Final

Facility-wide Groundwater Monitoring Program
RVAAP-66 Facility-wide Groundwater
Semi-Annual Report for Spring 2021 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 12, 2022

Final

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This Semi-annual Report summarizes activities conducted in spring 2021 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 2021.

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Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

February 15, 2022

TRANSMITTED ELECTRONICALLY

Mr. Kevin Sedlak
Restoration Program Manager
ARNG-ILE Clean Up
Camp James A Garfield JTC
1438 State Route 534 SW
Newton Falls, OH 44444

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

Subject: Approval of the "Final RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 Sampling Event" dated January 14, 2022

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Final RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 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) via email on January 14, 2022. The document 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.

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

At this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record. If you have questions, you can reach me at kevin.palombo@epa.ohio.gov, or by phone at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Site Coordinator
Division of Environmental Response and Revitalization

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CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Leidos has completed the Facility-wide Groundwater Monitoring Program, RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 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.

January 12, 2022

Jasmine Stefansky
Study/Design Team Leader

Date

January 12, 2022

Jed Thomas, P.E., PMP
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.

January 12, 2022

Lisa Jones-Bateman, REM, PMP
Senior Program Manager

Date

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January 12, 2022

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ARNG = Army National Guard
CO = Central Office
I&E = Installations and Environment
NEDO = Northeast District Office
OHARNG = Ohio Army National Guard
Ohio EPA = Ohio Environmental Protection Agency
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
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CJAG	Camp James A. Garfield
CSM	Conceptual Site Model
DFFO	Director’s Final Findings and Orders
DoD	U.S. Department of Defense
DQA	Data Quality Assessment
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
NTU	Nephelometric Turbidity Unit
Ohio EPA	Ohio Environmental Protection Agency
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
REM	Registered Environmental Manager
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
TCLP	Toxicity Characteristic Leaching Procedure
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 for groundwater within the former RVAAP 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 is now known as CJAG Joint Military Training Center. 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 2021* (Leidos 2021a) (herein referred to as the 2021 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 2021 sampling performed in accordance with the 2021 Addendum.

1.2 OBJECTIVES

The primary objectives of the 2021 Addendum and subsequent sampling in spring and fall 2021 are to assess potential exit pathways, monitor contaminant concentrations related to historical RVAAP activities (e.g., explosives/propellants) at selected source area wells for trend analysis, and sample wells to refine the conceptual site model (CSM) or contaminant distribution associated with the areas recommended for evaluation within the FS.

The 2021 Addendum supplements the FWGWMP Plan and discusses the subset of wells at the former RVAAP that will be monitored in 2021, the frequency of samples to be collected, and the chemicals that will be evaluated at each selected well. Contaminant trend analysis of the 2020 sampling results was conducted by reviewing the well-specific sampling histories and time series graphs provided in the *Facility-wide Groundwater Monitoring Program RVAAP-66 Facility-wide Groundwater Annual Report for 2020* (2020 Annual Report) (Leidos 2021b). In addition, the recommendations of the *Draft Remedial Investigation Report for RVAAP-66 Facility-wide Groundwater* (Draft RI Report) (Leidos 2020) were considered and data collection to support the FS has been incorporated into the 2021 FWGWMP.

The FWGWMP investigation is refined to supporting recommendations within the RI Report and providing supplemental data for the FS. Wells were selected for inclusion in the 2021 FWGWMP based on the following criteria:

- **FWGWMP Criterion 1:** Wells representing critical exit pathway monitoring points (generally a carryover from the 2020 program).
- **FWGWMP Criterion 2:** Wells representing primary AOC-specific contaminant source area conditions indicated to be potentially increasing or otherwise potentially unstable plume conditions.
- **FWGWMP Criterion 3:** Co-located wells used to establish the vertical distribution of contaminants within the stratigraphic sequence.
- **FWGWMP Criterion 4 (new in 2021):** Wells refining the CSM or contaminant distribution associated with the areas recommended for evaluation within the FS.

1.3 REPORT ORGANIZATION

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

- Section 2.0. Background,
- Section 3.0. Spring 2021 Monitoring Event,
- Section 4.0. Results,
- Section 5.0 Data Quality Assessment,
- Section 6.0 Well Redevelopment, and
- 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 wells historically known as 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. They are currently are being monitored as part of the CERCLA program at CJAG in accordance with the DFFO (Ohio EPA 2004) and are no longer identified as RCRA wells.

The FWGWMP monitoring well network currently contains 301 permanent wells. In addition to these wells, 14 permanent wells at RVAAP-69 Building 1048 Fire Station and 3 permanent wells at RVAAP-74 Building 1034 Motor Pool Hydraulic Lift are not currently incorporated into the FWGWMP monitoring well network as they were installed and sampled to support their current site-specific investigations.

Since 2005, the results have 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.

The *Draft Remedial Investigation Report for RVAAP-66 Facility-wide Groundwater* (Leidos 2020) was submitted to Ohio EPA in July 2020, and Ohio EPA comments on the draft document are currently under review.

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3.0 SPRING 2021 MONITORING EVENT

The 2021 Addendum presented information to support the continued monitoring of AOC-specific contaminant concentrations, as indicated by an analysis of results through 2020. This included using data and results from the 2020 FWGMWP sampling events and findings of the Draft RI Report (Leidos 2020). To this end, 53 wells were selected for sampling in 2021. These wells are depicted in Figure 3-1 and presented in Table 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) and subsequent Field Change Requests (FCRs). The following subsections summarize the activities completed in spring 2021 as they relate to the FWGWMP. The primary activity was groundwater sampling.

Groundwater elevation monitoring and monitoring well inspections are anticipated to occur in fall 2021 and be presented in the 2021 annual report.

3.1 SPRING 2021 MONITORING WELL SAMPLING EVENT

From April 26 to May 10, 2021, all 53 wells specified in the 2021 Addendum were sampled. These wells are depicted in Figure 3-1 and presented in Table 3-1.

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 the RIWP and FCRs.

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 Eurofins 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 DETmw-003, FBQmw-175, FWGmw-007, LL1mw-084, LL1mw-087, LL1mw-089, and LL12mw-185, and shipped to CT Laboratories in Baraboo, Wisconsin.

Appendix B includes the Daily Tailgate Safety Briefings, Daily Safety Inspections, Task Team Activity Logs, Well Purge Forms, Chains of Custody, and Calibration Reports.

3.2 FIELD CHANGE REQUESTS

While no new FCRs were necessary during the spring 2021 sampling event, the existing FCRs related to the work are summarized below and presented in Appendix A:

- 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.
- LEIDOS_FWGW_010 – Specifies that post-sample water quality parameters may not be an accurate characterization of groundwater, and water quality parameters recorded at the time of stabilization (before sampling) are the parameters used for evaluation.

