-5	---	---	---	---	---	---	18.2	21	129	15.3
Metals, Total	Thallium	7440-28-0	0.00261	0.000083	0.002	0.00002	0.002	MCL	0	0	0	0.000097
Metals, Total	Vanadium	7440-62-2	0.185	0.00638	---	0.0086	0.0086	RSL	0.0005	0.0007	0.00085	0
Metals, Total	Zinc	7440-66-6	9.756	0.312	---	0.6	0.6	RSL	0.005	0.011	0.009	0.003
Miscellaneous	Alkalinity	N33	---	---	---	---	---	---	---	---	---	---
Miscellaneous	Chromium, hexavalent	18540-29-9	---	---	---	0.000035	0.000035	RSL	0	0	0	0
Miscellaneous	Cyanide	57-12-5	---	---	0.2	0.00015	0.2	MCL	---	---	---	---
Miscellaneous	Perchlorate	14797-73-0	---	---	---	0.0014	0.0014	RSL	---	---	---	---
Miscellaneous	Total Phosphorus as P	7723-14-0	---	---	---	0.00004	0.00004	RSL	---	---	---	---
PCBs	PCB-1016	12674-11-2	---	---	---	0.00014	0.00014	RSL	---	---	---	---
PCBs	PCB-1221	11104-28-2	---	---	---	0.0000047	0.0000047	RSL	---	---	---	---
PCBs	PCB-1232	11141-16-5	---	---	---	0.0000047	0.0000047	RSL	---	---	---	---
PCBs	PCB-1242	53469-21-9	0.00229	0.000213	---	0.0000078	0.000213	RA	---	---	---	---
PCBs	PCB-1248	12672-29-6	---	---	---	0.0000078	0.0000078	RSL	---	---	---	---
PCBs	PCB-1254	11097-69-1	0.000655	0.000021	---	0.0000078	0.000021	RC	---	---	---	---
PCBs	PCB-1260	11096-82-5	0.00229	0.000213	---	0.0000078	0.000213	RA	---	---	---	---
Pesticides	4,4'-DDD	72-54-8	0.000639	0.000059	---	0.0000063	0.000059	RA	---	---	---	---
Pesticides	4,4'-DDE	72-55-9	0.000503	0.000047	---	0.000046	0.000047	RA	---	---	---	---
Pesticides	4,4'-DDT	50-29-3	0.000294	0.000027	---	0.00023	0.00023	RSL	---	---	---	---
Pesticides	Aldrin	309-00-2	0.000051	0.000005	---	9.2E-07	0.000005	RA	---	---	---	---
Pesticides	Dieldrin	60-57-1	0.000038	0.000004	---	0.0000018	0.000004	RA	---	---	---	---
Pesticides	Endosulfan I	959-98-8	---	---	---	0.01	0.01	RSL	---	---	---	---
Pesticides	Endosulfan II	33213-65-9	---	---	---	0.01	0.01	RSL	---	---	---	---
Pesticides	Endosulfan sulfate	1031-07-8	---	---	---	0.01	0.01	RSL	---	---	---	---
Pesticides	Endrin	72-20-8	---	---	0.002	0.00023	0.002	MCL	---	---	---	---
Pesticides	Endrin aldehyde	7421-93-4	---	---	---	0.00023	0.00023	RSL	---	---	---	---
Pesticides	Endrin ketone	53494-70-5	---	---	---	0.00023	0.00023	RSL	---	---	---	---
Pesticides	Heptachlor	76-44-8	0.000153	0.000014	0.0004	0.0000014	0.0004	MCL	---	---	---	---
Pesticides	Heptachlor epoxide	1024-57-3	0.000101	0.000009	0.0002	0.0000014	0.0002	MCL	---	---	---	---
Pesticides	Lindane	58-89-9	0.00055	0.000051	0.0002	0.000042	0.0002	MCL	---	---	---	---
Pesticides	Methoxychlor	72-43-5	---	---	0.04	0.0037	0.04	MCL	---	---	---	---
Pesticides	Toxaphene	8001-35-2	0.000518	0.000048	0.003	0.000071	0.003	MCL	---	---	---	---
Pesticides	alpha-BHC	319-84-6	0.000146	0.000014	---	0.0000072	0.000014	RA	---	---	---	---
Pesticides	alpha-Chlordane	5103-71-9	---	---	---	0.00002	0.00002	RSL	---	---	---	---
Pesticides	beta-BHC	319-85-7	0.00051	0.000047	---	0.000025	0.000047	RA	---	---	---	---
Pesticides	delta-BHC	319-86-8	---	---	---	---	---	---	---	---	---	---
Pesticides	gamma-Chlordane	5103-74-2	---	---	---	0.00002	0.00002	RSL	---	---	---	---
SVOCs	1,2,4-Trichlorobenzene	120-82-1	---	---	0.07	0.0004	0.07	MCL	---	---	---	---
SVOCs	1,2-Dichlorobenzene	95-50-1	---	---	0.6	0.03	0.6	MCL	---	---	---	---
SVOCs	1,3-Dichlorobenzene	541-73-1	---	---	---	---	---	---	---	---	---	---
SVOCs	1,4-Dichlorobenzene	106-46-7	---	---	0.075	0.00048	0.075	MCL	---	---	---	---
SVOCs	1,4-Dioxane	123-91-1	---	---	---	0.00046	0.00046	RSL	---	---	---	---

			Screening Criteria (mg/L)				Selected Screening Criteria		Background Concentration (mg/L)			
Analysis Type	Chemical	CAS No	NGT CUG	Resident CUG	MCL	Tapwater RSL	Criteria (mg/L)	Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
SVOCs	1-Methylnaphthalene	90-12-0	---	---	---	0.0011	0.0011	RSL	---	---	---	---
SVOCs	2,4,5-Trichlorophenol	95-95-4	---	---	---	0.12	0.12	RSL	---	---	---	---
SVOCs	2,4,6-Trichlorophenol	88-06-2	---	---	---	0.0012	0.0012	RSL	---	---	---	---
SVOCs	2,4-Dichlorophenol	120-83-2	---	---	---	0.0046	0.0046	RSL	---	---	---	---
SVOCs	2,4-Dimethylphenol	105-67-9	---	---	---	0.036	0.036	RSL	---	---	---	---
SVOCs	2,4-Dinitrophenol	51-28-5	---	---	---	0.0039	0.0039	RSL	---	---	---	---
SVOCs	2,4-Dinitrotoluene	121-14-2	0.00129	0.00012	---	0.00024	0.00024	RSL	---	---	---	---
SVOCs	2,6-Dinitrotoluene	606-20-2	0.00131	0.000122	---	0.000049	0.000122	RA	---	---	---	---
SVOCs	2-Chloronaphthalene	91-58-7	---	---	---	0.075	0.075	RSL	---	---	---	---
SVOCs	2-Chlorophenol	95-57-8	---	---	---	0.0091	0.0091	RSL	---	---	---	---
SVOCs	2-Methyl-4,6-dinitrophenol	534-52-1	---	---	---	0.00015	0.00015	RSL	---	---	---	---
SVOCs	2-Methylnaphthalene	91-57-6	---	---	---	0.0036	0.0036	RSL	---	---	---	---
SVOCs	2-Methylphenol	95-48-7	---	---	---	0.093	0.093	RSL	---	---	---	---
SVOCs	2-Nitrobenzenamine	88-74-4	---	---	---	0.019	0.019	RSL	---	---	---	---
SVOCs	2-Nitrophenol	88-75-5	---	---	---	---	---	---	---	---	---	---
SVOCs	3,3'-Dichlorobenzidine	91-94-1	---	---	---	0.00013	0.00013	RSL	---	---	---	---
SVOCs	3-Nitrobenzenamine	99-09-2	---	---	---	---	---	---	---	---	---	---
SVOCs	4-Bromophenyl phenyl ether	101-55-3	---	---	---	---	---	---	---	---	---	---
SVOCs	4-Chloro-3-methylphenol	59-50-7	---	---	---	0.14	0.14	RSL	---	---	---	---
SVOCs	4-Chlorobenzenamine	106-47-8	---	---	---	0.00037	0.00037	RSL	---	---	---	---
SVOCs	4-Chlorophenyl phenyl ether	7005-72-3	---	---	---	---	---	---	---	---	---	---
SVOCs	4-Nitrobenzenamine	100-01-6	0.0437	0.00313	---	0.0038	0.0038	RSL	---	---	---	---
SVOCs	4-Nitrophenol	100-02-7	---	---	---	---	---	---	---	---	---	---
SVOCs	Acenaphthene	83-32-9	---	---	---	0.053	0.053	RSL	---	---	---	---
SVOCs	Acenaphthylene	208-96-8	---	---	---	0.012	0.012	RSL	---	---	---	---
SVOCs	Anthracene	120-12-7	---	---	---	0.18	0.18	RSL	---	---	---	---
SVOCs	Benz(a)anthracene	56-55-3	0.000042	0.000004	---	0.00003	0.00003	RSL	---	---	---	---
SVOCs	Benzenemethanol	100-51-6	---	---	---	0.2	0.2	RSL	---	---	---	---
SVOCs	Benzo(a)pyrene	50-32-8	0.000002	0.00000023	0.0002	0.000025	0.0002	MCL	---	---	---	---
SVOCs	Benzo(b)fluoranthene	205-99-2	0.000024	0.000002	---	0.00025	0.00025	RSL	---	---	---	---
SVOCs	Benzo(ghi)perylene	191-24-2	---	---	---	0.012	0.012	RSL	---	---	---	---
SVOCs	Benzo(k)fluoranthene	207-08-9	---	---	---	0.0025	0.0025	RSL	---	---	---	---
SVOCs	Benzoic acid	65-85-0	---	---	---	7.5	7.5	RSL	---	---	---	---
SVOCs	Bis(2-chloroethoxy)methane	111-91-1	---	---	---	0.0059	0.0059	RSL	---	---	---	---
SVOCs	Bis(2-chloroethyl) ether	111-44-4	---	---	---	0.000014	0.000014	RSL	---	---	---	---
SVOCs	Bis(2-chloroisopropyl) ether	108-60-1	---	---	---	0.071	0.071	RSL	---	---	---	---
SVOCs	Bis(2-ethylhexyl)phthalate	117-81-7	0.0097	0.0009	0.006	0.0056	0.006	MCL	---	---	---	---
SVOCs	Butyl benzyl phthalate	85-68-7	---	---	---	0.016	0.016	RSL	---	---	---	---
SVOCs	Carbazole	86-74-8	---	---	---	---	---	---	---	---	---	---
SVOCs	Chrysene	218-01-9	---	---	---	0.025	0.025	RSL	---	---	---	---
SVOCs	Di-n-butyl phthalate	84-74-2	---	---	---	0.09	0.09	RSL	---	---	---	---
SVOCs	Di-n-octylphthalate	117-84-0	---	---	---	0.02	0.02	RSL	---	---	---	---
SVOCs	Dibenz(a,h)anthracene	53-70-3	0.000002	0.00000015	---	0.000025	0.000025	RSL	---	---	---	---
SVOCs	Dibenzofuran	132-64-9	---	---	---	0.00079	0.00079	RSL	---	---	---	---
SVOCs	Diethyl phthalate	84-66-2	---	---	---	1.5	1.5	RSL	---	---	---	---
SVOCs	Dimethyl phthalate	131-11-3	---	---	---	---	---	---	---	---	---	---
SVOCs	Fluoranthene	206-44-0	---	---	---	0.08	0.08	RSL	---	---	---	---
SVOCs	Fluorene	86-73-7	---	---	---	0.029	0.029	RSL	---	---	---	---
SVOCs	Hexachlorobenzene	118-74-1	---	---	0.001	0.0000098	0.001	MCL	---	---	---	---
SVOCs	Hexachlorobutadiene	87-68-3	---	---	---	0.00014	0.00014	RSL	---	---	---	---
SVOCs	Hexachlorocyclopentadiene	77-47-4	---	---	0.05	0.000041	0.05	MCL	---	---	---	---
SVOCs	Hexachloroethane	67-72-1	---	---	---	0.00033	0.00033	RSL	---	---	---	---
SVOCs	Indeno(1,2,3-cd)pyrene	193-39-5	0.000024	0.000002	---	0.00025	0.00025	RSL	---	---	---	---

Appendix F.2 Chemical-Specific Screening Criteria (continued)

			Screening Criteria (mg/L)				Selected Screening Criteria		Background Concentration (mg/L)			
Analysis Type	Chemical	CAS No	NGT CUG	Resident CUG	MCL	Tapwater RSL	Criteria (mg/L)	Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
SVOCs	Isophorone	78-59-1	---	---	---	0.078	0.078	RSL	---	---	---	---
SVOCs	N-Nitroso-di-n-propylamine	621-64-7	---	---	---	0.000011	0.000011	RSL	---	---	---	---
SVOCs	N-Nitrosodiphenylamine	86-30-6	---	---	---	0.012	0.012	RSL	---	---	---	---
SVOCs	Naphthalene	91-20-3	---	---	---	0.00017	0.00017	RSL	---	---	---	---
SVOCs	Nitrobenzene	98-95-3	0.0164	0.000521	---	0.00014	0.000521	RC	---	---	---	---
SVOCs	Pentachlorophenol	87-86-5	0.000797	0.000074	0.001	0.000041	0.001	MCL	---	---	---	---
SVOCs	Phenanthrene	85-01-8	---	---	---	0.012	0.012	RSL	---	---	---	---
SVOCs	Phenol	108-95-2	---	---	---	0.58	0.58	RSL	---	---	---	---
SVOCs	Pyrene	129-00-0	---	---	---	0.012	0.012	RSL	---	---	---	---
SVOCs	Total Cresols	1319-77-3	---	---	---	0.15	0.15	RSL	---	---	---	---
VOCs	1,1,1-Trichloroethane	71-55-6	---	---	0.2	0.8	0.2	MCL	---	---	---	---
VOCs	1,1,2,2-Tetrachloroethane	79-34-5	0.000744	0.000069	---	0.000076	0.000076	RSL	---	---	---	---
VOCs	1,1,2-Trichloroethane	79-00-5	---	---	0.005	0.000041	0.005	MCL	---	---	---	---
VOCs	1,1-Dichloroethane	75-34-3	---	---	---	0.0028	0.0028	RSL	---	---	---	---
VOCs	1,1-Dichloroethene	75-35-4	---	---	0.007	0.028	0.007	MCL	---	---	---	---
VOCs	1,2-Dibromoethane	106-93-4	---	---	0.00005	0.0000075	0.00005	MCL	---	---	---	---
VOCs	1,2-Dichloroethane	107-06-2	0.00167	0.000155	0.005	0.00017	0.005	MCL	---	---	---	---
VOCs	1,2-Dichloroethene	540-59-0	---	---	0.07	0.0036	0.07	MCL	---	---	---	---
VOCs	1,2-Dichloropropane	78-87-5	---	---	0.005	0.00082	0.005	MCL	---	---	---	---
VOCs	2-Butanone	78-93-3	---	---	---	0.56	0.56	RSL	---	---	---	---
VOCs	2-Hexanone	591-78-6	---	---	---	0.0038	0.0038	RSL	---	---	---	---
VOCs	4-Methyl-2-pentanone	108-10-1	---	---	---	0.63	0.63	RSL	---	---	---	---
VOCs	Acetone	67-64-1	---	---	---	1.4	1.4	RSL	---	---	---	---
VOCs	Benzene	71-43-2	0.00464	0.000431	0.005	0.00046	0.005	MCL	---	---	---	---
VOCs	Bromobenzene	108-86-1	---	---	---	0.0062	0.0062	RSL	---	---	---	---
VOCs	Bromochloromethane	74-97-5	---	---	---	0.0083	0.0083	RSL	---	---	---	---
VOCs	Bromodichloromethane	75-27-4	---	---	---	0.00013	0.00013	RSL	---	---	---	---
VOCs	Bromoform	75-25-2	---	---	---	0.0033	0.0033	RSL	---	---	---	---
VOCs	Bromomethane	74-83-9	---	---	---	0.00075	0.00075	RSL	---	---	---	---
VOCs	Carbon disulfide	75-15-0	---	---	---	0.081	0.081	RSL	---	---	---	---
VOCs	Carbon tetrachloride	56-23-5	0.0022	0.000204	0.005	0.00046	0.005	MCL	---	---	---	---
VOCs	Chlorobenzene	108-90-7	---	---	0.1	0.0078	0.1	MCL	---	---	---	---
VOCs	Chloroethane	75-00-3	---	---	---	2.1	2.1	RSL	---	---	---	---
VOCs	Chloroform	67-66-3	0.00223	0.000207	0.08	0.00022	0.08	MCL	---	---	---	---
VOCs	Chloromethane	74-87-3	---	---	---	0.019	0.019	RSL	---	---	---	---
VOCs	Dibromochloromethane	124-48-1	---	---	---	0.00087	0.00087	RSL	---	---	---	---
VOCs	Ethylbenzene	100-41-4	---	---	0.7	0.0015	0.7	MCL	---	---	---	---
VOCs	Methylene chloride	75-09-2	0.0575	0.00534	0.005	0.011	0.005	MCL	---	---	---	---
VOCs	Styrene	100-42-5	---	---	0.1	0.12	0.1	MCL	---	---	---	---
VOCs	Tetrachloroethene	127-18-4	0.00105	0.000098	0.005	0.0041	0.005	MCL	---	---	---	---
VOCs	Toluene	108-88-3	---	---	1	0.11	1	MCL	---	---	---	---
VOCs	Trichloroethene	79-01-6	0.000336	0.000031	0.005	0.00028	0.005	MCL	---	---	---	---
VOCs	Vinyl chloride	75-01-4	---	---	0.002	0.000019	0.002	MCL	---	---	---	---
VOCs	Xylenes, total	1330-20-7	---	---	10	0.019	10	MCL	---	---	---	---
VOCs	cis-1,3-Dichloropropene	10061-01-5	---	---	---	0.00047	0.00047	RSL	---	---	---	---
VOCs	trans-1,3-Dichloropropene	10061-02-6	---	---	---	0.00047	0.00047	RSL	---	---	---	---

F.3 Spring 2019 Results that Exceed Screening Criteria

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Appendix F.3 Spring 2019 Results that Exceed Screening Criteria

Zone	Well	Date Collected	Sample ID	Sample Type	Analysis Type	Chemical	Result (mg/L)	Validation Qual	GW Screening Criteria (mg/L)	GW Screening Criteria Source	Background Criteria
Upper Sharon	DA2mw-115	4/29/2019	DA2mw-115-190402-GW	Field Duplicate	Metals, Total	Potassium	3.4				3.38
Unconsolidated	DET-3	4/29/2019	DET-003-190401-GW	Grab	Metals, Total	Manganese	0.24		0.0463	RC	0.075
Unconsolidated	DET-3	4/29/2019	DET-003-190402-GW	Field Duplicate	Metals, Total	Manganese	0.24		0.0463	RC	0.075
Unconsolidated	DET-4	4/29/2019	DET-004-190401-GW	Grab	Explosives/Propellants	RDX	0.0014		0.00097	RSL	
Unconsolidated	DET-4	4/29/2019	DET-004-190401-GW	Grab	Metals, Total	Calcium	120				107
Homewood	FBQmw-171	4/30/2019	FBQmw-171-190401-GW	Grab	Anions	Sulfate	24				
Homewood	FBQmw-171	4/30/2019	FBQmw-171-190401-GW	Grab	Miscellaneous	Alkalinity	41				
Homewood	FBQmw-174	4/30/2019	FBQmw-174-190401-GW	Grab	Anions	Sulfate	15				
Homewood	FBQmw-174	4/30/2019	FBQmw-174-190401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.01		0.00098	RSL	
Homewood	FBQmw-174	4/30/2019	FBQmw-174-190401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.00067		0.00024	RSL	
Homewood	FBQmw-174	4/30/2019	FBQmw-174-190401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.015		0.0039	RSL	
Homewood	FBQmw-174	4/30/2019	FBQmw-174-190401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.014		0.0039	RSL	
Homewood	FBQmw-174	4/30/2019	FBQmw-174-190401-GW	Grab	Explosives/Propellants	RDX	0.0012	J	0.00097	RSL	
Homewood	FBQmw-174	4/30/2019	FBQmw-174-190401-GW	Grab	Miscellaneous	Alkalinity	4.8	J			
Homewood	FBQmw-175	5/7/2019	FBQmw-175-190401-GW	Grab	Anions	Sulfate	20				
Homewood	FBQmw-175	5/7/2019	FBQmw-175-190401-GW	Grab	Miscellaneous	Alkalinity	13				
Homewood	FBQmw-175	5/7/2019	FBQmw-175-190402-GW	Field Duplicate	Anions	Sulfate	18				
Homewood	FBQmw-175	5/7/2019	FBQmw-175-190402-GW	Field Duplicate	Miscellaneous	Alkalinity	12				
Unconsolidated	FWGmw-007	4/30/2019	FWGmw-007-190401-GW	Grab	Metals, Total	Calcium	130				107
Unconsolidated	FWGmw-007	4/30/2019	FWGmw-007-190401-GW	Grab	Metals, Total	Magnesium	66				55.3
Unconsolidated	FWGmw-007	4/30/2019	FWGmw-007-190401-GW	Grab	Metals, Total	Manganese	0.13		0.0463	RC	0.075
Unconsolidated	FWGmw-011	5/7/2019	FWGmw-011-190401-GW	Grab	Metals, Total	Iron	8.2		1.4	RSL	1.91
Unconsolidated	FWGmw-011	5/7/2019	FWGmw-011-190401-GW	Grab	Metals, Total	Manganese	0.29		0.0463	RC	0.075
Upper Sharon	FWGmw-012	5/7/2019	FWGmw-012-190401-GW	Grab	Metals, Total	Iron	2.4		1.4	RSL	2.08
Upper Sharon	FWGmw-012	5/7/2019	FWGmw-012-190401-GW	Grab	Metals, Total	Potassium	3.6				3.38
Unconsolidated	FWGmw-015	5/8/2019	FWGmw-015-190401-GW	Grab	Metals, Total	Calcium	280				107
Unconsolidated	FWGmw-015	5/8/2019	FWGmw-015-190401-GW	Grab	Metals, Total	Magnesium	290				55.3
Unconsolidated	FWGmw-015	5/8/2019	FWGmw-015-190401-GW	Grab	Metals, Total	Sodium	44	J			18.2
Upper Sharon	FWGmw-016	4/29/2019	FWGmw-016-190401-GW	Grab	Metals, Total	Manganese	0.22		0.0463	RC	0.198
Upper Sharon	FWGmw-020	5/13/2019	FWGmw-020-190401-GW	Grab	Metals, Total	Arsenic	0.023		0.01	MCL	0.003
Upper Sharon	FWGmw-020	5/13/2019	FWGmw-020-190401-GW	Grab	Metals, Total	Potassium	4.6				3.38
Upper Sharon	FWGmw-024	5/9/2019	FWGmw-024-190401-GW	Grab	Metals, Total	Manganese	0.33		0.0463	RC	0.198
Unconsolidated	L12mw-185	5/1/2019	LL12mw-185-190401-GW	Grab	Anions	Nitrate	92		10	MCL	
Unconsolidated	L12mw-187	5/2/2019	LL12mw-187-190401-GW	Grab	Anions	Nitrate	1600		10	MCL	
Unconsolidated	L12mw-187	5/2/2019	LL12mw-187-190401-GW	Grab	Metals, Total	Calcium	1000				107
Unconsolidated	L12mw-187	5/2/2019	LL12mw-187-190401-GW	Grab	Metals, Total	Magnesium	320	J			55.3
Unconsolidated	L12mw-187	5/2/2019	LL12mw-187-190401-GW	Grab	Metals, Total	Manganese	2.9		0.0463	RC	0.075
Unconsolidated	L12mw-187	5/2/2019	LL12mw-187-190401-GW	Grab	Metals, Total	Potassium	58				4.84
Unconsolidated	L12mw-187	5/2/2019	LL12mw-187-190401-GW	Grab	Metals, Total	Sodium	44	J			18.2
Unconsolidated	L12mw-242	5/1/2019	LL12mw-242-190401-GW	Grab	Metals, Filtered	Arsenic	0.013	J	0.01	MCL	0.003
Unconsolidated	L12mw-242	5/1/2019	LL12mw-242-190401-GW	Grab	Metals, Filtered	Iron	2		1.4	RSL	1.91
Unconsolidated	L12mw-242	5/1/2019	LL12mw-242-190401-GW	Grab	Metals, Filtered	Sodium	26				18.2
Unconsolidated	L12mw-242	5/1/2019	LL12mw-242-190401-GW	Grab	Metals, Total	Arsenic	0.022		0.01	MCL	0.003
Unconsolidated	L12mw-242	5/1/2019	LL12mw-242-190401-GW	Grab	Metals, Total	Iron	3.8		1.4	RSL	1.91
Unconsolidated	L12mw-242	5/1/2019	LL12mw-242-190401-GW	Grab	Metals, Total	Sodium	29	J			18.2
Unconsolidated	L12mw-245	5/2/2019	LL12mw-245-190401-GW	Grab	Metals, Total	Arsenic	0.012		0.01	MCL	0.003
Unconsolidated	L12mw-245	5/2/2019	LL12mw-245-190401-GW	Grab	Metals, Total	Calcium	140				107
Unconsolidated	L12mw-245	5/2/2019	LL12mw-245-190401-GW	Grab	Metals, Total	Magnesium	67				55.3
Unconsolidated	L12mw-245	5/2/2019	LL12mw-245-190401-GW	Grab	Metals, Total	Sodium	25	J			18.2
Unconsolidated	L12mw-247	5/1/2019	LL12mw-247-190401-GW	Grab	Metals, Total	Manganese	0.16		0.0463	RC	0.075
Unconsolidated	L12mw-247	5/1/2019	LL12mw-247-190401-GW	Grab	Metals, Total	Sodium	22				18.2

Appendix F.3 Spring 2019 Results that Exceed Screening Criteria (continued)

Zone	Well	Date Collected	Sample ID	Sample Type	Analysis Type	Chemical	Result (mg/L)	Validation Qual	GW Screening Criteria (mg/L)	GW Screening Criteria Source	Background Criteria
Unconsolidated	LL1mw-064	5/7/2019	LL1mw-064-190401-GW	Grab	Metals, Total	Manganese	0.12		0.0463	RC	0.075
Upper Sharon	LL1mw-080	5/7/2019	LL1mw-080-190401-GW	Grab	Explosives/Propellants	RDX	0.013		0.00097	RSL	
Upper Sharon	LL1mw-083	5/6/2019	LL1mw-083-190401-GW	Grab	Anions	Sulfate	120	J			
Upper Sharon	LL1mw-083	5/6/2019	LL1mw-083-190401-GW	Grab	Explosives/Propellants	1,3-Dinitrobenzene	0.002		0.0002	RSL	
Upper Sharon	LL1mw-083	5/6/2019	LL1mw-083-190401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.0019		0.00098	RSL	
Upper Sharon	LL1mw-083	5/6/2019	LL1mw-083-190401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.0028		0.00024	RSL	
Upper Sharon	LL1mw-083	5/6/2019	LL1mw-083-190401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.011		0.0039	RSL	
Upper Sharon	LL1mw-083	5/6/2019	LL1mw-083-190401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.014		0.0039	RSL	
Upper Sharon	LL1mw-083	5/6/2019	LL1mw-083-190401-GW	Grab	Miscellaneous	Alkalinity	44				
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Anions	Sulfate	140	J			
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Anions	Sulfide	0.8	J			
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Explosives/Propellants	1,3-Dinitrobenzene	0.0024		0.0002	RSL	
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.0033		0.00098	RSL	
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.00087		0.00024	RSL	
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0079		0.0039	RSL	
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.018		0.0039	RSL	
Upper Sharon	LL1mw-084	5/6/2019	LL1mw-084-190401-GW	Grab	Explosives/Propellants	RDX	0.002		0.00097	RSL	
Unconsolidated	LL1mw-086	5/7/2019	LL1mw-086-190401-GW	Grab	Metals, Filtered	Potassium	21	J			4.84
Unconsolidated	LL1mw-086	5/7/2019	LL1mw-086-190401-GW	Grab	Metals, Total	Aluminum	3.1		2	RSL	0.386
Unconsolidated	LL1mw-086	5/7/2019	LL1mw-086-190401-GW	Grab	Metals, Total	Iron	7.1		1.4	RSL	1.91
Unconsolidated	LL1mw-086	5/7/2019	LL1mw-086-190401-GW	Grab	Metals, Total	Manganese	0.36		0.0463	RC	0.075
Unconsolidated	LL1mw-086	5/7/2019	LL1mw-086-190401-GW	Grab	Metals, Total	Potassium	26				4.84
Unconsolidated	LL1mw-086	5/7/2019	LL1mw-086-190401-GW	Grab	Miscellaneous	Alkalinity	110				
Unconsolidated	LL1mw-088	5/8/2019	LL1mw-088-190401-GW	Grab	Metals, Total	Arsenic	0.028		0.01	MCL	0.003
Unconsolidated	LL1mw-088	5/8/2019	LL1mw-088-190401-GW	Grab	Metals, Total	Sodium	23	J			18.2
Unconsolidated	LL1mw-088	5/8/2019	LL1mw-088-190401-GW	Grab	Miscellaneous	Alkalinity	290				
Upper Sharon	LL2mw-059	5/6/2019	LL2mw-059-190401-GW	Grab	Explosives/Propellants	1,3-Dinitrobenzene	0.00027	J	0.0002	RSL	
Upper Sharon	LL2mw-059	5/6/2019	LL2mw-059-190401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.00052		0.00024	RSL	
Upper Sharon	LL2mw-267	5/2/2019	LL2mw-267-190401-GW	Grab	Metals, Total	Iron	2.5		1.4	RSL	2.08
Upper Sharon	LL3mw-237	5/6/2019	LL3mw-237-190401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.004		0.0039	RSL	
Unconsolidated	NTAmw-119	4/30/2019	NTAmw-119-190401-GW	Grab	Metals, Total	Manganese	0.33		0.0463	RC	0.075
Upper Sharon	RQLmw-007	5/9/2019	RQLmw-007-190401-GW	Grab	Metals, Total	Manganese	0.49		0.0463	RC	0.198
Upper Sharon	RQLmw-008	5/9/2019	RQLmw-008-190401-GW	Grab	Metals, Total	Arsenic	0.011		0.01	MCL	0.003
Upper Sharon	RQLmw-008	5/9/2019	RQLmw-008-190401-GW	Grab	Metals, Total	Iron	28		1.4	RSL	2.08
Upper Sharon	RQLmw-008	5/9/2019	RQLmw-008-190401-GW	Grab	Metals, Total	Magnesium	74				38.9
Upper Sharon	RQLmw-008	5/9/2019	RQLmw-008-190401-GW	Grab	Metals, Total	Manganese	0.46		0.0463	RC	0.198
Upper Sharon	RQLmw-009	5/9/2019	RQLmw-009-190401-GW	Grab	Metals, Total	Manganese	0.3		0.0463	RC	0.198
Upper Sharon	RQLmw-011	5/9/2019	RQLmw-011-190401-GW	Grab	Anions	Sulfate	130	J			
Upper Sharon	RQLmw-011	5/9/2019	RQLmw-011-190402-GW	Field Duplicate	Anions	Sulfate	130	J			
Upper Sharon	RQLmw-012	5/9/2019	RQLmw-012-190401-GW	Grab	Anions	Sulfate	110	J			
Upper Sharon	RQLmw-012	5/9/2019	RQLmw-012-190401-GW	Grab	Miscellaneous	Alkalinity	9.9	J			
Upper Sharon	RQLmw-013	5/9/2019	RQLmw-013-190401-GW	Grab	Anions	Sulfate	160	J			
Basal Sharon Congl	SCFmw-004	5/2/2019	SCFmw-004-190401-GW	Grab	Metals, Total	Calcium	150				93
Basal Sharon Congl	SCFmw-004	5/2/2019	SCFmw-004-190401-GW	Grab	Metals, Total	Magnesium	58				30
Basal Sharon Congl	SCFmw-004	5/2/2019	SCFmw-004-190401-GW	Grab	Metals, Total	Potassium	2.9	J			2.9
Unconsolidated	SCLmw-001	5/8/2019	SCLmw-001-190401-GW	Grab	Anions	Sulfate	160				
Unconsolidated	SCLmw-001	5/8/2019	SCLmw-001-190401-GW	Grab	Metals, Total	Calcium	130				107
Unconsolidated	SCLmw-001	5/8/2019	SCLmw-001-190401-GW	Grab	Metals, Total	Manganese	0.31		0.0463	RC	0.075
Unconsolidated	SCLmw-001	5/8/2019	SCLmw-001-190401-GW	Grab	Metals, Total	Sodium	19				18.2
Unconsolidated	SCLmw-001	5/8/2019	SCLmw-001-190401-GW	Grab	Miscellaneous	Alkalinity	320				
Unconsolidated	SCLmw-001	5/8/2019	SCLmw-001-190401-GW	Grab	Miscellaneous	Total Phosphorus as P	0.018	J	0.00004	RSL	

Appendix F.3 Spring 2019 Results that Exceed Screening Criteria (continued)

Zone	Well	Date Collected	Sample ID	Sample Type	Analysis Type	Chemical	Result (mg/L)	Validation Qual	GW Screening Criteria (mg/L)	GW Screening Criteria Source	Background Criteria
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190401-GW	Grab	Anions	Sulfate	190				
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190401-GW	Grab	Metals, Total	Calcium	190				107
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190401-GW	Grab	Metals, Total	Iron	10		1.4	RSL	1.91
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190401-GW	Grab	Metals, Total	Manganese	1.1		0.0463	RC	0.075
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190401-GW	Grab	Miscellaneous	Alkalinity	300				
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190401-GW	Grab	Miscellaneous	Total Phosphorus as P	0.1	J	0.00004	RSL	
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190402-GW	Field Duplicate	Metals, Total	Calcium	190				107
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190402-GW	Field Duplicate	Metals, Total	Iron	10		1.4	RSL	1.91
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190402-GW	Field Duplicate	Metals, Total	Manganese	1		0.0463	RC	0.075
Unconsolidated	SCLmw-002	5/8/2019	SCLmw-002-190402-GW	Field Duplicate	Miscellaneous	Total Phosphorus as P	0.11	J	0.00004	RSL	
Unconsolidated	SCLmw-003	5/8/2019	SCLmw-003-190401-GW	Grab	Anions	Sulfate	240				
Unconsolidated	SCLmw-003	5/8/2019	SCLmw-003-190401-GW	Grab	Metals, Total	Calcium	160				107
Unconsolidated	SCLmw-003	5/8/2019	SCLmw-003-190401-GW	Grab	Metals, Total	Magnesium	67				55.3
Unconsolidated	SCLmw-003	5/8/2019	SCLmw-003-190401-GW	Grab	Metals, Total	Manganese	0.23		0.0463	RC	0.075
Unconsolidated	SCLmw-003	5/8/2019	SCLmw-003-190401-GW	Grab	Metals, Total	Potassium	6				4.84
Unconsolidated	SCLmw-003	5/8/2019	SCLmw-003-190401-GW	Grab	Metals, Total	Sodium	38	J			18.2
Unconsolidated	SCLmw-003	5/8/2019	SCLmw-003-190401-GW	Grab	Miscellaneous	Alkalinity	390				
Unconsolidated	WBGmw-006	4/30/2019	WBGmw-006-190401-GW	Grab	Explosives/Propellants	RDX	0.011		0.00097	RSL	
Unconsolidated	WBGmw-006	4/30/2019	WBGmw-006-190401-GW	Grab	Metals, Total	Manganese	0.099		0.0463	RC	0.075
Unconsolidated	WBGmw-009	4/30/2019	WBGmw-009-190401-GW	Grab	Explosives/Propellants	RDX	0.0016		0.00097	RSL	
Unconsolidated	WBGmw-009	4/30/2019	WBGmw-009-190401-GW	Grab	Metals, Total	Manganese	0.18		0.0463	RC	0.075
Upper Sharon	WBGmw-020	4/30/2019	WBGmw-020-190401-GW	Grab	Metals, Total	Iron	3.4		1.4	RSL	2.08
Upper Sharon	WBGmw-020	4/30/2019	WBGmw-020-190401-GW	Grab	Metals, Total	Manganese	0.22		0.0463	RC	0.198
Upper Sharon	WBGmw-021	4/30/2019	WBGmw-021-190401-GW	Grab	Metals, Total	Manganese	0.37		0.0463	RC	0.198

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APPENDIX G

Laboratory Data Packages
(Provided as separate files on Compact Disc)

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APPENDIX H

Data Quality Assessment Report

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ACRONYMS AND ABBREVIATIONS

ADR	Automated Data Review
AOC	Area of Concern
CCV	Continuing Calibration Verification
DoD	U.S. Department of Defense
DQA	Data Quality Assessment
DQO	Data Quality Objective
EDD	Electronic Data Deliverable
FCR	Field Change Request
FWGWMP	Facility-wide Groundwater Monitoring Program
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LOD	Level of Detection
LOQ	Level of Quantitation
MDL	Method Detection Level
MPC	Measurement Performance Criteria
MPR	Monthly Progress Report
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PAH	Polycyclic Aromatic Hydrocarbon
PARCC	Precision, Accuracy, Representativeness, Comparability, and Completeness
PCB	Polychlorinated Biphenyl
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
REIMS	RVAAP Environmental Information Management System
RI	Remedial Investigation
RIWP	Remedial Investigation Work Plan
RPD	Relative Percent Difference
RVAAP	Ravenna Army Ammunition Plant
SVOC	Semi-volatile Organic Compound
TestAmerica	TestAmerica Laboratories, Inc.
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

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H. PROJECT QUALITY ASSURANCE SUMMARY

H.1 PURPOSE OF THIS REPORT

Environmental data must be evaluated relative to their known limitations and intended use. As can be expected in environmental media, some analytical results and data points require the user to be cautioned relative to the quality of the project information presented. The data verification/validation process and this data quality assessment (DQA) are performed to assist current and future data users in interpreting these data.