3.3 INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW) was generated during the field activities. Eighteen 55-gallon drums were used to containerize the estimated 804 gallons of liquid IDW generated. On May 10, 2021, a composite IDW sample was collected and analyzed for toxicity characteristic leaching procedure (TCLP) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, metals, total polychlorinated biphenyls (PCBs), ignitability, pH, nitrate, nitrite, total cyanide, and total sulfide. On July 19, 2021, Leidos submitted a characterization and disposal plan to recommend characterization and classification of the IDW and to propose methods for disposal. The plan recommended that the liquid IDW be characterized as non-hazardous and non-contaminated. A waste profile and manifest will be generated upon receipt of Army concurrence with the proposed waste characterization. Appendix C provides the IDW report and laboratory report.

Table 3-1. FWGWMP Wells with Analytical Testing Suite

No.	RVAAP-66 Area	Well Name	Aquifer	Metals	Explosives	Expanded Explosives (1)	VOCs	SVOCs (2)	PCBs	Pesticides	Cyanide	Nitrate	MNA Suite (3)	Other
1	RVAAP-04 Open Demolition Area #2	DETmw-003	Unconsolidated	X	X		X	X	X	X	X			
2	RVAAP-04 Open Demolition Area #2	DETmw-004	Unconsolidated	X	X		X	X	X	X	X			
3	RVAAP-05 Winklepeck Burning Grounds	WBGmw-006	Unconsolidated		X	X							X	
4	RVAAP-05 Winklepeck Burning Grounds	WBGmw-007	Unconsolidated		X	X								
5	RVAAP-05 Winklepeck Burning Grounds	WBGmw-008	Unconsolidated		X	X								
6	RVAAP-05 Winklepeck Burning Grounds	WBGmw-009	Unconsolidated		X	X								
7	RVAAP-05 Winklepeck Burning Grounds	WBGmw-014	Unconsolidated		X	X								
8	RVAAP-05 Winklepeck Burning Grounds	WBGmw-018	Unconsolidated		X	X							X	
9	RVAAP-05 Winklepeck Burning Grounds	WBGmw-019	Upper Sharon		X	X								
10	RVAAP-05 Winklepeck Burning Grounds	WBGmw-020	Upper Sharon		X	X								
11	RVAAP-05 Winklepeck Burning Grounds	WBGmw-021	Upper Sharon		X	X								
12	RVAAP-08 Load Line 1	LL1mw-063	Unconsolidated		X	X								
13	RVAAP-08 Load Line 1	LL1mw-064	Unconsolidated		X	X								
14	RVAAP-08 Load Line 1	LL1mw-079	Upper Sharon		X	X							X	
15	RVAAP-08 Load Line 1	LL1mw-080	Upper Sharon		X	X								
16	RVAAP-08 Load Line 1	LL1mw-081	Upper Sharon		X	X								
17	RVAAP-08 Load Line 1	LL1mw-082	Upper Sharon		X	X								
18	RVAAP-08 Load Line 1	LL1mw-083	Upper Sharon		X	X								
19	RVAAP-08 Load Line 1	LL1mw-084	Upper Sharon		X	X							X	
20	RVAAP-08 Load Line 1	LL1mw-086	Unconsolidated		X	X								
21	RVAAP-08 Load Line 1	LL1mw-087	Unconsolidated		X	X								
22	RVAAP-08 Load Line 1	LL1mw-089	Unconsolidated		X	X								
23	RVAAP-09 Load Line 2	LL2mw-059	Upper Sharon		X									
24	RVAAP-10 Load Line 3	LL3mw-237	Upper Sharon		X	X								
25	RVAAP-10 Load Line 3	LL3mw-238	Upper Sharon		X	X							X	
26	RVAAP-10 Load Line 3	LL3mw-239	Upper Sharon		X	X							X	
27	RVAAP-10 Load Line 3	LL3mw-241	Upper Sharon		X	X								
28	RVAAP-10 Load Line 3	LL3mw-245	Upper Sharon		X	X								
29	RVAAP-12 Load Line 12	LL12mw-185	Unconsolidated									X		Ammonia
30	RVAAP-12 Load Line 12	LL12mw-187	Unconsolidated									X		Ammonia
31	RVAAP-12 Load Line 12	LL12mw-244	Unconsolidated									X		Ammonia
32	RVAAP-12 Load Line 12	LL12mw-245	Unconsolidated									X		Ammonia
33	RVAAP-12 Load Line 12	LL12mw-246	Unconsolidated									X		Ammonia
34	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-170	Homewood		X	X								
35	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-171	Homewood		X	X								
36	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-172	Homewood		X	X								
37	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-173	Homewood		X	X							X	
38	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-174	Homewood		X	X							X	
39	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-175	Homewood		X	X								
40	RVAAP-43 Load Line 10	LL10mw-003	Homewood											Carbon Tetrachloride
41	RVAAP-66 Facility-wide Groundwater	FWGmw-004	Unconsolidated		X									
42	RVAAP-66 Facility-wide Groundwater	FWGmw-007	Unconsolidated		X									
43	RVAAP-66 Facility-wide Groundwater	FWGmw-010	Unconsolidated		X	X								
44	RVAAP-66 Facility-wide Groundwater	FWGmw-011	Unconsolidated		X									
45	RVAAP-66 Facility-wide Groundwater	FWGmw-012	Upper Sharon		X									
46	RVAAP-66 Facility-wide Groundwater	FWGmw-015	Unconsolidated		X									
47	RVAAP-66 Facility-wide Groundwater	FWGmw-016	Upper Sharon		X									
48	RVAAP-66 Facility-wide Groundwater	FWGmw-018	Basal Sharon				X					X		
49	RVAAP-66 Facility-wide Groundwater	FWGmw-020	Upper Sharon				X					X		

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

No.	RVAAP-66 Area	Well Name	Aquifer	Metals	Explosives	Expanded Explosives (1)	VOCs	SVOCs (2)	PCBs	Pesticides	Cyanide	Nitrate	MNA Suite (3)	Other
50	RVAAP-66 Facility-wide Groundwater	FWGmw-021	Upper Sharon		X									
51	RVAAP-66 Facility-wide Groundwater	FWGmw-023	Upper Sharon		X	X								
52	RVAAP-66 Facility-wide Groundwater	FWGmw-024	Upper Sharon		X									
53	RVAAP-66 Facility-wide Groundwater	SCFmw-004	Basal Sharon		X									

Notes:

X = Indicates well or constituent to be sampled as part of the 2021 FWGWMP. Wells and constituents will be sampled semi-annually unless indicated by footnotes described below.
(1) Expanded Explosives list include 3,5-dinitroanaline (3,5-DNA); hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX); hexahydro-1,3-dinitroso-5-dinitro-1,3,5-triazine (DNX); hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX); 2,4-diamino-6-nitrotoluene (2,4-DANT); and 2,6-diamino-4-nitrotoluene (2,6-DANT).
(2) SVOCs include phthalates, nitroaromatics, polycyclic aromatic hydrocarbons, and phenols.
(3) MNA suite includes anions, total organic carbon, alkalinity, pH, and water quality parameters.