The purpose of this DQA report is to document the following:

- The quality control (QC) procedures followed to ensure data generated by Leidos, during the implementation of the spring 2019 sampling event to support the Facility-wide Groundwater Monitoring Program (FWGWMP) at the former Ravenna Army Ammunition Plant (RVAAP), meet project requirements;
- The quality of the data collected; and
- Any problems encountered during the course of the study and their solutions.

This DQA report provides an assessment of the analytical information generated during the implementation of the *Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Addendum for 2019* (Leidos 2019; herein referred to as the 2019 Addendum). Implementation of the 2019 Addendum was done in accordance with the *Remedial Investigation Work Plan for Groundwater and Environmental Services for RVAAP-66 Facility-wide Groundwater* (TEC-Weston 2016; herein referred to as the Remedial Investigation Work Plan [RIWP]), Appendix A.2 Quality Assurance Project Plan (QAPP).

This DQA documents the quality of the data collected during the spring 2019 sampling event and assesses if quality assurance (QA)/QC objectives were met. The primary intent of this assessment is to document that, except as noted, data generated for this investigation can withstand scientific scrutiny; are appropriate for their intended purpose; are technically defensible; and are of known and adequate quality (i.e., sensitivity, precision, accuracy, representativeness, comparability, and completeness [PARCC]).

Multiple activities were performed to achieve the required data quality for this project. Data quality objectives (DQOs) along with a QA program were established to guide the implementation of the field sampling and laboratory analysis per the 2019 Addendum (Leidos 2019). The QA program was established to standardize procedures and document activities per the FWGWMP Plan (Portage Environmental 2004) and RIWP. This program provided a means to detect and correct any deficiencies in the process. Upon receipt by the project team, results provided in the electronic data deliverable (EDD) were subjected to electronic review by an automated data review (ADR) process to identify and qualify problems related to the analysis. This was followed by manual verification/validation of QC results not included in the EDD/ADR review. These combined verification/validation results are

summarized in this DQA to document that data used in the remedial investigation (RI) are identified as having met the criteria and are being utilized appropriately.

H.2 QUALITY ASSURANCE PROGRAM

The QAPP within the RIWP (TEC-Weston 2016) and field change request (FCR) LEIDOS_FWGW_004 were developed to enumerate the quantity and type of environmental samples needed and to define the quantity and type of QA/QC samples to be used to evaluate data quality. These documents established requirements for field and laboratory QC procedures. In general, field QC duplicate samples were required at a frequency of 10%; volatile organic compound (VOC) trip blanks were to accompany each cooler containing water samples for VOC determinations; field blanks and equipment blanks were collected to demonstrate equipment decontamination and clean ambient field conditions; and analytical laboratory QC samples, including duplicates, matrix spikes (MSs), laboratory control samples (LCSs), and method blanks, were required for each preparation batch of 20 samples or less for each parameter.

A primary goal of the QA program is to ensure that the quality of results for all environmental measurements is appropriate for their intended use and that standardized field procedures guide the investigation. Through the process of readiness review, training, equipment calibration, QC implementation, and detailed documentation, the project has successfully accomplished the goals set for the QA program.

H.2.1 Monthly Progress Reports

Monthly Progress Reports (MPRs) were completed by the Leidos Project Manager for the duration of the project. The MPRs contained information on work completed, a summary of anticipated upcoming work, discussion of any health and safety issues, and a summary of investigation-derived waste staged at the facility. These reports were issued to the U.S. Army Corps of Engineers (USACE) Louisville District Contracting Officer's Representative and Project Manager by email.

H.2.2 Daily Activity Logs

The Field Manager completed Daily Activity Logs. These include information such as, but not limited to, on-site sub-tier contractors, on-site equipment, work performed summaries, QC activities, health and safety activities, problems encountered, and corrective actions.

H.2.3 Laboratory "Definitive" Level Data Reporting

The QAPP for this project identified requirements for laboratory data reporting. White Water Associates of Amasa, Michigan, and their subcontracted partner TestAmerica Laboratories, Inc. (TestAmerica) of Denver, Colorado, performed the analysis of the samples. The TestAmerica facility in Denver, Colorado, performed all analyses, except nitroguanidine and nitrocellulose, which were performed at the TestAmerica facility in Sacramento, California, and hexavalent chromium, which was performed at the Test America facility in North Canton, Ohio. TestAmerica Denver and Sacramento

are accredited by the U.S. Department of Defense (DoD) for the analyses they performed. Test America in North Canton, Ohio, is not DoD accredited for hexavalent chromium; due to the short holding time associated with this analysis, an FCR (FCR No. 08, June 8, 2017) was sought and approved to use the North Canton laboratory due to its proximity to the site, which eliminated the delay of shipping samples to the laboratory. All analytical procedures were completed in accordance with U.S. Environmental Protection Agency (USEPA) requirements; the DoD Quality Systems Manual (QSM), Version 5.0 (DoD 2017); and the QAPP. USEPA "definitive" data have been reported, including laboratory-level IV data packages meeting QSM Appendix A guidance.

This information from the laboratory, along with field information, provides the basis for subsequent data evaluation relative to sensitivity and PARCC.

H.2.4 Field Change Requests

Three FCRs are pertinent to the spring 2019 sampling events:

- LEIDOS_FWGW_001 – Specifies that, due to the permanent bladder pumps, total depths of wells will not be collected during the facility-wide comprehensive water level measurements.
- LEIDOS_FWGW_004 – Specifies the field QC sampling frequency.
- LEIDOS_FWGW_006 – Documents the micro-purge procedure to be implemented during groundwater sampling collected by micro-purging with dedicated bladder pumps.

H.3 DATA VERIFICATION/VALIDATION

The objective when evaluating the project data quality is to determine its usability. The evaluation is based on the interpretation of laboratory QC measures, field QC measures, and project DQOs. This project implemented ADR software to facilitate laboratory data review. The ADR output was reviewed by the project-designated verification staff, as discussed below.

H.3.1 Field Data Verification

Field-generated documents, such as sampling logs, boring logs, daily health and safety summaries, daily safety inspections, equipment calibration and maintenance logs, and sample management logs, were peer-reviewed on site.

H.3.2 Laboratory Data Verification/Validation

Analytical data generated for this project have been subjected to a process of automated and manual data verification, validation, and review. Criteria and protocols were established in the following documents:

- 2019 Addendum (Leidos 2019);
- RIWP, including Appendix A.2 QAPP (TEC-Weston 2016);
- DoD QSM, Version 5.0 (DoD 2017);

- USEPA *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, EPA-540/R-99/008 (USEPA 1999);
- USEPA *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA-540/R-04/004(USEPA 2004); and
- Leidos Technical Support Contractor QA Standard Operating Procedure (ESE-DM-05), *Data Verification and Validation* (Leidos 2015).

Upon receipt of analytical data, QA staff performed a systematic examination of 100% of the reports, including ADR outputs. Discrepancies identified during this process were recorded and documented. Any discrepancies were resolved prior to database flag entry. QA Program Nonconformance Report and Corrective Action systems were implemented as required.

During the verification phase of the review and evaluation process, data were subjected to a systematic technical review by examining all field sample and analytical QC results against the measurement performance criteria (MPC) specified in the QAPP, following USEPA functional guidelines, DoD QSM criteria, and Leidos internal procedures for laboratory data review. These guidelines describe methods for evaluating the review criteria and actions to be taken resulting from the review of these criteria. The primary objectives of this phase were to assess and summarize the quality and reliability of the data for the intended use and to document factors that may affect the usability of the data. This data verification/validation and analytical review process included, but was not necessarily limited to, the following parameters:

- Data completeness;
- Analytical holding times and sample preservation;
- Calibration (initial and continuing);
- Method blanks and calibration blanks;
- Sample results verification;
- Surrogate recovery (organics);
- LCS analysis;
- Internal standard performance;
- MS/matrix spike duplicate (MSD) recovery;
- Serial dilution/post digestion spike, interference check standards (inorganics);
- Field duplicate analysis comparison;
- Reported detection limits; and
- Secondary dilutions.

As a result of this review, data were qualified based on the technical evaluations of QC sample results compared to MPC specified in the QAPP. Qualifiers were applied as needed to field and analytical results to indicate the usability of the data for its intended purpose.

H.3.3 Definitions of Data Qualifiers (Flags)

During the data verification/validation process, laboratory data were assigned appropriate data qualification flags with reason codes. Qualification flags are defined as follows:

- "U" Indicates the analyte was analyzed for, but not detected above, the level of the associated value.
- "J" Indicates the analyte was positively identified; however, the associated numerical value is an approximate concentration of the analyte in the sample.
- "UJ" Indicates the analyte was analyzed for, but not detected above, the associated value; however, the reported value is an estimate and demonstrates a decreased knowledge of its accuracy or precision.
- "R" Indicates the analyte value reported is unusable due to significant noncompliant QC results. One Nitrite result (RQLmw-013-190401-GW) was qualified "R" due to missed holding time.

H.3.4 Data Compliance

A total of 92 environmental groundwater samples were collected with approximately 4,689 discrete data points (i.e., analytes) obtained, reviewed, and integrated into the assessment (these totals do not include field measurements, field QC blanks, and field descriptions). During the project, samples were successfully collected and produced usable results for more than 99.9% of the sample analyses performed during the spring 2019 sampling event. No data were rejected.

Table H-1 summarizes the number of environmental and QA split samples collected during the spring 2019 sampling event. Cross-references for field duplicates and field QC samples and the associated primary samples are presented in Table H-2 along with the requested parameters for each sample. Table H-3 summarizes the qualified analyses grouped by parameter, and Table H-4 details the individual results qualified during review. The majority of the estimated values were based on concentrations between the laboratory method detection levels (MDLs) and the sample level of quantitation (LOQ) (i.e., values determined in this region have an inherently higher variability and are considered to be estimated concentrations); qualifiers also were assigned based on noncompliant MS recoveries, holding times, blank contamination, and LCS recoveries, as well as professional judgment.

During the spring 2019 sampling event, 11 field duplicates were collected and analyzed with primary samples. QA split samples were collected and sent to an independent laboratory (CT Laboratories in Baraboo, Wisconsin); these results were provided directly to USACE and are not included in this DQA. Six trip blanks were collected and analyzed. Equipment rinsate blanks were not required since samples were collected via the use of dedicated sampling equipment. The project goal for blanks is to achieve concentrations less than the reporting levels. Table H-5 summarizes analytes that were detected in the trip blanks. In general, trip blank results indicate that the potential for sample contamination due to cross contamination is very low.

H.4 DATA QUALITY EVALUATION

H.4.1 Volatile Organic Groundwater Analysis

Analytical holding times were met for all VOC samples Initial calibrations and continuing calibration criteria were achieved. Surrogate recoveries and internal area counts were within control limits for all analyses. Method blanks associated with three samples resulted in four data points being qualified as "U" or "UJ". All LCS and MS/MSD recoveries were within criteria. MS/MSD relative percent difference (RPD) values met control criteria. No samples required dilutions. Two samples contained significant headspace that developed during sample storage and results (72) were qualified as "J" or "UJ" based on professional judgment due to sample condition at the time of analysis. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in the RVAP Environmental Information Management System (REIMS).

H.4.2 Semi-volatile Organic Groundwater Analysis

Extraction and analytical holding times were met for all samples. Initial and continuing calibration criteria were met. Surrogate recoveries met criteria. Internal standard area counts and compound retention times met criteria throughout the data analyses. Method blanks were free of contamination. LCS and/or MS/MSD recoveries outside criteria resulted in nine data points being qualified as estimated "UJ". MSD RPD values met control criteria. No semi-volatile organic compound (SVOC) samples required dilutions. No data were estimated or rejected for any reason, and the results are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.3 Polycyclic Aromatic Hydrocarbon Groundwater Analysis

Extraction and analytical holding times were met for all samples. Initial and continuing calibration criteria were met. Surrogate recoveries, internal standard area counts and compound retention times met criteria throughout the data analyses. Method blanks were free from contamination. LCS and MS/MSD recoveries and RPD values met criteria. No PAH samples required dilutions. No data were rejected for any reason. All values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.4 Pesticide Analysis Groundwater Analysis

Analytical holding times were met for all samples; as needed, clean-up protocols (SW3660A and SW3665A) were used to reduce matrix interferences in the sample extracts. Surrogate recoveries met control criteria for all samples. Initial and continuing calibrations met criteria for all pesticide compounds. Pesticide method blanks were free of contamination. LCS recoveries associated with four compounds were outside acceptance criteria for six samples resulting in 24 data points qualified as "J" or "UJ." MS/MSD recoveries and RPD values were within criteria. No pesticide samples required

dilutions. Column comparison criteria were met. No pesticide data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.5 Polychlorinated Biphenyl Analysis Groundwater Analysis

Analytical holding times were met for all samples; as needed, clean-up protocols (SW3660A and SW3665A) were used to reduce matrix interferences in the sample extracts. Surrogate recoveries met control limits. Initial and continuing calibration criteria were met for all polychlorinated biphenyl (PCB) compounds. PCB method blanks were free from contamination. LCS recoveries were within acceptance criteria. MS/MSD recoveries and RPD values met criteria. No PCB data were estimated or rejected for any reason. No PCB samples required a dilution. All PCB values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.6 Explosives and Nitroglycerin Groundwater Analysis

Analytical holding times were met for all samples. Surrogate recoveries met control limits in all samples. Initial and continuing calibration criteria were met. All method blanks were free of contamination. LCS recovery for one compound exceeded criteria resulting in 11 results being qualified as "UJ." MS/MSD recoveries exceeded criteria for six compounds which caused 11 sample results to be qualified as "J" or "UJ". Column comparison criteria were exceeded for three results, which caused these data points to be qualified as "J" based on professional judgment. No explosives samples required dilutions. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.7 Metals and Phosphorus Groundwater Analysis

Analytical holding times were met for all samples. Initial and continuing calibration criteria were achieved for all elements. Sample results associated with calibration standard exceedances were qualified as follows: if ICV or CCV results were above criteria, detects were qualified as "J"; if ICV/CCV results were below criteria, detects were qualified as "J" and non-detects as "UJ." Method blank contamination resulted in eight results being qualified as non-detect "U"; initial and continuing calibration blank contamination resulted in six data points being qualified as "U" or "UJ." LCS recoveries met criteria. MS/MSD recoveries exceeded criteria for metal compounds in four samples, which resulted in nine sample results qualified as "J" or "UJ." MS/MSD RPD values were within control limits. Professional judgment was used to qualify 55 results, based on ICV/CCV results per above, as well as serial dilution and post digestion spike results. Reporting levels are considered consistent with QAPP goals. No data were rejected for any reason. No dilutions were required. Although some analyses were qualified as estimated, the deviations observed should not have a

significant impact on the results, and the reported values were considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.8 Propellants Groundwater Analysis

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS and MS/MSD recoveries were within criteria; RPD values were within control limits. No dilutions were required. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.9 Anions

Results for one nitrate and two nitrite results were qualified as estimated "J" or "UJ" due to missed holding times and one nitrite result was rejected due to analysis performed more than 2x the hold time. Initial and continuing calibration criteria were met for all compounds. Method and calibration blank were free from contamination that impacted sample results. MS/MSD recoveries were outside criteria for sulfate which resulted in six results qualified as estimated "J". MS/MSD RPD results met criteria. Laboratory duplicate RPD results met criteria. No groundwater samples required a dilution. The nitrite data point that was rejected was not used in evaluating project objectives. Analyses that were qualified as estimated, should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.10 Cyanide

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries were outside criteria and resulted in the qualification of six data points as estimated; RPD values met criteria. No dilutions were required. No data were rejected for any reason. Although some analyses were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.11 Perchlorate

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries exceeded criteria resulting in two samples qualified as estimated; RPD values met criteria. No dilutions were required. No data were rejected for any reason. Although some analyses

were qualified as estimated, the deviations observed should not have a significant impact on the results, and the values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.12 Alkalinity

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for alkalinity. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries and RPD values met criteria for alkalinity. No dilutions were required. No data were rejected for any reason. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.13 Hexavalent Chromium

Analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recoveries were within criteria. MS/MSD recoveries and RPD values met criteria. No dilutions were required. No data were rejected for any reason. Reported values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix F and can be found in REIMS.

H.4.14 Precision

Field duplicate samples were collected to assess the combined variability (i.e., precision) due to environmental media, sampling reproducibility, and analytical precision. Field duplicate samples were collected from the same spatial and temporal conditions as the primary environmental sample.

Field duplicate comparison information is presented in Table H-6. If a given analyte was not detected in both the regular and field duplicate sample, precision was considered within limits and results were not included in the table. The RPD was calculated only when both samples had reported concentrations greater than five times the LOQ. When one or both sample values were between the LOQ and five times the LOQ, the absolute difference was evaluated. Tables 12-1 through 12-17 of the QAPP set the RPD criteria, while the absolute difference is set at one times the reporting limit. Two metals results in one field duplicate pair exceeded criteria (parent samples having detected concentration and the field duplicate having nondetects); all other field duplicate comparisons met criteria.

H.4.15 Sensitivity

Determining minimum detectable values allows the investigation to assess the confidence that can be placed in a value relative to the magnitude of analyte concentration observed. The closer a measured value comes to the minimum detectable concentration, the less confidence and more variation the measurement may have. Project sensitivity goals were expressed relative to the project action limits in the QAPP, as presented in Tables 15-1 through 15-19; these tables identified compounds for which the expected LOD was greater than the project action limit. These levels were further evaluated relative to the applicable screening criteria, and LODs were at or below screening criteria, with the exceptions

previously noted in the QAPP tables; in addition, two compounds (benzo[a]anthracene and Aroclor 1016) were reported with LODs greater than the screening criteria but with an MDL below the applicable criteria. In general, LODs are considered adequate for their intended use and have been considered during data interpretation and statistical applications.

Method blank determinations were performed with each analytical sample batch for each analyte under investigation. These blanks were evaluated to determine their potential impact on individual data points. Action levels are set at 5 times the blank concentration for all analytes, except those designated as common laboratory contaminants (i.e., methylene chloride, acetone, toluene, 2-butanone, and phthalate compounds) for which the action level is 10 times the blank concentration. Action limits for inorganics were set as 10 times the blank concentration. Reported sample concentrations are evaluated against blank action levels, and the following qualifications are made when reportable quantities of analytes were observed in the associated method blank:

- When the sample analyte concentration is above the action level (5–10 times the blank concentration), the data are not qualified and it is considered a positive value.
- If the sample concentration is below the action level, the data are considered impacted by the method blank. If the sample result is greater than the LOQ, the result is qualified as a non-detectable concentration at the analyte value reported and these data are qualified as "U." If the sample result is greater than the level of detection (LOD) but less than the LOQ, the result is qualified as a non-detectable concentration at the analyte value reported and these data are qualified as "UJ." If the sample result is less than the LOD (an estimated value), the result is qualified as non-detectable at the concentration of the LOD and qualified as "U."

No data were rejected as a result of method blank contamination; however, various analytes were qualified as a non-detectable concentration "U," as summarized in Table H-4.

Table H-5 summarizes analytes that were detected in trip blanks. Six trip blanks were collected. One compound was detected in one trip blank, as listed in Table 3-5. The concentration observed was less than the reporting level. The transportation and sample storage process, and the procedures and precautions employed, were effective in preserving the integrity of the sample analysis.

H.4.16 Representativeness and Comparability

Representativeness expresses the degree to which data accurately reflect the analyte or parameter of interest for the environmental media being studied and is the qualitative term most concerned with the proper design of the sampling program. Factors that affect the representativeness of analytical data include proper preservation, holding times, and use of standard sampling and analytical methods. Samples were picked up on site by the TestAmerica courier, then delivered or shipped to the appropriate laboratory location; samples were received within temperature specifications and in good condition. Holding times were exceeded as discussed above; with one exception, samples were analyzed within two times the holding time, and the data are therefore considered usable but estimated ("J," "UJ"); one nitrite value was rejected due to hold time per the above discussion.

Comparability, like representativeness, is a qualitative term relative to an individual project data set. The RI employed appropriate sampling methodologies, sample containers and preservation, and site surveillance; used standard sampling devices and uniform training; and documented sampling procedures, standard analytical protocols/procedures, QC checks with standard control limits, and universally accepted data reporting units to ensure comparability to other data sets. Through the proper implementation and documentation of these standard practices, the project has established the confidence that the data will be comparable to other project and programmatic information.

H.4.17 Completeness

Usable data are defined as those data that pass individual scrutiny during the verification and validation process. These data, including estimated data, have been determined to be usable for RVAAP restoration program objectives.

The completeness goal for analytical data is 95%, as defined in Tables 12-1 through 12-17 of the FWGWMP Plan. All samples specified in the 2019 Addendum (Leidos 2019) were collected as planned, and usable results were generated for >99.9% of sample analyses performed.

H.5 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of the spring 2019 sampling event meets established project objectives. Through implementation of the project data verification, validation, and assessment process, project information has been determined to be acceptable for use.

Data, as presented, have been qualified as usable; some data have been qualified estimated, "J" or "UJ." One data point was rejected. Data that have been qualified as estimated indicate accuracy, precision, or sensitivity did not meet all requirements, but results are considered adequate for interpretation. All undetected analytes were reported at detection levels that were adequate for use during data interpretation and statistical applications.

Data produced for this project demonstrate they can withstand scientific scrutiny; are appropriate for its intended purpose; are technically defensible; and are of known and acceptable sensitivity, precision, and accuracy. Data integrity has been documented through proper implementation of QA and QC measures. The environmental information presented has an established confidence that allows utilization for the project objectives and provides data for future needs.

H.6 REFERENCES

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USEPA (U.S. Environmental Protection Agency) 1994. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. EPA-540/R-04/004. April 2004.

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Table H-1. Number of Samples Collected – Spring 2019 Sampling Event

Media	Environmental Samples	Field Duplicates	USACE Split Samples	Trip Blanks	Equipment Rinse Blanks	Source Water Blanks	Field Blanks
Groundwater	72	11	11	6	0	0	0

USACE = U.S. Army Corps of Engineers.

Table H-2. Identification of Regular and QC Samples Taken – Spring 2019 Sampling Event

Media	Environmental Samples	Lab SDG	Field Duplicates	Trip Blanks	Metals	Chromium, hexavalent	Explosives	Propellants	SVOCs	PAHs	VOCs	Pesticides	PCBs	Cyanide	Perchlorate	Anions	Alkalinity
Groundwater	CBPmw-008-190401-GW	280-123584-1												X			
Groundwater	CBPmw-009-190401-GW	280-123656-1												X			
Groundwater	DA2mw-115-190401-GW	280-123183-1	DA2mw-115-190402-GW		X												
Groundwater	DET-003-190401-GW	280-123221-1	DET-003-190402-GW	FWGTB-191001-TB	X		X		X	X	X	X	X	X			
Groundwater	DET-004-190401-GW	280-123221-1		FWGTB-191001-TB	X		X		X	X	X	X	X	X			
Groundwater	EBGmw-125-190401-GW	280-123467-1												X			
Groundwater	EBGmw-131-190401-GW	280-123467-1												X			
Groundwater	FBQmw-171-190401-GW	280-123261-1												X		X	X
Groundwater	FBQmw-172-190401-GW	280-123261-1	FBQmw-172-190402-GW											X			
Groundwater	FBQmw-174-190401-GW	280-123261-1					X									X	X
Groundwater	FBQmw-175-190401-GW	280-123467-1	FBQmw-175-190402-GW			X										X	X
Groundwater	FBQmw-176-190401-GW	280-123584-1												X			
Groundwater	FWGmw-004-190401-GW	280-123584-1			X		X										
Groundwater	FWGmw-007-190401-GW	280-123221-1			X		X										
Groundwater	FWGmw-011-190401-GW	280-123584-1			X		X										
Groundwater	FWGmw-012-190401-GW	280-123584-1			X		X										
Groundwater	FWGmw-015-190401-GW	280-123584-1			X		X										
Groundwater	FWGmw-016-190401-GW	280-123221-1			X		X										
Groundwater	FWGmw-018-190401-GW	280-123656-1		FWGTB-191004-TB	X						X			X			
Groundwater	FWGmw-019-190401-GW	280-123330-1						X									
Groundwater	FWGmw-020-190401-GW	280-123802-1		FWGTB-191006-TB	X						X			X			
Groundwater	FWGmw-021-190401-GW	280-123656-1	FWGmw-021-190402-GW		X		X										
Groundwater	FWGmw-022-190401-GW	280-123330-1						X									
Groundwater	FWGmw-023-190401-GW	280-123261-1						X									
Groundwater	FWGmw-024-190401-GW	280-123656-1			X		X										
Groundwater	LL10mw-003-190401-GW	280-123261-1	LL10mw-003-190402-GW	FWGTB-191002-TB							X						
Groundwater	LL10mw-005-190401-GW	280-123330-1			X												
Groundwater	LL11mw-005-190401-GW	280-123261-1												X			
Groundwater	LL12mw-183-190401-GW	280-123261-1												X			
Groundwater	LL12mw-185-190401-GW	280-123261-1															
Groundwater	LL12mw-187-190401-GW	280-123330-1			X										X		
															X		

Table H-3. Identification of Regular and QC Samples Taken – Spring 2019 Sampling Event (continued)

Media	Environmental Samples	Lab SDG	Field Duplicates	Trip Blanks	Metals	Chromium, hexavalent	Explosives	Propellants	SVOCs	PAHs	VOCs	Pesticides	PCBs	Cyanide	Perchlorate	Anions	Alkalinity
Groundwater	LL12mw-242-190401-GW	280-123330-1			X												
Groundwater	LL12mw-245-190401-GW	280-123330-1			X		X								X		
Groundwater	LL12mw-247-190401-GW	280-123261-1			X										X		
Groundwater	LL1mw-064-190401-GW	280-123467-1			X										X		
Groundwater	LL1mw-065-190401-GW	280-123467-1			X		X										
Groundwater	LL1mw-080-190401-GW	280-123584-1					X										
Groundwater	LL1mw-081-190401-GW	280-123467-1					X							X			
Groundwater	LL1mw-083-190401-GW	280-123457-1					X	X								X	X
Groundwater	LL1mw-084-190401-GW	280-123457-1			X		X	X								X	X
Groundwater	LL1mw-086-190401-GW	280-123467-1			X									X			X
Groundwater	LL1mw-087-190401-GW	280-123330-1			X		X										
Groundwater	LL1mw-088-190401-GW	280-123656-1			X		X										X
Groundwater	LL1mw-089-190401-GW	280-123467-1	LL1mw-089-190402-GW				X	X									
Groundwater	LL2mw-059-190401-GW	280-123457-1			X		X										
Groundwater	LL2mw-264-190401-GW	280-123330-1												X			
Groundwater	LL2mw-267-190401-GW	280-123330-1			X		X										
Groundwater	LL2mw-272-190401-GW	280-123457-1												X			
Groundwater	LL3mw-234-190401-GW	280-123467-1												X			
Groundwater	LL3mw-237-190401-GW	280-123457-1					X										
Groundwater	LL3mw-244-190401-GW	280-123457-1			X		X										
Groundwater	LL3mw-246-190401-GW	280-123656-1	LL3mw-246-190402-GW		X		X								X		
Groundwater	LL4mw-200-190401-GW	280-123330-1												X			
Groundwater	LL7mw-001-190401-GW	280-123261-1			X									X			
Groundwater	LL7mw-006-190401-GW	280-123261-1					X										
Groundwater	NTAmw-119-190401-GW	280-123221-1	NTAmw-119-190402-GW		X		X			X							
Groundwater	NTAmw-120-190401-GW	280-123221-1							X								
Groundwater	RQLmw-007-190401-GW	280-123656-1		FWGTB-191008-TB	X		X		X	X	X	X	X	X			
Groundwater	RQLmw-008-190401-GW	280-123656-1		FWGTB-191008-TB	X		X		X	X	X	X	X	X			
Groundwater	RQLmw-009-190401-GW	280-123656-1		FWGTB-191008-TB	X		X		X	X	X	X	X	X			
Groundwater	RQLmw-011-190401-GW	280-123656-1	RQLmw-011-190402-GW													X	X
Groundwater	RQLmw-012-190401-GW	280-123656-1												X		X	X

Table H-3. Identification of Regular and QC Samples Taken – Spring 2019 Sampling Event (continued)

Media	Environmental Samples	Lab SDG	Field Duplicates	Trip Blanks	Metals	Chromium, hexavalent	Explosives	Propellants	SVOCs	PAHs	VOCs	Pesticides	PCBs	Cyanide	Perchlorate	Anions	Alkalinity
Groundwater	RQLmw-013-190401-GW	280-123656-1														X	X
Groundwater	RQLmw-016-190401-GW	280-123656-1												X			
Groundwater	SCFmw-004-190401-GW	280-123330-1			X												
Groundwater	SCLmw-001-190401-GW	280-123584-1		FWGTB-191005-TB	X		X	X	X	X	X	X	X	X	X	X	X
Groundwater	SCLmw-002-190401-GW	280-123584-1	SCLmw-002-190402-GW	FWGTB-191005-TB	X		X	X	X	X	X	X	X	X	X	X	X
Groundwater	SCLmw-003-190401-GW	280-123584-1		FWGTB-191005-TB	X		X	X	X	X	X	X	X	X	X	X	X
Groundwater	WBGmw-006-190401-GW	280-123221-1			X		X										
Groundwater	WBGmw-009-190401-GW	280-123221-1			X		X										
Groundwater	WBGmw-020-190401-GW	280-123221-1			X		X										
Groundwater	WBGmw-021-190401-GW	280-123221-1			X		X										

Trip blanks only accompany samples for VOCs in water.
Propellants include nitrocellulose and nitroguanidine.
PAH = Polycyclic aromatic hydrocarbon.
PCB = Polychlorinated biphenyl.
QC = Quality control.
SDG = Sample delivery group.
SVOC = Semi-volatile organic compound.
TB = Trip blank.
VOC = Volatile organic compound.

Table H-3. Summary of Qualified Results for Samples – Spring 2019 Sampling Event

Analysis Group	Val. Qual	Validation Code	Number Qualified	Total Number of Analyses	Percent Qualified
All Analyses	R		1	3114	0
All Analyses	J		307	3114	10
All Analyses	UJ		127	3114	4
All Analyses	U		29	3114	1
All Analyses	None		2650	3114	85
Metals	J	MS-J	4	1109	0
Metals	J	MS-J,RepLimit-J	4	1109	0
Metals	J	ProJudge-J	31	1109	3
Metals	J	RepLimit-J	220	1109	20
Metals	J	RepLimit-J,ProJudge-J	8	1109	1
Metals	UJ	MS-UJ	1	1109	0
Metals	UJ	ProJudge-UJ	1	1109	0
Metals	UJ	RepLimit-J,CalBlk-U,ProJudge-J	1	1109	0
Metals	U	MB-U,RepLimit-J	8	1109	1
Metals	U	ProJudge-U	7	1109	1
Metals	U	RepLimit-J,CalBlk-U	5	1109	0
Metals	U	RepLimit-J,ProJudge-U	7	1109	1
Metals	None	None	812	1109	73
Explosives	J	MS-J	2	672	0
Explosives	J	ProJudge-J	3	672	0
Explosives	J	RepLimit-J	4	672	1
Explosives	UJ	LCS-UJ	9	672	1
Explosives	UJ	MS-UJ	7	672	1
Explosives	UJ	MS-UJ,LCS-UJ	2	672	0
Explosives	None	None	645	672	96
Propellants	J	RepLimit-J	1	20	5
Propellants	None	None	19	20	95
SVOCs	UJ	LCS-UJ	7	307	2
SVOCs	UJ	MS-UJ	1	307	0
SVOCs	UJ	MS-UJ,LCS-UJ	1	307	0
SVOCs	None	None	298	307	97
PAHs	None	None	180	180	100
VOCs	J	RepLimit-J	8	468	2
VOCs	J	RepLimit-J,ProJudge-J	1	468	0
VOCs	UJ	MB-U,RepLimit-J,ProJudge-J	2	468	0
VOCs	UJ	ProJudge-UJ	69	468	15
VOCs	U	MB-U,RepLimit-J	2	468	0
VOCs	None	None	386	468	82
Pesticides	UJ	LCS-UJ	24	189	13
Pesticides	None	None	165	189	87
PCBs	None	None	63	63	100
Cyanide	J	MS-J	3	31	10
Cyanide	J	MS-J,RepLimit-J	3	31	10
Cyanide	J	RepLimit-J	2	31	7
Cyanide	None	None	23	31	74

Table H-3. Summary of Qualified Results for Samples – Spring 2019 Sampling Event (continued)

Analysis Group	Val. Qual	Validation Code	Number Qualified	Total Number of Analyses	Percent Qualified
Perchlorate	J	MS-J	2	5	40
Perchlorate	None	None	3	5	60
Anions	R	HT-R	1	53	2
Anions	J	HT-J,RepLimit-J	1	53	2
Anions	J	MS-J	6	53	11
Anions	J	RepLimit-J	2	53	4
Anions	UJ	HT-UJ	2	53	4
Anions	None	None	41	53	77
Alkalinity	J	RepLimit-J	2	15	13
Alkalinity	None	None	13	15	87
Hex Chromium	None	None	2	2	100

Validation Qualifiers: J = estimated, U = not detected, UJ = not detected and reporting limit estimated.
Validation Reason Codes: CalBlk = calibration blank, CCV = continuing calibration verification, FldQC = field quality control, HT = holding time, IntStd = internal standard, LCS = laboratory control sample, MB = method blank, MS = matrix spike, ProJudge = professional judgment, RptLimit = reporting limit, Surr = surrogate recovery.
PAH = Polycyclic aromatic hydrocarbon.
PCB = Polychlorinated biphenyl.
SVOC = Semi-volatile organic compound.
VOC = Volatile organic compound.
-- = No data qualifier.