FWGWMP = Facility-wide Groundwater Monitoring Program
ID = Identification
MNA = Monitored Natural Attenuation
PCB = Polychlorinated Biphenyl
SVOC = Semivolatile Organic Compound
VOC = Volatile Organic Compound

4.0 RESULTS

Table 4-1 presents the 2021 FWGWMP sampling recommendations for each individual well, as presented in the 2021 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). Chemicals that are considered essential nutrients (e.g., calcium, chloride, iodine, iron, magnesium, potassium, phosphorus, and sodium) are an integral part of the human food supply and often are added to food as supplements. These essential nutrients are not discussed in Table 4-1 to streamline the narrative.

Appendix D.1 contains a table with all analytical results from the wells sampled in spring 2021, Appendix D.2 contains the chemical-specific screening criteria, and Appendix D.3 contains a summary of results that exceeded the applicable screening criteria. The laboratory data packages are presented in Appendix E.

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Table 4-1. Summary of 2021 FWGWMP Wells, Sampling Recommendations, and Results

No	RVAAP-66 Area	Well Name	Aquifer	2021 FWGWMP Sampling Recommendations	Spring 2021 Sampling Results
1	RVAAP-04 Open Demolition Area #2	DETmw-003	Unconsolidated	• In accordance with the DFFO, analytical parameters for this well in 2021 include VOCs, phthalates, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and metals.	• Phthalates, phenol, cyanide, nitroaromatics, SVOCs, PCBs, explosives, or pesticides were not detected. • The VOCs benzene and ethylbenzene were detected at low, estimated concentrations below screening criteria. • All metal concentrations were below the screening level or background concentration, with the exception of manganese. Manganese was detected at a concentration of 0.23 mg/L, exceeding the background concentration of 0.075 mg/L in the primary and duplicate sample.
2	RVAAP-04 Open Demolition Area #2	DETmw-004	Unconsolidated	• In accordance with the DFFO, analytical parameters for this well in 2021 include VOCs, phthalates, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and metals.	• VOCs, SVOCs, pesticides, phthalates, phenol nitroaromatics, cyanide, PAHs, and PCBs were not detected. • All metal and explosive concentrations were below the screening level or background concentration.
3	RVAAP-05 Winklepeck Burning Grounds	WBGmw-006	Unconsolidated	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• No explosives were detected with the exception of HMX, DNX, MNX, and RDX. The RDX concentration of 0.0081 mg/L exceeded the RSL of 0.00097 mg/L. • Nitrate and nitrite were not detected. • Sulfate was detected at an estimated concentration of 27J mg/L. • Sulfide was detected at an estimated concentration of 0.8J mg/L. • Alkalinity was detected at a concentration of 270 mg/L. • TOC was detected at an estimated concentration of 0.83J mg/L. • pH was 7.05 S.U.
4	RVAAP-05 Winklepeck Burning Grounds	WBGmw-007	Unconsolidated	• Monitor for explosives to support the FS.	• Explosives were not detected.
5	RVAAP-05 Winklepeck Burning Grounds	WBGmw-008	Unconsolidated	• Monitor for explosives to support the FS.	• Explosives were not detected.
6	RVAAP-05 Winklepeck Burning Grounds	WBGmw-009	Unconsolidated	• Continue to monitor for explosives.	• No explosives were detected with the exception of HMX and RDX. The RDX concentration of 0.0016 mg/L exceeded the RSL of 0.00097 mg/L.
7	RVAAP-05 Winklepeck Burning Grounds	WBGmw-014	Unconsolidated	• Monitor for explosives to support the FS.	• Explosives were not detected.
8	RVAAP-05 Winklepeck Burning Grounds	WBGmw-018	Unconsolidated	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• Explosives and nitrite were not detected. • Nitrate was detected at an estimated concentration of 0.3J mg/L. • Sulfate was detected at an estimated concentration of 8.9J mg/L. • Sulfide was detected at an estimated concentration of 0.8J mg/L. • Alkalinity was detected at a concentration of 38 mg/L. • TOC was detected at a concentration of 1.7 mg/L. • pH was 5.62 S.U.
9	RVAAP-05 Winklepeck Burning Grounds	WBGmw-019	Upper Sharon	• Monitor for explosives to support the FS.	• Explosives were not detected.
10	RVAAP-05 Winklepeck Burning Grounds	WBGmw-020	Upper Sharon	• Continue to monitor for explosives.	• Explosives were not detected.
11	RVAAP-05 Winklepeck Burning Grounds	WBGmw-021	Upper Sharon	• Continue to monitor for explosives.	• Explosives were not detected.
12	RVAAP-08 Load Line 1	LL1mw-063	Unconsolidated	• Continue to monitor for explosives.	• No explosives were detected with the exception of HMX, 2-amino-4,6-DNT, and 4-amino-2,6-DNT. No detection exceeded screening criteria.
13	RVAAP-08 Load Line 1 (east of Load Line 1 fence)	LL1mw-064	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.