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	ALUMINUM	280-123183-1	DA2mw-115-190401-GW	21	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123584-1	FWGmw-004-190401-GW	23	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123221-1	FWGmw-007-190401-GW	32	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123802-1	FWGmw-020-190401-GW	31	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123330-1	LL12mw-245-190401-GW	31	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123457-1	LL1mw-084-190401-GW	23	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123467-1	LL1mw-086-190401-GW	53	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123330-1	LL1mw-087-190401-GW	87	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123457-1	LL2mw-059-190401-GW	33	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123330-1	LL2mw-267-190401-GW	100	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123457-1	LL3mw-244-190401-GW	240	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123221-1	NTAmw-119-190401-GW	32	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123656-1	RQLmw-007-190401-GW	19	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123656-1	RQLmw-008-190401-GW	25	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123656-1	RQLmw-009-190401-GW	53	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123584-1	SCLmw-001-190401-GW	37	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123584-1	SCLmw-002-190401-GW	19	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123584-1	SCLmw-002-190402-GW	18	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123221-1	WBGmw-006-190401-GW	19	300	J	J	RepLimit-J
Metals	Groundwater	ALUMINUM	280-123221-1	WBGmw-009-190401-GW	19	300	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123656-1	FWGmw-018-190401-GW	0.41	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123656-1	FWGmw-021-190401-GW	0.51	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123656-1	FWGmw-021-190402-GW	0.99	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123656-1	FWGmw-024-190401-GW	0.70	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123330-1	LL12mw-242-190401-GW	0.87	6.0	J J1	J	MS-J,RepLimit-J
Metals	Groundwater	ANTIMONY	280-123457-1	LL1mw-084-190401-GW	0.76	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123467-1	LL1mw-086-190401-GW	0.95	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123457-1	LL2mw-059-190401-GW	0.61	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123656-1	LL3mw-246-190401-GW	0.59	6.0	J	J	RepLimit-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	ANTIMONY	280-123656-1	LL3mw-246-190402-GW	0.56	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123584-1	SCLmw-001-190401-GW	0.53	6.0	J	J	RepLimit-J
Metals	Groundwater	ANTIMONY	280-123584-1	SCLmw-002-190402-GW	0.59	6.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123183-1	DA2mw-115-190401-GW	1.7	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123584-1	FWGmw-011-190401-GW	4.2	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123584-1	FWGmw-012-190401-GW	1.1	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123584-1	FWGmw-015-190401-GW	0.38	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123221-1	FWGmw-016-190401-GW	4.5	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123656-1	FWGmw-021-190401-GW	0.57	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123656-1	FWGmw-021-190402-GW	0.66	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123656-1	FWGmw-024-190401-GW	2.1	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123330-1	LL12mw-187-190401-GW	0.56	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123330-1	LL12mw-242-190401-GW	13	5.0	J1	J	MS-J
Metals	Groundwater	ARSENIC	280-123467-1	LL1mw-064-190401-GW	4.9	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123467-1	LL1mw-086-190401-GW	1.6	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123467-1	LL1mw-086-190401-GW	4.2	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123330-1	LL1mw-087-190401-GW	0.36	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123330-1	LL2mw-267-190401-GW	2.1	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123261-1	LL7mw-001-190401-GW	1.7	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123656-1	RQLmw-007-190401-GW	0.70	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123656-1	RQLmw-009-190401-GW	1.7	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123584-1	SCLmw-001-190401-GW	3.4	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123584-1	SCLmw-002-190401-GW	0.86	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123584-1	SCLmw-002-190402-GW	1.0	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123584-1	SCLmw-003-190401-GW	4.6	5.0	J	J	RepLimit-J
Metals	Groundwater	ARSENIC	280-123221-1	WBGmw-020-190401-GW	1.2	5.0	J	J	RepLimit-J
Metals	Groundwater	BARIUM	280-123584-1	FWGmw-004-190401-GW	22	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123584-1	FWGmw-011-190401-GW	29	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123584-1	FWGmw-012-190401-GW	26	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123584-1	FWGmw-015-190401-GW	10	3.0		J	ProJudge-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	BARIUM	280-123802-1	FWGmw-020-190401-GW	84	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123330-1	LL12mw-242-190401-GW	34	3.0	J1	J	MS-J
Metals	Groundwater	BARIUM	280-123457-1	LL1mw-084-190401-GW	3.0	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123457-1	LL2mw-059-190401-GW	15	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123457-1	LL3mw-244-190401-GW	14	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123584-1	SCLmw-001-190401-GW	53	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123584-1	SCLmw-002-190401-GW	51	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123584-1	SCLmw-002-190402-GW	51	3.0		J	ProJudge-J
Metals	Groundwater	BARIUM	280-123584-1	SCLmw-003-190401-GW	21	3.0		J	ProJudge-J
Metals	Groundwater	BERYLLIUM	280-123183-1	DA2mw-115-190402-GW	0.18	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123656-1	FWGmw-021-190402-GW	0.52	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123656-1	FWGmw-024-190401-GW	0.11	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123330-1	LL12mw-242-190401-GW	0.093	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123330-1	LL12mw-242-190401-GW	0.11	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123467-1	LL1mw-086-190401-GW	0.098	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123457-1	LL3mw-244-190401-GW	0.12	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123584-1	SCLmw-002-190402-GW	0.56	1.0	J	J	RepLimit-J
Metals	Groundwater	BERYLLIUM	280-123221-1	WBGmw-020-190401-GW	0.082	1.0	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123221-1	DET-004-190401-GW	0.55	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123221-1	FWGmw-007-190401-GW	0.51	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123584-1	FWGmw-011-190401-GW	0.90	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123656-1	FWGmw-021-190401-GW	0.76	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123656-1	FWGmw-021-190402-GW	0.82	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123330-1	LL12mw-242-190401-GW	2.4	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123330-1	LL12mw-242-190401-GW	3.1	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123261-1	LL12mw-247-190401-GW	1.1	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123467-1	LL1mw-064-190401-GW	0.58	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123467-1	LL1mw-086-190401-GW	2.8	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123656-1	LL1mw-088-190401-GW	0.50	10	J	J	RepLimit-J
Metals	Groundwater	CHROMIUM	280-123330-1	LL2mw-267-190401-GW	0.79	10	J	J	RepLimit-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	CHROMIUM	280-123330-1	SCFmw-004-190401-GW	1.3	10	J	J	RepLimit-J
Metals	Groundwater	COBALT	280-123221-1	DET-003-190401-GW	0.29	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123221-1	DET-003-190402-GW	0.24	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123221-1	FWGmw-007-190401-GW	0.42	1.0	J Q	U	RepLimit-J,CalBlk-U
Metals	Groundwater	COBALT	280-123584-1	FWGmw-015-190401-GW	0.066	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123656-1	FWGmw-021-190402-GW	0.18	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123656-1	FWGmw-024-190401-GW	0.90	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123330-1	LL12mw-242-190401-GW	0.96	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123261-1	LL12mw-247-190401-GW	0.75	1.0	J Q	U	MB-U,RepLimit-J
Metals	Groundwater	COBALT	280-123457-1	LL1mw-084-190401-GW	0.35	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123467-1	LL1mw-086-190401-GW	0.56	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123330-1	LL1mw-087-190401-GW	0.18	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123656-1	LL1mw-088-190401-GW	0.19	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123656-1	RQLmw-009-190401-GW	0.87	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123330-1	SCFmw-004-190401-GW	0.14	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123584-1	SCLmw-001-190401-GW	0.67	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123584-1	SCLmw-002-190401-GW	0.057	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123584-1	SCLmw-002-190402-GW	0.11	1.0	J Q	J	RepLimit-J
Metals	Groundwater	COBALT	280-123221-1	WBGmw-006-190401-GW	0.29	1.0	J Q	U	RepLimit-J,CalBlk-U
Metals	Groundwater	COBALT	280-123221-1	WBGmw-009-190401-GW	0.62	1.0	J Q	U	RepLimit-J,CalBlk-U
Metals	Groundwater	COBALT	280-123221-1	WBGmw-020-190401-GW	0.38	1.0	J Q	U	RepLimit-J,CalBlk-U
Metals	Groundwater	COBALT	280-123221-1	WBGmw-021-190401-GW	0.20	1.0	J Q	U	RepLimit-J,CalBlk-U
Metals	Groundwater	COPPER	280-123221-1	DET-004-190401-GW	1.5	2.0	J	J	RepLimit-J
Metals	Groundwater	COPPER	280-123584-1	FWGmw-015-190401-GW	0.87	2.0	J	J	RepLimit-J
Metals	Groundwater	COPPER	280-123656-1	FWGmw-021-190401-GW	1.2	2.0	J	J	RepLimit-J
Metals	Groundwater	COPPER	280-123656-1	FWGmw-021-190402-GW	1.1	2.0	J	J	RepLimit-J
Metals	Groundwater	COPPER	280-123330-1	LL12mw-187-190401-GW	1.0	2.0	J	J	RepLimit-J
Metals	Groundwater	COPPER	280-123330-1	LL12mw-242-190401-GW	1.1	2.0	J B	U	MB-U,RepLimit-J
Metals	Groundwater	COPPER	280-123330-1	LL12mw-245-190401-GW	1.3	2.0	J	J	RepLimit-J
Metals	Groundwater	COPPER	280-123261-1	LL12mw-247-190401-GW	0.59	2.0	J	J	RepLimit-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	COPPER	280-123330-1	LL1mw-087-190401-GW	0.94	2.0	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123584-1	FWGmw-004-190401-GW	50	100	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123584-1	FWGmw-015-190401-GW	45	100	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123656-1	FWGmw-021-190401-GW	630	100		J	ProJudge-J
Metals	Groundwater	IRON	280-123656-1	FWGmw-024-190401-GW	1600	100		J	ProJudge-J
Metals	Groundwater	IRON	280-123330-1	LL10mw-005-190401-GW	25	100	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123457-1	LL1mw-084-190401-GW	82	100	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123656-1	LL1mw-088-190401-GW	1700	100		J	ProJudge-J
Metals	Groundwater	IRON	280-123457-1	LL2mw-059-190401-GW	46	100	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123656-1	LL3mw-246-190401-GW	22	100	J	J	RepLimit-J,ProJudge-J
Metals	Groundwater	IRON	280-123656-1	LL3mw-246-190402-GW	85	100	J	U	RepLimit-J,ProJudge-U
Metals	Groundwater	IRON	280-123656-1	RQLmw-007-190401-GW	75	100	J	U	RepLimit-J,ProJudge-U
Metals	Groundwater	IRON	280-123330-1	SCFmw-004-190401-GW	81	100	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123221-1	WBGmw-006-190401-GW	46	100	J	J	RepLimit-J
Metals	Groundwater	IRON	280-123221-1	WBGmw-009-190401-GW	58	100	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123221-1	FWGmw-007-190401-GW	0.22	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123584-1	FWGmw-011-190401-GW	0.37	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123656-1	FWGmw-021-190402-GW	0.23	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123330-1	LL12mw-187-190401-GW	0.20	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123330-1	LL12mw-242-190401-GW	0.67	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123330-1	LL12mw-242-190401-GW	1.7	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123330-1	LL12mw-245-190401-GW	0.32	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123261-1	LL12mw-247-190401-GW	0.38	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123467-1	LL1mw-086-190401-GW	2.2	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123656-1	LL1mw-088-190401-GW	0.18	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123457-1	LL3mw-244-190401-GW	0.33	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123656-1	RQLmw-007-190401-GW	0.28	3.0	J	J	RepLimit-J
Metals	Groundwater	LEAD	280-123656-1	RQLmw-009-190401-GW	1.4	3.0	J	J	RepLimit-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	LEAD	280-123584-1	SCLmw-001-190401-GW	0.21	3.0	J	J	RepLimit-J
Metals	Groundwater	MAGNESIUM	280-123330-1	LL12mw-187-190401-GW	320000	500	J1	J	MS-J
Metals	Groundwater	MANGANESE	280-123221-1	DET-004-190401-GW	0.63	3.5	J	J	RepLimit-J
Metals	Groundwater	MANGANESE	280-123584-1	FWGmw-004-190401-GW	3.1	3.5	J	U	MB-U,RepLimit-J
Metals	Groundwater	MANGANESE	280-123330-1	LL10mw-005-190401-GW	680	3.5		U	ProJudge-U
Metals	Groundwater	MANGANESE	280-123330-1	LL12mw-242-190401-GW	74	3.5	J1	J	MS-J
Metals	Groundwater	MANGANESE	280-123330-1	LL12mw-242-190401-GW	120	3.5		U	ProJudge-U
Metals	Groundwater	MANGANESE	280-123330-1	LL12mw-245-190401-GW	110	3.5		U	ProJudge-U
Metals	Groundwater	MANGANESE	280-123330-1	LL1mw-087-190401-GW	37	3.5		U	ProJudge-U
Metals	Groundwater	MANGANESE	280-123457-1	LL2mw-059-190401-GW	1.2	3.5	J	U	MB-U,RepLimit-J
Metals	Groundwater	MANGANESE	280-123330-1	LL2mw-267-190401-GW	590	3.5		U	ProJudge-U
Metals	Groundwater	MANGANESE	280-123656-1	LL3mw-246-190401-GW	1.5	3.5	J	U	MB-U,RepLimit-J
Metals	Groundwater	MANGANESE	280-123656-1	LL3mw-246-190402-GW	1.2	3.5	J	U	MB-U,RepLimit-J
Metals	Groundwater	MANGANESE	280-123330-1	SCFmw-004-190401-GW	840	3.5		U	ProJudge-U
Metals	Groundwater	MERCURY	280-123183-1	DA2mw-115-190401-GW	0.080	0.20	U J1	UJ	MS-UJ
Metals	Groundwater	NICKEL	280-123584-1	FWGmw-004-190401-GW	0.43	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123221-1	FWGmw-007-190401-GW	1.2	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123584-1	FWGmw-011-190401-GW	1.5	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123584-1	FWGmw-012-190401-GW	1.1	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123584-1	FWGmw-015-190401-GW	0.97	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123656-1	FWGmw-021-190401-GW	1.8	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123656-1	FWGmw-021-190402-GW	1.6	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123330-1	LL10mw-005-190401-GW	0.57	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123330-1	LL12mw-242-190401-GW	2.1	3.0	J J1	J	MS-J,RepLimit-J
Metals	Groundwater	NICKEL	280-123330-1	LL12mw-245-190401-GW	1.4	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123261-1	LL12mw-247-190401-GW	1.1	3.0	J	U	MB-U,RepLimit-J
Metals	Groundwater	NICKEL	280-123467-1	LL1mw-086-190401-GW	1.8	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123330-1	LL1mw-087-190401-GW	0.92	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123656-1	LL1mw-088-190401-GW	0.39	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123457-1	LL2mw-059-190401-GW	1.4	3.0	J	J	RepLimit-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	NICKEL	280-123656-1	LL3mw-246-190401-GW	1.6	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123656-1	LL3mw-246-190402-GW	1.4	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123656-1	RQLmw-009-190401-GW	1.6	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123584-1	SCLmw-001-190401-GW	0.71	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123584-1	SCLmw-003-190401-GW	2.9	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123221-1	WBGmw-006-190401-GW	0.33	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123221-1	WBGmw-009-190401-GW	2.7	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123221-1	WBGmw-020-190401-GW	2.2	3.0	J	J	RepLimit-J
Metals	Groundwater	NICKEL	280-123221-1	WBGmw-021-190401-GW	0.36	3.0	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	DET-003-190401-GW	1900	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	DET-003-190402-GW	1900	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	DET-004-190401-GW	1200	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123584-1	FWGmw-004-190401-GW	700	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	FWGmw-007-190401-GW	2500	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123584-1	FWGmw-011-190401-GW	1200	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	FWGmw-016-190401-GW	2400	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	FWGmw-018-190401-GW	1900	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	FWGmw-021-190401-GW	1200	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	FWGmw-021-190402-GW	1200	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	FWGmw-024-190401-GW	810	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123330-1	LL10mw-005-190401-GW	630	3000	J	U	RepLimit-J,ProJudge-U
Metals	Groundwater	POTASSIUM	280-123330-1	LL12mw-242-190401-GW	2300	3000	J	U	RepLimit-J,ProJudge-U
Metals	Groundwater	POTASSIUM	280-123330-1	LL12mw-245-190401-GW	3400	3000		U	ProJudge-U
Metals	Groundwater	POTASSIUM	280-123261-1	LL12mw-247-190401-GW	2600	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123467-1	LL1mw-064-190401-GW	920	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123467-1	LL1mw-065-190401-GW	1400	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123457-1	LL1mw-084-190401-GW	880	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123467-1	LL1mw-086-190401-GW	21000	3000		J	ProJudge-J
Metals	Groundwater	POTASSIUM	280-123330-1	LL1mw-087-190401-GW	900	3000	J	J	RepLimit-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	POTASSIUM	280-123656-1	LL1mw-088-190401-GW	2400	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123457-1	LL2mw-059-190401-GW	1400	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123330-1	LL2mw-267-190401-GW	790	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	LL3mw-246-190401-GW	1200	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	LL3mw-246-190402-GW	1100	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123261-1	LL7mw-001-190401-GW	1100	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	NTAmw-119-190401-GW	1400	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	RQLmw-007-190401-GW	2900	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	RQLmw-008-190401-GW	2100	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123656-1	RQLmw-009-190401-GW	2800	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123330-1	SCFmw-004-190401-GW	2900	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	WBGmw-006-190401-GW	860	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	WBGmw-009-190401-GW	610	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	WBGmw-020-190401-GW	800	3000	J	J	RepLimit-J
Metals	Groundwater	POTASSIUM	280-123221-1	WBGmw-021-190401-GW	1400	3000	J	J	RepLimit-J
Metals	Groundwater	Phosphorus	280-123584-1	SCLmw-001-190401-GW	18	3000	J	J	RepLimit-J
Metals	Groundwater	Phosphorus	280-123584-1	SCLmw-002-190401-GW	100	3000	J	J	MS-J,RepLimit-J
Metals	Groundwater	Phosphorus	280-123584-1	SCLmw-002-190402-GW	110	3000	J	J	RepLimit-J
Metals	Groundwater	SELENIUM	280-123584-1	FWGmw-004-190401-GW	1.1	5.0	J	J	RepLimit-J
Metals	Groundwater	SELENIUM	280-123656-1	FWGmw-021-190402-GW	0.72	5.0	J	J	RepLimit-J
Metals	Groundwater	SELENIUM	280-123457-1	LL3mw-244-190401-GW	2.3	5.0	J	J	RepLimit-J
Metals	Groundwater	SELENIUM	280-123584-1	SCLmw-002-190402-GW	0.48	5.0	J	J	RepLimit-J
Metals	Groundwater	SILVER	280-123467-1	LL1mw-086-190401-GW	0.10	5.0	U	UJ	ProJudge-UJ
Metals	Groundwater	SILVER	280-123584-1	SCLmw-001-190401-GW	0.18	5.0	J	J	RepLimit-J
Metals	Groundwater	SILVER	280-123584-1	SCLmw-002-190402-GW	0.040	5.0	J	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123221-1	DET-004-190401-GW	2200	5000	J Q	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123584-1	FWGmw-004-190401-GW	4600	5000	J Q	J	RepLimit-J,ProJudge-J
Metals	Groundwater	SODIUM	280-123584-1	FWGmw-011-190401-GW	5700	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123584-1	FWGmw-012-190401-GW	6700	5000	Q	J	ProJudge-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	SODIUM	280-123584-1	FWGmw-015-190401-GW	44000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123802-1	FWGmw-020-190401-GW	16000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123656-1	FWGmw-021-190401-GW	3000	5000	J Q	J	RepLimit-J,ProJudge-J
Metals	Groundwater	SODIUM	280-123656-1	FWGmw-021-190402-GW	2900	5000	J Q	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123656-1	FWGmw-024-190401-GW	4900	5000	J Q	J	RepLimit-J,ProJudge-J
Metals	Groundwater	SODIUM	280-123330-1	LL10mw-005-190401-GW	3500	5000	J Q	J	RepLimit-J,ProJudge-J
Metals	Groundwater	SODIUM	280-123330-1	LL12mw-187-190401-GW	44000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123330-1	LL12mw-242-190401-GW	29000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123330-1	LL12mw-245-190401-GW	25000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123467-1	LL1mw-064-190401-GW	5500	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123467-1	LL1mw-065-190401-GW	15000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123457-1	LL1mw-084-190401-GW	3400	5000	J Q	J	RepLimit-J,ProJudge-J
Metals	Groundwater	SODIUM	280-123467-1	LL1mw-086-190401-GW	16000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123330-1	LL1mw-087-190401-GW	10000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123656-1	LL1mw-088-190401-GW	23000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123457-1	LL2mw-059-190401-GW	3300	5000	J Q	J	RepLimit-J,ProJudge-J
Metals	Groundwater	SODIUM	280-123330-1	LL2mw-267-190401-GW	8100	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123457-1	LL3mw-244-190401-GW	2800	5000	J Q	UJ	RepLimit-J,CalBlk-U,ProJudge-J
Metals	Groundwater	SODIUM	280-123656-1	LL3mw-246-190401-GW	2800	5000	J Q	J	RepLimit-J,ProJudge-J
Metals	Groundwater	SODIUM	280-123656-1	LL3mw-246-190402-GW	2700	5000	J Q	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123656-1	RQLmw-007-190401-GW	1800	5000	J Q	U	RepLimit-J,ProJudge-U
Metals	Groundwater	SODIUM	280-123656-1	RQLmw-008-190401-GW	2200	5000	J Q	U	RepLimit-J,ProJudge-U
Metals	Groundwater	SODIUM	280-123656-1	RQLmw-009-190401-GW	1400	5000	J Q	U	RepLimit-J,ProJudge-U
Metals	Groundwater	SODIUM	280-123330-1	SCFmw-004-190401-GW	13000	5000	Q	J	ProJudge-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	SODIUM	280-123584-1	SCLmw-002-190401-GW	3300	5000	J Q	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123584-1	SCLmw-002-190402-GW	3300	5000	J Q	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123584-1	SCLmw-003-190401-GW	38000	5000	Q	J	ProJudge-J
Metals	Groundwater	SODIUM	280-123221-1	WBGmw-009-190401-GW	3300	5000	J Q	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123221-1	WBGmw-020-190401-GW	3900	5000	J Q	J	RepLimit-J
Metals	Groundwater	SODIUM	280-123221-1	WBGmw-021-190401-GW	4800	5000	J Q	J	RepLimit-J
Metals	Groundwater	THALLIUM	280-123656-1	FWGmw-021-190402-GW	0.11	1.0	J	J	RepLimit-J
Metals	Groundwater	THALLIUM	280-123330-1	LL12mw-187-190401-GW	0.75	1.0	J	J	RepLimit-J
Metals	Groundwater	THALLIUM	280-123457-1	LL3mw-244-190401-GW	0.27	1.0	J	J	RepLimit-J
Metals	Groundwater	THALLIUM	280-123261-1	LL7mw-001-190401-GW	0.11	1.0	J	J	RepLimit-J
Metals	Groundwater	THALLIUM	280-123584-1	SCLmw-002-190402-GW	0.094	1.0	J	J	RepLimit-J
Metals	Groundwater	VANADIUM	280-123330-1	LL12mw-242-190401-GW	1.5	6.0	J	J	RepLimit-J
Metals	Groundwater	VANADIUM	280-123330-1	LL12mw-242-190401-GW	3.2	6.0	J J1	J	MS-J,RepLimit-J
Metals	Groundwater	VANADIUM	280-123467-1	LL1mw-086-190401-GW	1.2	6.0	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123221-1	DET-004-190401-GW	14	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123221-1	FWGmw-007-190401-GW	2.7	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123584-1	FWGmw-011-190401-GW	3.9	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123584-1	FWGmw-015-190401-GW	3.9	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123802-1	FWGmw-020-190401-GW	3.5	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123656-1	FWGmw-021-190401-GW	5.5	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123656-1	FWGmw-021-190402-GW	5.2	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123330-1	LL12mw-187-190401-GW	6.3	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123330-1	LL12mw-242-190401-GW	9.3	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123330-1	LL12mw-242-190401-GW	5.6	20	J	U	MB-U,RepLimit-J
Metals	Groundwater	ZINC	280-123330-1	LL12mw-245-190401-GW	4.7	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123261-1	LL12mw-247-190401-GW	6.3	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123457-1	LL1mw-084-190401-GW	2.2	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123467-1	LL1mw-086-190401-GW	9.3	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123457-1	LL2mw-059-190401-GW	2.1	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123330-1	LL2mw-267-190401-GW	2.3	20	J	J	RepLimit-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Metals	Groundwater	ZINC	280-123656-1	LL3mw-246-190401-GW	2.5	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123656-1	LL3mw-246-190402-GW	2.0	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123656-1	RQLmw-008-190401-GW	11	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123656-1	RQLmw-009-190401-GW	3.7	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123584-1	SCLmw-001-190401-GW	2.2	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123584-1	SCLmw-002-190401-GW	2.0	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123584-1	SCLmw-002-190402-GW	2.0	20	J	J	RepLimit-J
Metals	Groundwater	ZINC	280-123584-1	SCLmw-003-190401-GW	2.2	20	J	J	RepLimit-J
Explosives	Groundwater	1,3-DINITROBENZENE	280-123457-1	LL2mw-059-190401-GW	0.27	0.44	J J1	J	RepLimit-J
Explosives	Groundwater	2,4,6-TRINITROTOLUENE	280-123656-1	FWGmw-021-190401-GW	0.43	0.43	U J1	UJ	MS-UJ
Explosives	Groundwater	2,4,6-TRINITROTOLUENE	280-123330-1	LL12mw-245-190401-GW	0.46	0.42	J1	J	ProJudge-J
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-123656-1	FWGmw-021-190401-GW	0.31	0.21	J1	J	MS-J
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	DET-003-190401-GW	0.22	0.45	U Q J1	UJ	MS-UJ,LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	DET-003-190402-GW	0.22	0.44	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	DET-004-190401-GW	0.21	0.41	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	FWGmw-007-190401-GW	0.22	0.44	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	FWGmw-016-190401-GW	0.20	0.40	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123656-1	FWGmw-021-190401-GW	0.21	0.43	U J1	UJ	MS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	NTAmw-119-190401-GW	0.22	0.43	U J1 Q	UJ	MS-UJ,LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	NTAmw-119-190402-GW	0.21	0.43	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	WBGmw-006-190401-GW	0.20	0.39	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	WBGmw-009-190401-GW	0.21	0.42	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	WBGmw-020-190401-GW	0.19	0.39	U Q	UJ	LCS-UJ
Explosives	Groundwater	2-NITROTOLUENE	280-123221-1	WBGmw-021-190401-GW	0.22	0.44	U Q	UJ	LCS-UJ
Explosives	Groundwater	3-NITROTOLUENE	280-123221-1	DET-003-190401-GW	0.45	0.45	U J1	UJ	MS-UJ
Explosives	Groundwater	3-NITROTOLUENE	280-123656-1	FWGmw-021-190401-GW	0.43	0.43	U J1	UJ	MS-UJ
Explosives	Groundwater	3-NITROTOLUENE	280-123221-1	NTAmw-119-190401-GW	0.43	0.43	U J1	UJ	MS-UJ
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-123656-1	FWGmw-021-190401-GW	0.28	0.21	J1	J	MS-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Explosives	Groundwater	4-NITROTOLUENE	280-123656-1	FWGmw-021-190401-GW	0.43	1.1	U J1	UJ	MS-UJ
Explosives	Groundwater	4-NITROTOLUENE	280-123221-1	NTAmw-119-190401-GW	0.43	1.1	U J1	UJ	MS-UJ
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-123261-1	FBQmw-174-190401-GW	1.2	0.42	M J1	J	ProJudge-J
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-123330-1	LL12mw-245-190401-GW	0.72	0.42	M J1	J	ProJudge-J
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-123467-1	LL1mw-081-190401-GW	0.16	0.41	J M	J	RepLimit-J
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-123330-1	LL2mw-267-190401-GW	0.29	0.40	J M	J	RepLimit-J
Explosives	Groundwater	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-123261-1	LL7mw-006-190401-GW	0.17	0.40	J M	J	RepLimit-J
Propellants	Groundwater	Nitrocellulose	280-123467-1	LL1mw-089-190402-GW	630	2000	J	J	RepLimit-J
SVOCs	Groundwater	BENZOIC ACID	280-123584-1	SCLmw-001-190401-GW	30	79	U Q	UJ	LCS-UJ
SVOCs	Groundwater	BENZOIC ACID	280-123584-1	SCLmw-002-190401-GW	30	81	U Q	UJ	LCS-UJ
SVOCs	Groundwater	BENZOIC ACID	280-123584-1	SCLmw-002-190402-GW	31	83	U Q	UJ	LCS-UJ
SVOCs	Groundwater	BENZOIC ACID	280-123584-1	SCLmw-003-190401-GW	31	82	U Q	UJ	LCS-UJ
SVOCs	Groundwater	HEXACHLOROCYCLOPENTADIENE	280-123584-1	SCLmw-001-190401-GW	9.9	50	U	UJ	LCS-UJ
SVOCs	Groundwater	HEXACHLOROCYCLOPENTADIENE	280-123584-1	SCLmw-002-190401-GW	10	51	U	UJ	MS-UJ,LCS-UJ
SVOCs	Groundwater	HEXACHLOROCYCLOPENTADIENE	280-123584-1	SCLmw-002-190402-GW	10	52	U	UJ	LCS-UJ
SVOCs	Groundwater	HEXACHLOROCYCLOPENTADIENE	280-123584-1	SCLmw-003-190401-GW	10	51	U	UJ	LCS-UJ
SVOCs	Groundwater	N-NITROSODIPHENYLAMINE	280-123584-1	SCLmw-002-190401-GW	1.0	10	U J1	UJ	MS-UJ
VOCs	Groundwater	1,1,1-TRICHLOROETHANE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,1,1-TRICHLOROETHANE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,1,2,2-TETRACHLOROETHANE	280-123584-1	SCLmw-001-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,1,2,2-TETRACHLOROETHANE	280-123584-1	SCLmw-003-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,1,2-TRICHLOROETHANE	280-123584-1	SCLmw-001-190401-GW	0.80	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	1,1,2-TRICHLOROETHANE	280-123584-1	SCLmw-003-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,1-DICHLOROETHANE	280-123584-1	SCLmw-001-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,1-DICHLOROETHANE	280-123584-1	SCLmw-003-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,1-DICHLOROETHENE	280-123584-1	SCLmw-001-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	Groundwater	1,1-DICHLOROETHENE	280-123584-1	SCLmw-003-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,2-DIBROMOETHANE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,2-DIBROMOETHANE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,2-DICHLOROETHANE	280-123584-1	SCLmw-001-190401-GW	0.15	1.0	J Q	UJ	MB-U,RepLimit-J,ProJudge-J
VOCs	Groundwater	1,2-DICHLOROETHANE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,2-DICHLOROETHENE (TOTAL)	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,2-DICHLOROETHENE (TOTAL)	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	1,2-DICHLOROPROPANE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	1,2-DICHLOROPROPANE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	2-BUTANONE	280-123584-1	SCLmw-001-190401-GW	4.0	6.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	2-BUTANONE	280-123584-1	SCLmw-003-190401-GW	4.0	6.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	2-HEXANONE	280-123584-1	SCLmw-001-190401-GW	4.0	5.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	2-HEXANONE	280-123584-1	SCLmw-003-190401-GW	4.0	5.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	4-METHYL-2-PENTANONE	280-123584-1	SCLmw-001-190401-GW	3.2	5.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	4-METHYL-2-PENTANONE	280-123584-1	SCLmw-003-190401-GW	3.2	5.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	ACETONE	280-123221-1	DET-003-190401-GW	2.8	10	J	J	RepLimit-J
VOCs	Groundwater	ACETONE	280-123221-1	DET-003-190402-GW	2.4	10	J	J	RepLimit-J
VOCs	Groundwater	ACETONE	280-123221-1	DET-004-190401-GW	5.1	10	J	J	RepLimit-J
VOCs	Groundwater	ACETONE	280-123802-1	FWGmw-020-190401-GW	5.8	10	J	U	MB-U,RepLimit-J
VOCs	Groundwater	ACETONE	280-123261-1	LL10mw-003-190401-GW	3.6	10	J	J	RepLimit-J
VOCs	Groundwater	ACETONE	280-123261-1	LL10mw-003-190402-GW	4.2	10	J	J	RepLimit-J
VOCs	Groundwater	ACETONE	280-123656-1	RQLmw-008-190401-GW	2.6	10	J B	U	MB-U,RepLimit-J
VOCs	Groundwater	ACETONE	280-123584-1	SCLmw-001-190401-GW	6.4	10	U	UJ	ProJudge-UJ
VOCs	Groundwater	ACETONE	280-123584-1	SCLmw-002-190401-GW	2.1	10	J	J	RepLimit-J
VOCs	Groundwater	ACETONE	280-123584-1	SCLmw-003-190401-GW	2.1	10	J	J	RepLimit-J,ProJudge-J
VOCs	Groundwater	BENZENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	BENZENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	BROMOCHLOROMETHANE	280-123584-1	SCLmw-001-190401-GW	0.20	1.0	U	UJ	ProJudge-UJ

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	Groundwater	BROMOCHLOROMETHANE	280-123584-1	SCLmw-003-190401-GW	0.20	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	BROMODICHLOROMETHANE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	BROMODICHLOROMETHANE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	BROMOFORM	280-123584-1	SCLmw-001-190401-GW	1.0	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	BROMOFORM	280-123584-1	SCLmw-003-190401-GW	1.0	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	BROMOMETHANE	280-123584-1	SCLmw-001-190401-GW	0.80	2.0	U M	UJ	ProJudge-UJ
VOCs	Groundwater	BROMOMETHANE	280-123584-1	SCLmw-003-190401-GW	0.80	2.0	U M	UJ	ProJudge-UJ
VOCs	Groundwater	Bromobenzene	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	Bromobenzene	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CARBON DISULFIDE	280-123584-1	SCLmw-001-190401-GW	0.80	2.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CARBON DISULFIDE	280-123584-1	SCLmw-003-190401-GW	0.43	2.0	J	UJ	MB-U,RepLimit-J,ProJudge-J
VOCs	Groundwater	CARBON TETRACHLORIDE	280-123261-1	LL10mw-003-190401-GW	0.63	2.0	J	J	RepLimit-J
VOCs	Groundwater	CARBON TETRACHLORIDE	280-123261-1	LL10mw-003-190402-GW	0.86	2.0	J	J	RepLimit-J
VOCs	Groundwater	CARBON TETRACHLORIDE	280-123584-1	SCLmw-001-190401-GW	0.40	2.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	CARBON TETRACHLORIDE	280-123584-1	SCLmw-003-190401-GW	0.40	2.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROBENZENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROBENZENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROETHANE	280-123584-1	SCLmw-001-190401-GW	1.6	2.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROETHANE	280-123584-1	SCLmw-003-190401-GW	1.6	2.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROFORM	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROFORM	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROMETHANE	280-123584-1	SCLmw-001-190401-GW	0.80	2.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CHLOROMETHANE	280-123584-1	SCLmw-003-190401-GW	0.80	2.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	CIS-1,3-DICHLOROPROPENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	CIS-1,3-DICHLOROPROPENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	DIBROMOCHLOROMETHANE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	DIBROMOCHLOROMETHANE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	ETHYLBENZENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	ETHYLBENZENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
VOCs	Groundwater	METHYLENE CHLORIDE	280-123584-1	SCLmw-001-190401-GW	2.0	5.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	METHYLENE CHLORIDE	280-123584-1	SCLmw-003-190401-GW	2.0	5.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	STYRENE	280-123584-1	SCLmw-001-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	STYRENE	280-123584-1	SCLmw-003-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	TETRACHLOROETHENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	TETRACHLOROETHENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	TOLUENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	TOLUENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	TRANS-1,3-DICHLOROPROPENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	TRANS-1,3-DICHLOROPROPENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	TRICHLOROETHENE	280-123584-1	SCLmw-001-190401-GW	0.40	1.0	U Q	UJ	ProJudge-UJ
VOCs	Groundwater	TRICHLOROETHENE	280-123584-1	SCLmw-003-190401-GW	0.40	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	VINYL CHLORIDE	280-123584-1	SCLmw-001-190401-GW	0.20	1.5	U	UJ	ProJudge-UJ
VOCs	Groundwater	VINYL CHLORIDE	280-123584-1	SCLmw-003-190401-GW	0.20	1.5	U M	UJ	ProJudge-UJ
VOCs	Groundwater	XYLENES (TOTAL)	280-123584-1	SCLmw-001-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
VOCs	Groundwater	XYLENES (TOTAL)	280-123584-1	SCLmw-003-190401-GW	0.80	1.0	U	UJ	ProJudge-UJ
Pesticides	Groundwater	4,4'-DDE	280-123656-1	RQLmw-007-190401-GW	0.020	0.050	U Q	UJ	LCS-UJ
Pesticides	Groundwater	4,4'-DDE	280-123656-1	RQLmw-008-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Pesticides	Groundwater	4,4'-DDE	280-123656-1	RQLmw-009-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	4,4'-DDE	280-123584-1	SCLmw-001-190401-GW	0.021	0.052	U Q	UJ	LCS-UJ
Pesticides	Groundwater	4,4'-DDE	280-123584-1	SCLmw-002-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	4,4'-DDE	280-123584-1	SCLmw-003-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALDRIN	280-123656-1	RQLmw-007-190401-GW	0.020	0.050	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALDRIN	280-123656-1	RQLmw-008-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALDRIN	280-123656-1	RQLmw-009-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALDRIN	280-123584-1	SCLmw-001-190401-GW	0.021	0.052	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALDRIN	280-123584-1	SCLmw-002-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALDRIN	280-123584-1	SCLmw-003-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALPHA-CHLORDANE	280-123656-1	RQLmw-007-190401-GW	0.020	0.050	U Q	UJ	LCS-UJ