Table 4-1. Summary of 2021 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2021 FWGWMP Sampling Recommendations	Spring 2021 Sampling Results
14	RVAAP-08 Load Line 1	LL1mw-079	Upper Sharon	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• No explosives were detected with the exception of HMX, RDX, 2-Amino-4,6-DNT, and 4-amino-2,6-DNT. No concentration exceeded screening criteria. • Nitrite and sulfide were not detected. • Nitrate was detected at an estimated concentration of 0.11J mg/L. • Sulfate was detected at a concentration of 82 mg/L. • Alkalinity was detected at a concentration of 72 mg/L. • TOC was detected at an estimated concentration of 0.56J mg/L. • pH was 6.16 S.U.
15	RVAAP-08 Load Line 1	LL1mw-080	Upper Sharon	• Continue to monitor for explosives.	• The explosives 1,3,5-TNB, TNT, 2-amino-4,6-DNT, 3,5-dinitroaniline, 4-amino-2,6-DNT, HMX, MNX, and RDX were detected; however, only RDX exceeded the RSL of 0.00097 mg/L at a concentration of 0.023 mg/L.
16	RVAAP-08 Load Line 1	LL1mw-081	Upper Sharon	• Continue to monitor for explosives.	• No explosives were detected with the exception of 2,4-diamino-6-nitrotoluene, 2,6-diamino-4-nitrotoluene, 2-amino-4,6-DNT, 3,5-dinitroaniline, and TNX. No concentration exceeded screening criteria.
17	RVAAP-08 Load Line 1	LL1mw-082	Upper Sharon	• Monitor for explosives to support the FS.	• No explosives were detected with the exception of MNX and RDX. The estimated RDX concentration of 0.0012J mg/L exceeded the RSL of 0.00097 mg/L.
18	RVAAP-08 Load Line 1	LL1mw-083	Upper Sharon	• Continue to monitor for explosives.	• The explosives TNT, 2,4-DNT, 2,6-DNT, 2-amino-4,6-DNT, and 4-amino-2,6-DNT were detected at concentrations above screening criteria. TNT exceeded the RSL of 0.00098 mg/L at an estimated concentration of 0.0015J mg/L. 2,4-DNT exceeded the RSL of 0.00024 mg/L at an estimated concentration of 0.002J mg/L. 2,6-DNT exceeded the RA of 0.000122 mg/L at an estimated concentration of 0.00097J mg/L. 2-Amino-4,6-DNT exceeded the RSL of 0.0039 mg/L at a concentration of 0.0066 mg/L. 4-Amino-2,6-DNT exceeded the RSL of 0.0039 mg/L at an estimated concentration of 0.013J mg/L. All other explosives were detected at concentrations below screening criteria. All other explosives were detected at concentrations below screening criteria.
19	RVAAP-08 Load Line 1	LL1mw-084	Upper Sharon	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• The explosives 1,3-DNB, TNT, 2,4-DNT, 2-amino-4,6-DNT, and 4-amino-2,6-DNT were detected at concentrations above screening criteria. 1,3-DNB exceeded the RSL of 0.0002 mg/L in the primary and duplicate samples at concentrations of 0.00064 and 0.00076 mg/L, respectively. TNT exceeded the RSL of 0.00098 mg/L in the primary and duplicate samples at concentrations of 0.0023 and 0.003 mg/L, respectively. 2,4-DNT exceeded the RSL of 0.00024mg/L in the primary sample at a concentration of 0.00077 mg/L, 2,4-DNT was not detected in the duplicate sample. 2-Amino-4,6-DNT exceeded the RSL of 0.0039 mg/L in the primary and duplicate samples at concentrations of 0.0058 and 0.0076 mg/L, respectively. 4-Amino-2,6-DNT exceeded the RSL of 0.0039 mg/L in the primary and field duplicate samples at concentrations of 0.017 and 0.019 mg/L, respectively. All other explosives were detected at concentrations below screening criteria. • Nitrite was not detected in the primary or duplicate sample. • Nitrate was detected at estimated concentrations of 0.44J and 0.046J mg/L in the primary and duplicate samples, respectively. • Sulfate was detected at a concentration of 130 mg/L in the primary and duplicate samples. • Sulfide was detected at estimated concentrations of 1.6J and 0.8J mg/L in the primary and duplicate samples, respectively. • Alkalinity was detected at concentrations of 39 and 38 mg/L in the primary and duplicate samples, respectively. • TOC was detected at a concentration of 1.4 mg/L. • pH was 5.57 S.U.
20	RVAAP-08 Load Line 1 (southeast of Load Line 1 fence)	LL1mw-086	Unconsolidated	• Monitor for explosives in this exit pathway well. Although no historical exceedances of screening levels have been detected, ongoing sampling for explosives is recommended in support of the FS.	• Explosives were not detected.
21	RVAAP-08 Load Line 1 (southeast of Load Line 1 fence)	LL1mw-087	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
22	RVAAP-08 Load Line 1	LL1mw-089	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.

Table 4-1. Summary of 2021 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2021 FWGWMP Sampling Recommendations	Spring 2021 Sampling Results
23	RVAAP-09 Load Line 2 South	LL2mw-059	Upper Sharon	• Continue to monitor for explosives.	• No explosives were detected with the exception of 1,3,5-TNB, 2,4-DNT, 2-amino-4,6-DNT, and 4-amino-2,6-DNT; however, only the 2,4-DNT concentration of 0.00038 mg/L exceeded the RSL of 0.00024 mg/L.
24	RVAAP-10 Load Line 3	LL3mw-237	Upper Sharon	• Continue to monitor for explosives.	• No explosives were detected with the exception of TNT, 2-amino-4,6-DNT, 4-amino-2,6-DNT, and 3,5-dinitroaniline; however, only the 4-amino-2,6-DNT concentration of 0.0061 mg/L exceeded the RSL of 0.0039 mg/L.
25	RVAAP-10 Load Line 3	LL3mw-238	Upper Sharon	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• The explosives TNT, 2-amino-4,6-DNT, 4-amino-2,6-DNT, and RDX were detected at concentrations above the screening criteria. TNT exceeded the RSL of 0.00098 mg/L at an estimated concentration of 0.03J mg/L. 2-Amino-4,6-DNT exceeded the RSL of 0.0039 mg/L at a concentration of 0.0067 mg/L. 4-Amino-2,6-DNT exceeded the RSL of 0.0039 mg/L at a concentration of 0.017 mg/L. RDX exceeded the RSL of 0.00097 mg/L at a concentration of 0.0019 mg/L. All other concentrations were below the screening criteria. • Nitrite and sulfide were not detected. • Nitrate was detected at an estimated concentration of 0.46J mg/L. • Sulfate was detected at an estimated concentration of 45J mg/L. • Alkalinity was detected at a concentration of 140 mg/L. • TOC was detected at a concentration of 2.2 mg/L. • pH was 6.71 S.U.
26	RVAAP-10 Load Line 3	LL3mw-239	Upper Sharon	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• The explosives TNT, 2,4-DNT, 2-amino-4,6-DNT, 3,5-dinitroaniline, 4-amino-2,6-DNT, and RDX were detected; however, only RDX exceeded the RSL of 0.00097 mg/L at a concentration of 0.0012 mg/L. • Nitrite and sulfide were not detected. • Nitrate was detected at an estimated concentration of 0.74J mg/L. • Sulfate was detected at an estimated concentration of 40J mg/L. • Alkalinity was detected at a concentration of 55 mg/L. • TOC was detected at an estimated concentration of 0.78J mg/L. • pH was 6.02 S.U.
27	RVAAP-10 Load Line 3	LL3mw-241	Upper Sharon	• Continue to monitor for explosives.	• The explosives 1,3,5-TNB, TNT, 2-amino-4,6-DNT, 3,5-dinitroaniline, 4-amino-2,6-DNT, and RDX were detected; however, only TNT exceeded the RSL of 0.00098 mg/L at a concentration of 0.001 mg/L.
28	RVAAP-10 Load Line 3	LL3mw-245	Upper Sharon	• Monitor for explosives to support the FS.	• Explosives were not detected.
29	RVAAP-12 Load Line 12	LL12mw-185	Unconsolidated	• Continue to monitor for nitrate and ammonia.	• Nitrate was detected at estimated concentrations of 63J and 64J mg/L in the primary and duplicate samples, exceeding the MCL of 10 mg/L. • Ammonia was not detected.
30	RVAAP-12 Load Line 12	LL12mw-187	Unconsolidated	• Continue to monitor for nitrate and ammonia.	• Nitrate was detected at an estimated concentration of 1,500J mg/L, exceeding the MCL of 10 mg/L. • Ammonia has no screening level, but was detected at a concentration of 780 mg/L.
31	RVAAP-12 Load Line 12	LL12mw-244	Unconsolidated	• Monitor for nitrate and ammonia to support the FS.	• Nitrate was not detected. • Ammonia has no screening level, but was detected at an estimated concentration of 0.023J mg/L.
32	RVAAP-12 Load Line 12	LL12mw-245	Unconsolidated	• Monitor for nitrate and ammonia to support the FS.	• Nitrate was detected at an estimated concentration of 0.11J mg/L, below the screening criteria. • Ammonia was not detected.
33	RVAAP-12 Load Line 12	LL12mw-246	Unconsolidated	• Monitor for nitrate and ammonia to support the FS.	• Nitrate was not detected. • Ammonia has no screening level, but was detected at an estimated concentration of 0.088J mg/L.
34	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-170	Homewood	• Continue to monitor for explosives.	• Explosives were not detected.
35	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-171	Homewood	• Continue to monitor for explosives.	• Explosives were not detected.
36	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-172	Homewood	• Monitor for explosives to support the FS.	• Explosives were not detected.

Table 4-1. Summary of 2021 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2021 FWGWMP Sampling Recommendations	Spring 2021 Sampling Results
37	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-173	Homewood	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• No explosives were detected with the exception of 2-amino-4,6-DNT; the concentration did not exceed screening criteria. • Nitrate, nitrite, and sulfide were not detected. • Sulfate was detected at a concentration of 32 mg/L. • Alkalinity was detected at a concentration of 13 mg/L. • TOC was detected at a concentration of 0.53 mg/L. • pH was 4.93 S.U.
38	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-174	Homewood	• Continue to monitor for explosives and assess effectiveness of MNA (anions, TOC, alkalinity, pH, and expanded explosives, which include explosive daughter products) as a remedial option.	• The explosives TNT, 2-amino-4,6-DNT, 4-amino-2,6-DNT, and 2,4-DNT were detected at concentrations above screening criteria. TNT exceeded the RSL of 0.00098 mg/L at a concentration of 0.0017 mg/L. 2,4-DNT exceeded the RSL of 0.00024 mg/L at a concentration of 0.00037 mg/L. 2-Amino-4,6-DNT exceeded the RSL of 0.0039 mg/L at a concentration of 0.0086 mg/L. 4-Amino-2,6-DNT exceeded the RSL of 0.0039 at a concentration of 0.011 mg/L. All other concentrations were below screening criteria. • Sulfide was not detected. • Nitrate was detected at a concentration of 3.4 mg/L. • Nitrite was detected at an estimated concentration of 0.049J mg/L. • Sulfate was detected at a concentration of 60 mg/L. • Alkalinity was detected at an estimated concentration of 8.3J mg/L. • TOC was detected at a concentration of 1.9 mg/L. • pH was 4.72 S.U.
39	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-175	Homewood	• Continue to monitor for explosives.	• Explosives were not detected.
40	RVAAP-43 Load Line 10	LL10mw-003	Homewood	• Continue to monitor for carbon tetrachloride to verify recent reduced concentrations.	• Carbon tetrachloride was detected at a concentration of 2.4 µg/L, below the MCL of 5 µg/L.
41	RVAAP-66 Facility-wide Groundwater (southern portion of Administration Area)	FWGmw-004	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
42	RVAAP-66 Facility-wide Groundwater (southwestern portion of facility, south of NACA Test Area)	FWGmw-007	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
43	RVAAP-66 Facility-wide Groundwater (in DLA Main Ore Storage Area)	FWGmw-010	Unconsolidated	• Monitor for explosives to support the FS.	• Explosives were not detected.
44	RVAAP-66 Facility-wide Groundwater (near East Classification Yard)	FWGmw-011	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
45	RVAAP-66 Facility-wide Groundwater (near East Classification Yard)	FWGmw-012	Upper Sharon	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
46	RVAAP-66 Facility-wide Groundwater (southeast of Administration Area)	FWGmw-015	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
47	RVAAP-66 Facility-wide Groundwater (southeast of Administration Area)	FWGmw-016	Upper Sharon	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
48	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 12)	FWGmw-018	Basal Sharon	• Continue to monitor for VOCs in this exit pathway well. Monitor for nitrates to support the FS.	• Nitrate and VOCs were not detected.

Table 4-1. Summary of 2021 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2021 FWGWMP Sampling Recommendations	Spring 2021 Sampling Results
49	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 12)	FWGmw-020	Upper Sharon	• Continue to monitor for VOCs in this exit pathway well. Monitor for nitrates to support the FS.	• Nitrate and VOCs were not detected.
50	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 3)	FWGmw-021	Upper Sharon	• Continue to monitor for explosives in this exit pathway well.	• No explosives were detected with the exception of 2-amino-4,6-DNT and RDX. Concentrations were below screening criteria.
51	RVAAP-66 Facility-wide Groundwater (downgradient of Fuze and Booster Quarry Landfill/Ponds)	FWGmw-023	Upper Sharon	• Monitor for explosives to support the FS.	• Explosives were not detected.
52	RVAAP-66 Facility-wide Groundwater (off-facility, south of State Route 5, south of Load Line 2)	FWGmw-024	Upper Sharon	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.
53	RVAAP-66 Facility-wide Groundwater (southeastern portion of facility)	SCFmw-004	Basal Sharon	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected.

Note: Background concentrations for metals vary by aquifer.