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Pesticides	Groundwater	ALPHA-CHLORDANE	280-123656-1	RQLmw-008-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALPHA-CHLORDANE	280-123656-1	RQLmw-009-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALPHA-CHLORDANE	280-123584-1	SCLmw-001-190401-GW	0.021	0.052	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALPHA-CHLORDANE	280-123584-1	SCLmw-002-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	ALPHA-CHLORDANE	280-123584-1	SCLmw-003-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Pesticides	Groundwater	GAMMA-CHLORDANE	280-123656-1	RQLmw-007-190401-GW	0.020	0.050	U Q	UJ	LCS-UJ
Pesticides	Groundwater	GAMMA-CHLORDANE	280-123656-1	RQLmw-008-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Pesticides	Groundwater	GAMMA-CHLORDANE	280-123656-1	RQLmw-009-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	GAMMA-CHLORDANE	280-123584-1	SCLmw-001-190401-GW	0.021	0.052	U Q	UJ	LCS-UJ
Pesticides	Groundwater	GAMMA-CHLORDANE	280-123584-1	SCLmw-002-190401-GW	0.022	0.054	U Q	UJ	LCS-UJ
Pesticides	Groundwater	GAMMA-CHLORDANE	280-123584-1	SCLmw-003-190401-GW	0.021	0.053	U Q	UJ	LCS-UJ
Cyanide	Groundwater	Cyanide, Total	280-123656-1	FWGmw-018-190401-GW	0.0065	0.010	J	J	MS-J,RepLimit-J
Cyanide	Groundwater	Cyanide, Total	280-123330-1	LL2mw-264-190401-GW	0.0060	0.010	J	J	RepLimit-J
Cyanide	Groundwater	Cyanide, Total	280-123467-1	LL3mw-234-190401-GW	0.0087	0.010	J	J	RepLimit-J
Cyanide	Groundwater	Cyanide, Total	280-123656-1	RQLmw-008-190401-GW	0.0053	0.010	J	J	MS-J,RepLimit-J
Cyanide	Groundwater	Cyanide, Total	280-123656-1	RQLmw-009-190401-GW	0.013	0.010		J	MS-J
Cyanide	Groundwater	Cyanide, Total	280-123656-1	RQLmw-012-190401-GW	0.040	0.010		J	MS-J
Cyanide	Groundwater	Cyanide, Total	280-123584-1	SCLmw-001-190401-GW	0.015	0.010		J	MS-J
Cyanide	Groundwater	Cyanide, Total	280-123584-1	SCLmw-002-190402-GW	0.0052	0.010	J	J	MS-J,RepLimit-J
Perchlorate	Groundwater	Perchlorate	280-123656-1	LL3mw-246-190401-GW	0.052	0.050	J1	J	MS-J
Perchlorate	Groundwater	Perchlorate	280-123656-1	LL3mw-246-190402-GW	0.062	0.050		J	MS-J
Anions	Groundwater	Nitrate as N	280-123261-1	FBQmw-171-190401-GW	0.33	0.50	J H	J	HT-J,RepLimit-J
Anions	Groundwater	Nitrate as N	280-123330-1	LL12mw-245-190401-GW	0.12	0.50	J	J	RepLimit-J
Anions	Groundwater	Nitrite as N	280-123261-1	FBQmw-171-190401-GW	0.10	0.50	U H	UJ	HT-UJ
Anions	Groundwater	Nitrite as N	280-123656-1	RQLmw-012-190401-GW	0.10	0.50	U H	UJ	HT-UJ
Anions	Groundwater	Nitrite as N	280-123656-1	RQLmw-013-190401-GW	0.10	0.50	U H	R	HT-R
Anions	Groundwater	Sulfate	280-123457-1	LL1mw-083-190401-GW	120	5.0	M	J	MS-J
Anions	Groundwater	Sulfate	280-123457-1	LL1mw-084-190401-GW	140	5.0	M J1	J	MS-J
Anions	Groundwater	Sulfate	280-123656-1	RQLmw-011-190401-GW	130	5.0	J1	J	MS-J
Anions	Groundwater	Sulfate	280-123656-1	RQLmw-011-190402-GW	130	5.0		J	MS-J

Table H-4. Detailed Listing of Qualified Results – Spring 2019 Sampling Event (continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit (LOQ)	Lab Qual	Val. Qual	Validation Code
Anions	Groundwater	Sulfate	280-123656-1	RQLmw-012-190401-GW	110	5.0		J	MS-J
Anions	Groundwater	Sulfate	280-123656-1	RQLmw-013-190401-GW	160	5.0	M J1	J	MS-J
Anions	Groundwater	Sulfide	280-123457-1	LL1mw-084-190401-GW	0.80	4.0	J	J	RepLimit-J
Alkalinity	Groundwater	Alkalinity	280-123261-1	FBQmw-174-190401-GW	4.8	10	J	J	RepLimit-J
Alkalinity	Groundwater	Alkalinity	280-123656-1	RQLmw-012-190401-GW	9.9	10	J	J	RepLimit-J

Laboratory Qualifiers: J = estimated because result is between the method detection limit and the reporting limit, J1= Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria, U = not detected, H = Holding Time, M = Manually integrated compound, Q = One or more quality control failed.
Validation Qualifiers: J = estimated, R = rejected, U = not detected, and UJ = not detected and reporting limit estimated.
Validation Reason Codes: HT = holding time, LCS = laboratory control sample, MB = method blank, MS = matrix spike, ProJudge = professional judgment, RptLimit = reporting limit, and Surr = surrogate recovery.
BHC = Hexachlorocyclohexane.
DDD = Dichlorodiphenyldichloroethane.
DDE = Dichlorodiphenyldichloroethylene.
DDT = Dichlorodiphenyltrichloroethane.
ID = Identification.
µg/kg = Micrograms per kilogram.
µg/L = Micrograms per liter.
mg/kg = Milligrams per kilogram.
PAH = Polycyclic aromatic hydrocarbon.
PETN = Pentaerythritol tetranitrate.
SVOC = Semi-volatile organic compound.
VOC = Volatile organic compound.

Table H-5. Results for Analytes Detected in Field Blanks or Trip Blanks – Spring 2019 Sampling Event

Client Sample ID	Analysis Type	Analyte Name	Results	Laboratory Qualifier	Final Qualifier
FWGTB-191002-TB	VOCs	1,2-Dichloroethene (Total)	0.00033	J	J

Data Qualifiers: J = estimated
ID = Identification.
VOC = Volatile organic compound.

Table H-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – Spring 2019 Sampling Event

Sample No.	Analysis Type	Chemical	Parent Result (mg/Kg)	Duplicate Result (mg/Kg)	RPD % or (Abs. Diff)	Test
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	ALUMINUM	0.021J	0.07U	(0.16)	D
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	ARSENIC	0.0017J	0.001U	(0.14)	D
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	BARIUM	0.023	0.00095U	(7.40)	D *
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	BERYLLIUM	0.0003U	0.00018J	(0.12)	D
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	CALCIUM	100	100	0%	RPD
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	IRON	0.84	0.82	2%	RPD
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	MAGNESIUM	28	28	0%	RPD
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	MANGANESE	0.099	0.00095U	(25.0)	D *
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	POTASSIUM	3.3	3.4	(0.03)	D
DA2mw-115-190401-GW/ DA2mw-115-190402-GW	Metals	SODIUM	12	12	(0.00)	D
DET-003-190401-GW/ DET-003-190402-GW	Metals	ARSENIC	0.0092	0.0093	(0.02)	D
DET-003-190401-GW/ DET-003-190402-GW	Metals	BARIUM	0.043	0.042	2%	RPD
DET-003-190401-GW/ DET-003-190402-GW	Metals	CALCIUM	90	91	1%	RPD
DET-003-190401-GW/ DET-003-190402-GW	Metals	COBALT	0.00029J	0.00024J	(0.05)	D
DET-003-190401-GW/ DET-003-190402-GW	Metals	IRON	1.9	1.9	0%	RPD
DET-003-190401-GW/ DET-003-190402-GW	Metals	MAGNESIUM	33	33	0%	RPD
DET-003-190401-GW/ DET-003-190402-GW	Metals	MANGANESE	0.24	0.24	0%	RPD
DET-003-190401-GW/ DET-003-190402-GW	Metals	POTASSIUM	1.9J	1.9J	(0.00)	D
DET-003-190401-GW/ DET-003-190402-GW	Metals	SODIUM	12	12	(0.00)	
DET-003-190401-GW/ DET-003-190402-GW	VOCs	ACETONE	0.0028J	0.0024J	(0.04)	D
FBQmw-175-190401-GW/ FBQmw-175-190402-GW	Anions	NITRATE AS N	1.6	1.6	(0.00) D	D
FBQmw-175-190401-GW/ FBQmw-175-190402-GW	Anions	SULFATE	20	18	(0.40)	D
FBQmw-175-190401-GW/ FBQmw-175-190402-GW	Alkalinity	ALKALINITY	13	12	(0.10)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	ANTIMONY	0.00051J	0.00099J	(0.08)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	ARSENIC	0.00057J	0.00066J	(0.02)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	BARIUM	0.016	0.016	0%	RPD
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	BERYLLIUM	0.0003U	0.00052J	(0.22)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	CALCIUM	21	20	5%	RPD
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	CHROMIUM	0.00076J	0.00082J	(0.01)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	COBALT	0.0002U	0.00018J	(0.02)	D

Table H-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – Spring 2019 Sampling Event (continued)

Sample No.	Analysis Type	Chemical	Parent Result (mg/Kg)	Duplicate Result (mg/Kg)	RPD % or (Abs. Diff)	Test
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	COPPER	0.0012J	0.0011J	(0.05)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	IRON	0.63J	0.66	5%	RPD
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	LEAD	0.0007U	0.00023J	(0.16)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	MAGNESIUM	6.9	6.8	2%	RPD
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	MANGANESE	0.0099	0.0094	(0.13)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	NICKEL	0.0018J	0.0016J	(0.07)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	POTASSIUM	1.2J	1.2J	(0.00)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	SELENIUM	0.001U	0.00072J	(0.06)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	SODIUM	3J	2.9J	(0.02)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	THALLIUM	0.0002U	0.00011J	(0.09)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Metals	ZINC	0.0055J	0.0052J	(0.02)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Explosives	2-AMINO-4,6-DINITROTOLUENE	0.00031J	0.00038	(0.34)	D
FWGmw-021-190401-GW/ FWGmw-021-190402-GW	Explosives	4-AMINO-2,6-DINITROTOLUENE	0.00028J	0.00031	(0.15)	D
LL10mw-003-190401-GW/ LL10mw-003-190402-GW	VOCs	ACETONE	0.0036J	0.0042J	(0.06)	D
LL10mw-003-190401-GW/ LL10mw-003-190402-GW	VOCs	CARBON TETRACHLORIDE	0.00063J	0.00086J	(0.12)	D
LL1mw-089-190401-GW/ LL1mw-089-190402-GW	Propellants	NITROCELLULOSE	1U	0.63J	(0.19)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	ANTIMONY	0.00059J	0.00056J	(0.01)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	BARIUM	0.015	0.015	0%	RPD
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	CALCIUM	20	20	0%	RPD
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	IRON	0.022J	0.085U	(0.63)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	MAGNESIUM	6.7	6.6	2%	RPD
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	NICKEL	0.0016J	0.0014J	(0.07)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	POTASSIUM	1.2J	1.1J	(0.03)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	SODIUM	2.8J	2.7J	(0.02)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Metals	ZINC	0.0025J	0.002J	(0.03)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Explosives	2-AMINO-4,6-DINITROTOLUENE	0.00031	0.0003	(0.05)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Explosives	4-AMINO-2,6-DINITROTOLUENE	0.00027	0.00026	(0.05)	D
LL3mw-246-190401-GW/ LL3mw-246-190402-GW	Perchlorate	PERCHLORATE	0.000052J	0.000062J	(0.20)	D

Table H-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – Spring 2019 Sampling Event (continued)

Sample No.	Analysis Type	Chemical	Parent Result (mg/Kg)	Duplicate Result (mg/Kg)	RPD % or (Abs. Diff)	Test
RQLmw-011-190401-GW/ RQLmw-011-190402-GW	Anions	SULFATE	130J	130J	0%	RPD
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	ALUMINUM	0.019J	0.018J	(0.00)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	ANTIMONY	0.001U	0.00059J	(0.07)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	ARSENIC	0.00086J	0.001J	(0.03)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	BARIUM	0.051J	0.051J	0%	RPD
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	BERYLLIUM	0.0003U	0.00056J	(0.26)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	CALCIUM	190	190	0%	RPD
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	COBALT	0.000057J	0.00011J	(0.05)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	IRON	10	10	0%	RPD
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	MAGNESIUM	16	16	0%	RPD
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	MANGANESE	1.1	1	10%	RPD
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	POTASSIUM	4	4	(0.00)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	PHOSPHORUS	0.1J	0.11J	(0.00)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	SELENIUM	0.001U	0.00048J	(0.10)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	SILVER	0.0001U	0.00004J	(0.01)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	SODIUM	3.3J	3.3J	(0.00)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	THALLIUM	0.0002U	0.000094J	(0.11)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Metals	ZINC	0.002J	0.002J	(0.00)	D
SCLmw-002-190401-GW/ SCLmw-002-190402-GW	Cyanide	CYANIDE, TOTAL	0.01U	0.0052J	(0.48)	D

RPD is calculated as 100x |R-D|/(R-D)/2, where R is the concentration of the regular sample and D is the concentration of the duplicate. The absolute difference is calculated as |R-D|/L, where L is the average reporting limit of the two samples. Values followed by a "%" are RPD values. Values in parentheses are absolute difference values.
The test used to evaluate the duplicate comparison is the RPD if both sample results were more than five times the reporting limit or D if any result was less than five times the reporting limit.
*RPD or D outside criteria
Data Qualifiers: J = estimated, U = not detected, and UJ = not detected and reporting limit estimated.
BHC = Hexachlorocyclohexane.
D = Absolute difference.
ID = Identification.
mg/kg = Milligrams per kilogram.
PAH = Polycyclic aromatic hydrocarbon.
SVOC = Semi-volatile organic compound.
RDX = Hexahydro-1,3,5-Trinitro-1,3,5-Triazine.
RPD = Relative percent difference.
SVOC = Semi-volatile organic compound.

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APPENDIX I

Well Abandonment Records

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I.1 Ohio EPA Notification Letter

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NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

May 30, 2019

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Mr. Kevin Palombo, Project Coordinator
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Notification of Field Work, Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-wide Groundwater

Dear Mr. Palombo:

In accordance with the Director's Final Findings and Orders, Section XIII, #28, for the RVAAP Restoration Program, the Army National Guard (ARNG) is providing notification of field activities at the former RVAAP (Camp James A. Garfield) 15 days prior to the scheduled start date. These field activities include:

1) Abandonment of the one temporary well at Open Demolition Area #1; and
2) Abandonment of the three temporary wells at Electric Substations No. 3.

It is anticipated that the mobilization, well abandonment activities, and demobilization will take place from 6/12/19 to 6/14/19. Acknowledging this is only a 13 day notice, please advise if you require rescheduling the field operation.

Please contact the undersigned at (703) 607-7589 or david.m.connolly8.civ@mail.mil if there are issues or concerns with this submission.

Sincerely,

Mr. David Connolly
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Mark Johnson, Ohio EPA, DERR-NEDO
Bob Princic, Ohio EPA, DERR-NEDO
Liam McEvoy, Ohio EPA, DERR-NEDO
Kevin Sedlak, ARNG, Camp James A. Garfield
Katie Tait, OHARNG, Camp James A. Garfield
Craig Coombs, USACE Louisville
Jay Trumble, USACE Louisville
Vasu Peterson, Leidos
Jed Thomas, Leidos
Gail Harris, Vista Sciences Corporation

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I.2 Well Abandonment Logs

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leidos MONITORING WELL/BOREHOLE ABANDONMENT RECORD

Well/Borehole Number: DA1tw-001 Abandonment Date: 6/12/19

County: Portage State: OH

Address or Location: Camp James A. Garfield / former Camp Ravenna

RL/6/12/19

Investigative Unit (if applicable): ~~Area Test Area~~ DJG 6/14/19 Open Demolition Area #1

Reason for Abandonment: NO longer necessary for groundwater evaluation

---

Geologist/Field Supervisor: Gabby Gromofsky

Drilling Company: Frontz Drilling

Driller: Ricky Shanks . Helpers: Andre Ewart N/A

Static Water Level: 7.40 BTOC Date/Time Measured: 6/12/19 1018

Casing Stick-up Height: 2.90 Total Well Depth: 17.91'

Type of Well Casing: PVC Diameter: 2"

Length of Well Casing Cutoff During Abandonment: 4.66'

Final Casing Stick-up Height or Depth Below Ground Surface: 1.75' BGS

Abandonment Method/Procedure: Remove casing to 1.75' BGS, backfill PVC with Bentonite chips, hydrate bentonite to approx. 1' BGS, backfill hole with ~~native~~ on-site soil. DJG 6/12/19 * entire casing could not be removed

Grout Mixture: Portland Cement (lbs/bags) N/A Type: N/A

Bentonite (lbs/bags) 25 lbs/1/2-50 lb bag Type: Bentonite chips

Water (gallons) 4 Gallons

Total Amount of Grout Used: N/A gallons/lbs/buckets

Surface Restoration: Complete at surface using on-site soil from hole dug in order to remove PVC.

Recorded By: 6/12/19 QA Check By: 6/12/19

leidos **MONITORING WELL/BOREHOLE ABANDONMENT RECORD**

Well/Borehole Number: ES3 tw - 0001 Abandonment Date: 6/12/19

County: Portage State: OH

Address or Location: Camp James A. Garfield / Former Camp Ravenna

RE/6/12/19

Investigative Unit (if applicable): Electric Substation 3

Reason for Abandonment: No longer needed for groundwater evaluation

---

Geologist/Field Supervisor: Gabby Gramofsky

Drilling Company: Frontz Drilling

Driller: Ricky Shanks Helpers: Andre Ewart N/A

Static Water Level: 5.40' BTOC Date/Time Measured: 6/12/19 0905

Casing Stick-up Height: 3.0' Total Well Depth: 7.0' BGS

Type of Well Casing: PVC Diameter: 2"

Length of Well Casing Cutoff During Abandonment: N/A

Final Casing Stick-up Height or Depth Below Ground Surface: N/A

Abandonment Method/Procedure: Remove entire casing by hand and backfill with hydrated coarse grained wyoming sodium bentonite chips.

RE/6/12/19

Grout Mixture: Portland Cement (lbs/bags) N/A Type: N/A

Bentonite (lbs/bags) 71b / ~1/6-50 lb bag Type: bentonite chips

Water (gallons) 1.5 Gallons

Total Amount of Grout Used: N/A gallons/lbs/buckets

Surface Restoration: Complete at surface using on-site gravel and soil

Recorded By: 6/12/19 QA Check By: 6/12/19

leidos **MONITORING WELL/BOREHOLE ABANDONMENT RECORD**

Well/Borehole Number: ES3 tw-002 Abandonment Date: 6/12/19

County: Portage State: OH

Address or Location: Camp James A. Garfield / Former Camp Ravenna

Investigative Unit (if applicable): Electric Substation 3

Reason for Abandonment: No longer needed for groundwater evaluation

---

Geologist/Field Supervisor: Gabby Gromofsky

Drilling Company: Frontz Drilling

Driller: Ricky Shanks Helpers: Andre Ewart N/A

Static Water Level: 6.30 BTOC Date/Time Measured: 6/12/19 0840

Casing Stick-up Height: 2.4' Total Well Depth: 16'

Type of Well Casing: PVC Diameter: 2"

Length of Well Casing Cutoff During Abandonment: N/A

Final Casing Stick-up Height or Depth Below Ground Surface: N/A

Abandonment Method/Procedure: Remove entire casing by hand and backfill borehole with coarse grained Wyoming bentonite chips. Hydrate bentonite chips.