DFFO = Director's Final Findings and Orders
DNX = Hexahydro-1,3-Dinitroso-5-Dinitro-1,3,5-Triazine
DNB = Dinitrobenzene
DNT = Dinitrotoluene
FS = Feasibility Study
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
MNA = Monitored Natural Attenuation
MNX = Hexahydro-1-Nitroso-3,5-Dinitro-1,3,5-Triazine
NACA = National Advisory Committee for Aeronautics
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
RA = Resident Clean-up Goal
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine
RSL = Regional Screening Level
RVAAP = Ravenna Army Ammunition Plant
S.U. = Standard Unit
SVOC = Semivolatile Organic Compound
TNB = Trinitrobenzene
TNT = 2,4,6-Trinitrotoluene
TNX = Hexahydro-1,3,5-Trinitroso-1,3,5-Triazine
TOC = Total Organic Carbon
VOC = Volatile Organic Compound

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5.0 DATA QUALITY ASSESSMENT

A data quality assessment (DQA) was performed to support the results of the spring 2021 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 spring 2021 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 F.

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6.0 WELL REDEVELOPMENT

During the spring 2021 sampling event, 11 permanent monitoring wells (FBQmw-173, LL1mw-079, LL1mw-082, LL3mw-245, LL12mw-244, LL12mw-246, WBGmw-007, WBGmw-008, WBGmw-014, WBGmw-018, and WBGmw-019) were redeveloped. Redevelopment activities followed Section 3.5.2 of the RIWP and Appendix A.1, Section 4.6 (TEC-Weston 2016), and in accordance with the *Ohio EPA's Technical Guidance Manual for Ground Water Investigations – Chapter 8: Monitoring Well Development, Maintenance, and Redevelopment* (Ohio EPA 2009) unless otherwise noted below.

Redevelopment occurred prior to sampling these 11 wells (April 19-27, 2021, LL1mw-082 was redeveloped May 7, 2021). During redevelopment, a whaler pump was used to surge water in and out of the well screen, allowing fine sediments to be removed while pumping. Redevelopment was considered complete when five well volumes were removed, turbidity was below 10.0 nephelometric turbidity units (NTUs), and quality parameters stabilized over three consecutive readings. Exceptions to these standards are noted below:

- Monitoring wells LL12mw-244, LL12mw-246, and LL1mw-079 were pumped dry during redevelopment. These wells were allowed to recharge above the screened interval, resurged, and pumped dry multiple times to remove additional fine sediments. A total of five well volumes were removed from each well. However, the water generally remained turbid as each well went dry again, and water quality parameter stabilization could not be obtained. Therefore, redevelopment was concluded. With the exception of LL12mw-244, these wells had turbidity below 10.0 NTU prior to sampling.
- Monitoring well LL1mw-082 was pumped dry during redevelopment. This well was allowed to recharge above the screened interval, resurged, and pumped dry multiple times to remove additional fine sediments. However, the water generally remained turbid as each well went dry again, and water quality parameter stabilization could not be obtained. Due to time constraints, only a total of 2.5 well volumes were removed. This well had turbidity below 10.0 NTU prior to sampling.
- Monitoring wells WBGmw-008 and WBGmw-014 did not reach turbidity values under 10 NTU after five well volumes were removed. All other water quality parameters stabilized over three consecutive readings. Both wells had turbidity below 10.0 NTU prior to sampling.

Turbidity values post redevelopment and at the time of sample collection are shown in Table 6-1. Team Task Activity Logs, Well Development Forms, and Well Development Logs are located in Appendix G.

Table 6-1. Turbidity Values of Redeveloped Monitoring Wells

Well ID	Redevelopment Date	Turbidity Post Redevelopment (NTU)	Sampling Date	Turbidity at Time of Sample Collection Spring 2021 (NTU)
FBQmw-173	4/20/2021	8.6	5/4/2021	0.24
LL1mw-079	4/27/2021	22.5	5/5/2021	0.00
LL1mw-082	5/7/2021	59.8	5/10/2021	7.08
LL3mw-245	4/21/2021	0.5	5/5/2021	0.00
LL12mw-244	4/21/2021	1000*	5/3/2021	7,537.2
LL12mw-246	4/22/2021	319	5/3/2021	5.74
WBGmw-007	4/19/2021	0.0	4/28/2021	0.95
WBGmw-008	4/20/2021	31.2	4/27/2021	2.45
WBGmw-014	4/20/2021	41.5	4/27/2021	8.46
WBGmw-018	4/19/2021	0.0	4/28/2021	0.00
WBGmw-019	4/19/2021	0.0	4/28/2021	0.00

*Turbidity value was higher than 1,000 NTUs, and instrumentation could only read as high as 1,000.

ID = Identification
NTU = Nephelometric Turbidity Unit

7.0 REFERENCES

Leidos 2020. *Remedial Investigation Report for RVAAP-66 Facility-wide Groundwater*. Draft. July.

Leidos 2021a. *Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Addendum for 2021.* May.

Leidos 2021b. *Facility-wide Groundwater Monitoring Program RVAAP-66 Facility-wide Groundwater Annual Report for 2020.* July.

Ohio EPA (Ohio Environmental Protection Agency) 2009. *Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring – Chapter 8: Monitoring Well Development, Maintenance, and Redevelopment*. Revision 2. February.