TM 6/12/19

Grout Mixture: Portland Cement (lbs/bags) N/A Type: N/A

Bentonite (lbs/bags) 10 lbs | 1/8 - 50lb bag Type: Bentonite Chips

Water (gallons) 2 gallons

Total Amount of Grout Used: N/A gallons/lbs/buckets

Surface Restoration: Complete level to surface using on-site soil and gravel

Recorded By: 6/12/19 QA Check By: 6/12/19

leidos **MONITORING WELL/BOREHOLE ABANDONMENT RECORD**

Well/Borehole Number: ES3 tw-0003 Abandonment Date: 6/12/19

County: Portage State: OH

Address or Location: Camp James A. Garfield | Former Camp Ravenna

Investigative Unit (if applicable): Electric Substation 3

Reason for Abandonment: No longer needed for groundwater evaluation

---

Geologist/Field Supervisor: Gabby Gromofsky

Drilling Company: Frontz Drilling

Driller: Ricky Shanks Helpers: Andre Ewart N/A

Static Water Level: 3.10 BTOC Date/Time Measured: 6/12/19 0914

Casing Stick-up Height: 2' AGS Total Well Depth: 10' BGS

Type of Well Casing: PVC Diameter: 2"

Length of Well Casing Cutoff During Abandonment: N/A

Final Casing Stick-up Height or Depth Below Ground Surface: N/A

Abandonment Method/Procedure: Remove entire well casing by hand and backfill with hydrated bentonite chips.

6/12/19

Grout Mixture: Portland Cement (lbs/bags) N/A Type: N/A

Bentonite (lbs/bags) 5 lbs / 1/10 - 50 lb bag Type: Bentonite chips

Water (gallons) None

Total Amount of Grout Used: N/A gallons/lbs/buckets

Surface Restoration: Complete at surface using on-site soil and gravel

Recorded By: 6/12/19 QA Check By: 6/12/19

I.3 Well Sealing Reports

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DNR 7810.12e

WATER WELL SEALING REPORT e-FORM
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

324494

LOCATION

County PORTAGE Township CHARLESTOWN Section No. Lot No.

Owner OHIO ARMY NATIONAL GUARD

Address of Well Location 8451 SR 5

City RAVENNA Zip Code 44266

Well Location Description (120 Characters): WELL ID: ES3TW-001

Location of Well in either:
State Plane N ☐ S ☐ X +/- ft. Y +/- ft.
OR
Latitude/Longitude Latitude 41.186763 Longitude -81.099458

Elevation of Well +/- ft. Datum Plane: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☒ Other GLOBAL POSITIONING SYSTEM
Source of Elevation: ☐ GPS ☐ Survey ☐ Other

WELL IDENTIFICATION ODNR Well Log Number 2071779 Project Well ID

MEASURED CONSTRUCTION DETAILS

Date of measurements 6/12/2019
Depth of Well 8.5 ft. Static Water Level 6 ft.
Borehole Depth 8.5 ft. Borehole Diameter 8 in.
Casing Diameter 2 in. Casing Length 3 ft. Casing Type PVC

SEALING PROCEDURE

Placement:	Sealing Material	Volume/Weight Used (Units Required)	Placement Method
From 0 ft. To 8.5 ft.	Bentonite pellets/chunks	20 LBS.	Poured (gravity)
From ft. To ft.			
From ft. To ft.			
From ft. To ft.			

Condition of Casing GOOD Was Casing Removed? ☒ Yes or ☐ No (check one)

If casing **Not Removed**, was it Perforated? ☐ Yes or ☒ No (check one) Perforations: From ft. To ft.

Date Sealing Performed 6/12/2019
Comments/Reason for Sealing: NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING.

CONTRACTOR

Name FRONTZ DRILLING INC / ENVIRONMENTAL ODH Registration # 0120
Address 2031 MILLERSBURG ROAD
City/State/Zip WOOSTER, OH 44691

e-Signature STEPHEN R. WRIGHT Filed electronically on 7/19/2019
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of sealing.
Distribute additional copies to: Customer, Driller and Local Health Department.

DNR 7810.12e

WATER WELL SEALING REPORT e-FORM
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

324495

LOCATION

County PORTAGE Township CHARLESTOWN Section No. Lot No.

Owner OHIO ARMY NATIONAL GUARD

Address of Well Location 8451 SR 5

City RAVENNA Zip Code 44266

Well Location Description (120 Characters): WELL ID: ES3TW-002

Location of Well in either: State Plane N ☐ S ☐ X +/- ft. Y +/- ft.
OR
Latitude/Longitude Latitude 41.186892 Longitude -81.099226

Elevation of Well +/- ft. Datum Plane: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☒ Other GLOBAL POSITIONING SYSTEM
Source of Elevation: ☐ GPS ☐ Survey ☐ Other

WELL IDENTIFICATION ODNR Well Log Number 2071780 Project Well ID

MEASURED CONSTRUCTION DETAILS

Date of measurements 6/12/2019
Depth of Well 10 ft. Static Water Level 5 ft.
Borehole Depth 10 ft. Borehole Diameter 8 in.
Casing Diameter 2 in. Casing Length 4 ft. Casing Type PVC

SEALING PROCEDURE

Placement:	Sealing Material	Volume/Weight Used (Units Required)	Placement Method
From 0 ft. To 10 ft.	Bentonite pellets/chunks	20 LBS.	Poured (gravity)
From ft. To ft.			
From ft. To ft.			
From ft. To ft.			

Condition of Casing GOOD Was Casing Removed? ☒ Yes or ☐ No (check one)

If casing **Not Removed**, was it Perforated? ☐ Yes or ☒ No (check one) Perforations: From ft. To ft.

Date Sealing Performed 6/12/2019
Comments/Reason for Sealing: NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING

CONTRACTOR

Name FRONTZ DRILLING INC / ENVIRONMENTAL ODH Registration # 0120
Address 2031 MILLERSBURG ROAD
City/State/Zip WOOSTER, OH 44691

e-Signature STEPHEN R. WRIGHT Filed electronically on 7/19/2019
I hereby certify the information given is accurate and correct to the best of my knowledge.

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DNR 7810.12e

WATER WELL SEALING REPORT e-FORM
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

324496

LOCATION

County PORTAGE Township CHARLESTOWN Section No. Lot No.

Owner OHIO ARMY NATIONAL GUARD

Address of Well Location 8451 SR 5

City RAVENNA Zip Code 44266

Well Location Description (120 Characters): WELL ID: ES3TW-003

Location of Well in either: State Plane N ☐ S ☐ X +/- ft. Y +/- ft.
OR
Latitude/Longitude Latitude 41.186889 Longitude -81.099597

Elevation of Well +/- ft. Datum Plane: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☒ Other GLOBAL POSITIONING SYSTEM
Source of Elevation: ☐ GPS ☐ Survey ☐ Other

WELL IDENTIFICATION ODNR Well Log Number 2071781 Project Well ID

MEASURED CONSTRUCTION DETAILS

Date of measurements 6/12/2019
Depth of Well 10 ft. Static Water Level 4 ft.
Borehole Depth 10 ft. Borehole Diameter 8 in.
Casing Diameter 2 in. Casing Length 4 ft. Casing Type PVC

SEALING PROCEDURE

Placement:	Sealing Material	Volume/Weight Used (Units Required)	Placement Method
From 0 ft. To 10 ft.	Bentonite pellets/chunks	20 LBS.	Poured (gravity)
From ft. To ft.			
From ft. To ft.			
From ft. To ft.			

Condition of Casing GOOD Was Casing Removed? ☒ Yes or ☐ No (check one)

If casing **Not Removed**, was it Perforated? ☐ Yes or ☒ No (check one) Perforations: From ft. To ft.

Date Sealing Performed 6/12/2019
Comments/Reason for Sealing: NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING

CONTRACTOR

Name FRONTZ DRILLING INC / ENVIRONMENTAL ODH Registration # 0120
Address 2031 MILLERSBURG ROAD
City/State/Zip WOOSTER, OH 44691

e-Signature STEPHEN R. WRIGHT Filed electronically on 7/19/2019
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of sealing.
Distribute additional copies to: Customer, Driller and Local Health Department.

DNR 7810.12e

WATER WELL SEALING REPORT e-FORM
OHIO DEPARTMENT OF NATURAL RESOURCES
Division of Soil and Water Resources
2045 Morse Road, Bldg B
Columbus, OH 43229-6693
Voice: (614) 265-6740 Fax: (614) 265-6767

324497

LOCATION

County PORTAGE Township CHARLESTOWN Section No. Lot No.

Owner OHIO ARMY NATIONAL GUARD

Address of Well Location 8451 SR 5

City RAVENNA Zip Code 44266

Well Location Description (120 Characters): WELL ID: DA1TW-001

Location of Well in either: State Plane N ☐ S ☐ X +/- ft Y +/- ft
OR
Latitude/Longitude Latitude 41.171325 Longitude -81.12794

Elevation of Well +/- ft. Datum Plane: ☐ NAD27 ☒ NAD83

Source of Coordinates: ☐ GPS ☐ Survey ☒ Other GLOBAL POSITIONING SYSTEM
Source of Elevation: ☐ GPS ☐ Survey ☐ Other

WELL IDENTIFICATION ODNR Well Log Number 2071778 Project Well ID

MEASURED CONSTRUCTION DETAILS

Date of measurements 6/12/2019
Depth of Well 18 ft. Static Water Level 7 ft
Borehole Depth 18 ft. Borehole Diameter 8 in.
Casing Diameter 2 in. Casing Length 7 ft. Casing Type PVC

SEALING PROCEDURE

Placement:	Sealing Material	Volume/Weight Used Units Required	Placement Method
From 0 ft. To 18 ft.	Bentonite pellets/chunks	40 LBS.	Poured (gravity)
From ft. To ft.			
From ft. To ft.			
From ft. To ft.			

Condition of Casing GOOD Was Casing Removed? ☐ Yes or ☒ No (check one)

If casing **Not Removed**, was it Perforated? ☐ Yes or ☒ No (check one) Perforations: From ft. To ft.

Date Sealing Performed 6/12/2019
Comments/Reason for Sealing NO LONGER NEEDED FOR ENVIRONMENTAL MONITORING.
CASING CUT 1.75 FT. BELOW GRADE.

CONTRACTOR

Name FRONTZ DRILLING INC / ENVIRONMENTAL ODH Registration # 0120
Address 2031 MILLERSBURG ROAD
City/State/Zip WOOSTER, OH 44691

e-Signature STEPHEN R. WRIGHT Filed electronically on 7/19/2019
I hereby certify the information given is accurate and correct to the best of my knowledge.

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of sealing.
Distribute additional copies to: Customer, Driller and Local Health Department.

APPENDIX J

Ohio EPA Comments

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Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

January 17, 2020

RE: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859036

Mr. David Connolly
Army National Guard Directorate
Environmental Programs Division
ARNGD-ILE-CR
111 South George Mason Drive
Arlington, VA 22204

Subject: Response to Ohio EPA Comments on the "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event," Dated December 17, 2019

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the response to Ohio EPA comments on the "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event." This document was received via email at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR), on December 17, 2019. The response was prepared for the United States Army Corps of Engineers on behalf of the National Guard Bureau by Leidos under Contract Number W912QR-16-D-0003.

Ohio EPA finds that the two comments from Ohio EPA's December 10, 2019 comment letter have been adequately addressed and are resolved with no further comments warranted. Please finalize the document with the changes agreed to according to this correspondence.

RECEIVED
JAN 21 2020

If you have questions, please call me at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/sc

ec: David Connolly, ARNG
Kevin Sedlak, ARNG, Camp James A. Garfield
Katie Tait, OHARNG, Camp James A. Garfield
Craig Coombs, USACE Louisville
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Rebecca Shreffler, Chenega Tri-Services, LLC
Natalie Oryshkewych, Manager, Ohio EPA, NEDO, DERR
Bob Princic, Ohio EPA, NEDO, DERR
Liam McEvoy, Ohio EPA, NEDO, DERR
Thomas Schneider, Ohio EPA, SWDO, DERR
Carrie Rasik, Ohio EPA, CO, DERR

NATIONAL GUARD BUREAU
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ARLINGTON VA 22204-1373

December 17, 2019

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Mr. Kevin Palombo
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-Wide Groundwater, Responses to Comments on the Draft Semi-Annual Report for Spring 2019 Sampling Event (Work Activity No. 267-000-859-036)

Dear Mr. Palombo:

The Army appreciates your time and comments (dated December 10, 2019) on the *Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event*. Enclosed for your review are responses to your comments. Upon resolution of these comments, the Army will provide a Final version of the report for Ohio EPA concurrence.

This comment response table was prepared for the Army National Guard in support of the RVAAP restoration program. Please contact the undersigned at (703) 607-7589 or david.m.connolly8.civ@mail.mil if there are issues or concerns with this submission.

Sincerely,

David Connolly
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Bob Princic, Ohio EPA, NEDO, DERR
Natalie Oryshkewych, Ohio EPA, NEDO, DERR
Liam Envoy, Ohio EPA, NEDO, DERR
Megan Oravec, Ohio EPA, NEDO, DERR
Thomas Schneider, Ohio EPA, SWDO, DERR
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Kevin Sedlak, ARNG, Camp James A. Garfield
Katie Tait, OHARNG, Camp James A. Garfield
Craig Coombs, USACE Louisville
Jay Trumble, USACE Louisville
Vasu Peterson, Leidos
Jed Thomas, Leidos
Rebecca Shreffler, Chenega Tri-Services, LLC
Gail Harris, Vista Sciences Corporation

Subject: Former Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, Responses to Comments on RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event (Work Activity No. 267-000-859-036)

Comments

Ohio EPA Comment 1: Figure 3-1 reference in the Draft FWGWMP Semi-Annual Report for Spring 2019:

Page 3-1 contains several references (line 5 and line 40) to the 72 wells selected for sampling as being listed on "Figure 3-1". It appears that the reference should be "Table 3-1", as that is the table found starting on page 3-3 containing the listing of the FWGWMP wells and analytical testing suites. It is correctly referenced as "Table 3-1" on page 3-2, line 10.

Figure/Table reference needs corrected throughout the document to accurately represent nomenclature of the figure/table being referenced.

Army Response: Clarification and agree. The callouts for "Figure 3-1 were reviewed, and the intent of these callouts were to show the reader where the 72 wells are located within the facility. For clarity, the text references have been revised to state "These wells are depicted in Figure 3-1."

Ohio EPA Comment 2: Table 4-1 reference in the Draft FWGWMP Semi-Annual Report for Spring 2019:

Page 4-1, line 3 refers to a "Table 4-1" presenting sampling rationale and discussion of analytical results for each well which appears correct. However, the actual title block on Table 4-1 found starting on Page 4-3 reads "Table 4-1. Recommended FWGWMP Wells for 2019" which appears to be a carry-over from the 2019 FWGWMP Addendum.

Please advise if this title block is correct, or if it needs corrected to more accurately reflect the intent of the information presented on Table 4-1 which also summarizes the results of the 2019 sampling event.

Army Response: Clarification and agree. Part of the intent of Table 4-1 is to provide the "2019 FWGWMP Sampling Recommendations" (see the fifth column). That said, the first paragraph in Section 4.0 has been revised to state "Table 4-1 presents the 2019 FWGWMP sampling recommendations ~~rationale~~ for sampling each individual well, as presented in the 2019 Addendum."

Ohio Environmental Protection Agency

Mike DeWine, Governor
John Husted, Lt. Governor
Laurie A. Stevenson, Director

December 10, 2019

RE: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859036

Mr. David Connolly
Army National Guard Directorate
Environmental Programs Division
ARNGD-ILE-CR
111 South George Mason Drive
Arlington, VA 22204

Subject: Ohio EPA Comments on the "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event" Dated September 26, 2019

Dear Mr. Connolly:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event" at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio (Camp James A. Garfield). This document was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on September 27, 2019.

The report was prepared for the United States Army Corps of Engineers (USACE) on behalf of the National Guard Bureau by Leidos, under Contract Number W912QR-16-D-0003. Comments on the document based on Ohio EPA review are provided below. Please provide responses to the enclosed comments in accordance with the Director's Findings and Orders.

STATEMENT

The Draft Facility-Wide Ground Water Monitoring Plan (FWGWMP) Semi-Annual Report for Spring 2019 summarizes ground water monitoring activities conducted during the Spring 2019 sampling event, provides descriptions of field activities performed, and presents field and analytical results. The report also evaluates chemical data collected per the approved ground water sampling scheme specified in the FWGWMP Ground Water Addendum for 2019:

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- During 2019, four temporary monitoring wells were abandoned (DA1tw-001, ES3tw-001, ES3tw-002, and ES3tw-003), and well abandonment logs and Ohio Department of Natural Resources (ODNR) Water Well Sealing Report e-forms were provided in Appendix I.1.

- Between April 29 through May 13, 2019 (Spring 2019 sampling event), a total of 72 of the facility's monitoring wells were sampled. This included sampling of the five semi-annual Resource Conservation and Recovery Act (RCRA) ground water wells.

- Section 3.4 (Page 3-2, line 20) documents the three approved field change requests submitted for the Spring 2019 sampling event, also included as Appendix C.

- Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2019 indicated that all 72 wells were analyzed for the proper analytical parameters in accordance with the 2019 Addendum (combinations of volatile organic compounds, semi volatile organic compounds, polycyclic aromatic hydrocarbons, phenols, polychlorinated biphenyls, hexachlorocyclopentadiene, perchlorate, nitroaromatics, propellants, explosives, phthalates, pesticides, cyanide, phosphorus, anions, pH, alkalinity, and metals). No summary or evaluation of the data findings was presented in this report; evaluation of the Spring 2019 data is expected to be presented along with the Fall 2019 data in the Draft FWGWMP Annual Report for 2019.

- A review of Appendix H (Data Quality Assessment Report) documented that greater than 99.9% of the data were qualified as usable, with some data qualified as "estimated," and one data point was rejected. Overall, the data quality assessment reported that data produced for the project can withstand scientific scrutiny, are appropriate for its intended purpose, are technically defensible, and are of known and acceptable sensitivity, precision, and accuracy.

COMMENTS

1. **Figure 3-1 reference in the Draft FWGWMP Semi-Annual Report for Spring 2019:** Page 3-1 contains several references (line 5 and line 40) to the 72 wells selected for sampling as being listed on "Figure 3-1". It appears that the reference should be "Table 3-1", as that is the table found starting on page 3-3 containing the listing of the FWGWMP wells and analytical testing suites. It is correctly referenced as "Table 3-1" on page 3-2, line 10.

   Figure/Table reference needs corrected throughout the document to accurately represent nomenclature of the figure/table being referenced.

2. **Table 4-1 reference in the Draft FWGWMP Semi-Annual Report for Spring 2019:** Page 4-1, line 3 refers to a "Table 4-1" presenting sampling rationale and discussion of analytical results for each well which appears correct. However, the actual title block on Table 4-1 found starting on Page 4-3 reads "Table 4-1. Recommended FWGWMP Wells for 2019" which appears to be a carry-over from the 2019 FWGWMP Addendum.

   Please advise if this title block is correct, or if it needs corrected to more accurately reflect the intent of the information presented on Table 4-1 which also summarizes the results of the 2019 sampling event.

This "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2019 Sampling Event" was reviewed by personnel from Ohio EPA, who have determined that additional information is necessary to approve the document. If you have questions or would like to set up a meeting to discuss these comments, please call me at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/sc

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