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

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

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FIGURES

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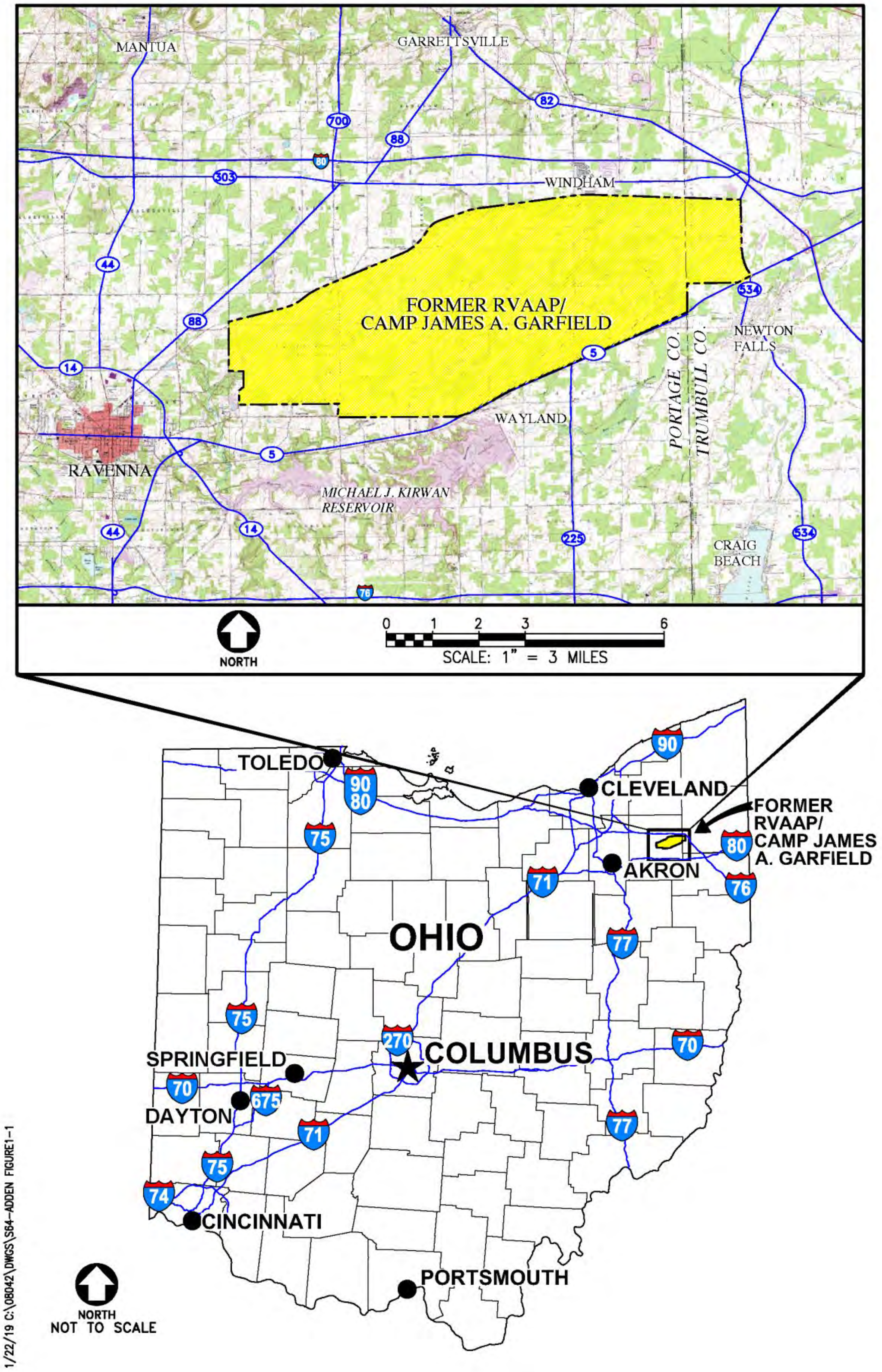

Figure 1-1. General Location and Orientation of the Former RVAAP/CJAG

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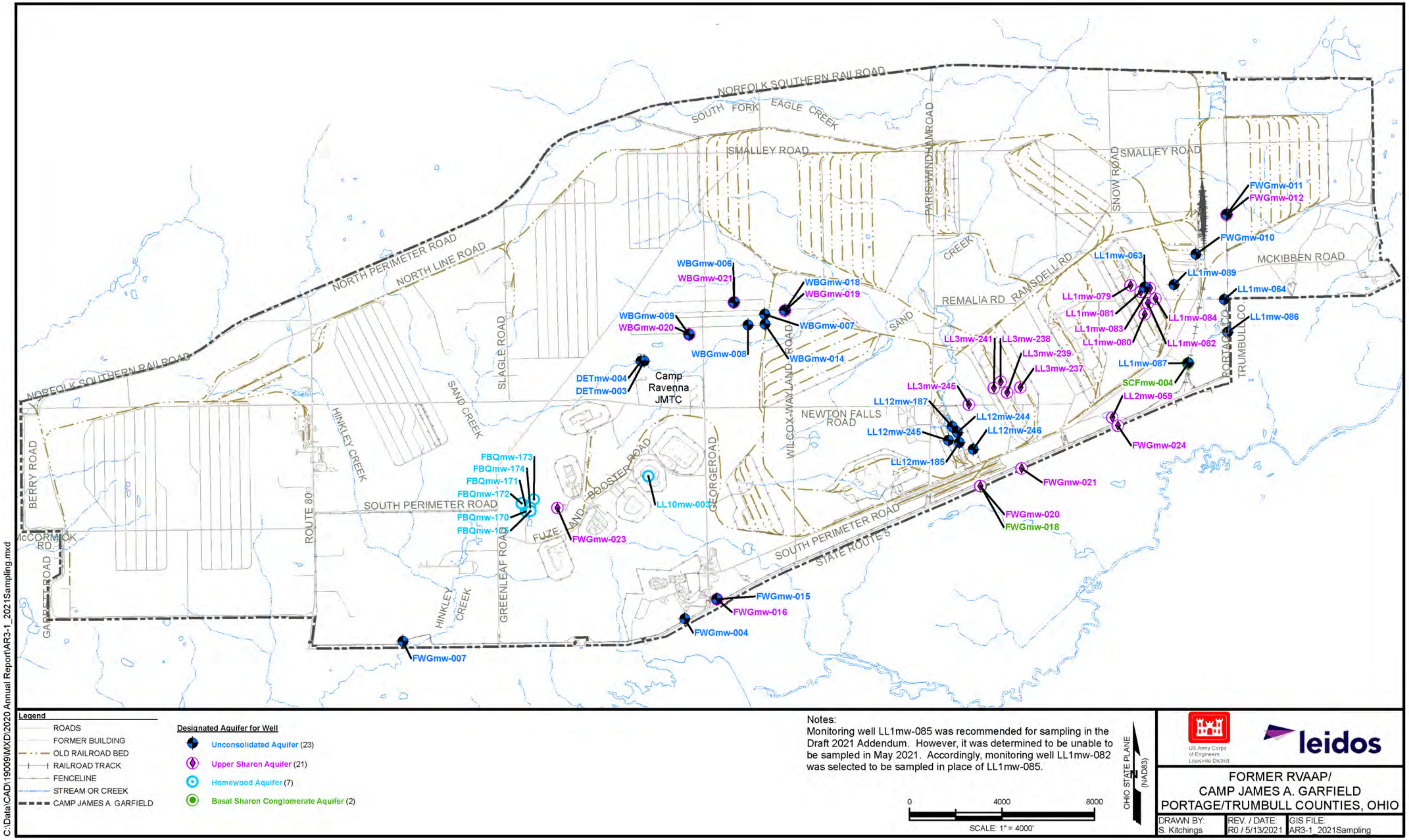

Notes:
Monitoring well LL1mw-085 was recommended for sampling in the Draft 2021 Addendum. However, it was determined to be unable to be sampled in May 2021. Accordingly, monitoring well LL1mw-082 was selected to be sampled in place of LL1mw-085.

Figure 3-1. 2021 FWGWMP Wells

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APPENDIX A

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   DATE 10/4/18

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'   DATE 10 Oct 2018

Ohio EPA Project Coordinator: DATE 11-7-18

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 — 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

DATE 10/26/18

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 the 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
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: 2018.11.08 06:40:45 -05'00'
7 Nov 2018
DATE

Ohio EPA Project Coordinator
11-7-18
DATE

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

FIELD CHANGE REQUEST

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_010
PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program
CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337
BRIEF DESCRIPTION: Post-Sample Water Quality Measurements

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

SIGNATURE

DATE 10/2/19

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

AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION):
Revised Final Remedial Investigation Work Plan for Groundwater and Environmental Investigation Services for RVAAP-66 Facility-Wide Groundwater (dated 9/21/16), Section 3.7 2016 FWGW Monitoring Program and RI Groundwater Sampling

DESCRIPTION OF CHANGE:
Section 3.7 of the RI Work Plan specifies that "Following completion of groundwater sampling, a final set of groundwater quality parameters will be measured and recorded." These post-sample water quality parameters are not used and may not be an accurate characterization of the groundwater samples. Rather, the water quality parameters recorded at the time stabilization is achieved (immediately before sampling) are the parameters entered into the database and used for evaluation.

To ensure the appropriate water quality parameters are entered in the database, this FCR removes the requirement to collect a final set of groundwater quality parameters following the completion of groundwater sampling.

JUSTIFICATION:
The water quality parameters recorded at the time stabilization is achieved (immediately before sampling) are the parameters entered into the database and used for evaluation. The post-sample water quality parameters are not entered in the database, nor are they used for any evaluation of groundwater characteristics. Recording the post-sample water quality parameters may result in an incorrect data entry.

IMPACT OF NOT IMPLEMENTING REQUEST:
See justification.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:
Leidos

FIELD CHANGE REQUEST

FIELD CHANGE REQUEST NO.: LEIDOS_FWGW_010
PROJECT: Groundwater Investigation and Reporting Services, RVAAP Restoration Program
CONTRACT NUMBER: W912QR-16-D-0003, Delivery Order W912QR-18-F-0337
BRIEF DESCRIPTION: Post-Sample Water Quality Measurements

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 Date: 2019.10.07 07:18:45 -04'00'	7 Oct 2019 DATE
Ohio EPA Project Coordinator		10-8-19 DATE
Leidos H&S Manager (if applicable)	Not applicable	DATE

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APPENDIX B

Field Forms

B.1 Daily Log Sheets

leidos

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 4/26/2021	**Temperature:** 52°F	**Wind:** N 2 MPH
Weather:		

Safety Moment Topic:	
Task Descriptions:	**Associated Hazards:**
GW	COLD STRESS
WELL DEVELOPMENT	BIOLOGICAL
	DEFENSIVE DRIVING
	SLIPS / TRIPS / FALLS
TL / 4/26/2021	LIFTING
	TL / 4/26/2021

Subcontractors Onsite:	**Equipment Onsite:**
NA	NA
TL / 4/26/2021	TL / 4/26/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	Review of Site-Specific Conditions	Monitoring Equipment, Calibration and Communication	Hazard Control Measures and Equipment
☐ Hard Hat ☒ Safety Boots ☐ Hearing Protection ☒ Safety Glasses ☐ Tyvek ☐ Respirator ☒ Gloves	☐ Accessibility ☐ Dig Permit ☒ Site Controls ☒ Site Hazards ☒ Decontamination Procedure/Hazard ☒ IDW Management ☒ Driving	☐ PID ☐ OVA ☐ CGI ☒ Horiba ☒ Calibration ☒ Phones/Radios ☒ Emergency #'s ☒ Hospital Map	☒ 1st Aid Kit ☒ Eyewash ☒ Fire Extinguisher ☒ HASP ☐ Exclusion Zone ☒ Chain of command ☐ Certification of personnel

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason: ______________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	**Appropriate Emergency Response Procedures**
VEHICLE ACCIDENT	- NOTIFY [illegible] EMERGENCY IF SERIOUS - REPORT TO FM, COMMUNICATE TO PM + OHARNG + LEIDOS H+S

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Lindsey Mayer/Leidos		4/26/21
J Mine Stefansky/Leidos		4/26/21
Danielle Anderson/Leidos		4/26/21
Rick Spanzel Leidos		4/26/21

Site Safety and Health: Officer Ryan Lanier **(Printed Name)** ______ **(Signature)** 4/26/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL 2021 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
	X		If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: Pump Fulump April 2021 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
		X	Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

Ryan Ham 4/28/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

Date: (mm/dd/yy): 4/26/2021 Page 1 of 1

Task Team Members:

RYAN LAMMY DANIELLE ANDERSON

LINDSEY MOYER RICH SPRINZL

JASMINE STEFANSKY

Narrative (include time and location):

0700 - LEIDOS ONSITE AT 1036, BEGIN TO MOBILIZE FOR GWS + WELL DEVELOPMENT

0750 - RYAN GOES TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES

0800 - COMPLETE H+S TAILGATE.

0810 - DANIELLE HEADS OUT TO TWINSBURG OFFICE TO PICK UP EQUIPMENT.

0815 - RICH TO LL1 FOR WELL DEVELOPMENT. LINDSEY + JASMINE TO LL1 FOR GWS

0945 - DANIELLE RETURNS TO 1036, PACKS UP FOR GWS AT LL1

1500 - DANIELLE, JASMINE, AND LINDSEY RETURN TO 1036, DEMOB + START SAMPLE PREP FOR SHIPMENT.

1505 - COURIER ONSITE.

1530 - COURIER PICKS UP SAMPLES (3) COOLERS

1550 - DANIELLE, LINDSEY, JASMINE OFFSITE, DANIELLE TO DROP CT SAMPLES AT UPS FOR SHIPMENT

1600 - RYAN + RICH OFFSITE. RYAN NOTIFIES RANGE CONTROL LEIDOS OFFSITE + 1036 LOCKED UP

4/26/2021

Daily Weather Condition: A.M. 39°F P. CLOUDY

P.M. 60°F SUNNY

Recorded By: 4/26/2021 QC Checked by: 05/07/21
(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

ate: (mm/dd/yy): 04/26/21

Page 1 of 2

Task Team Members:

Danielle Anderson

Jasmine Stefansky

Ryan Laurich

Rich Sprinzl DA 04/26/21

Lindsey Moyer

Narrative (include time and location):

0700 Arrive at 1036 in CJAG to mobilize for the day.
0800 H&S Tailgate hosted by Ryan
0815 Depart from 1036 and CJAG for the Twinsburg office for equipment.
0845 Arrive in Twinsburg.
0849 Call Ryan about equipment.
0855 Call Amanda about equipment.
0905 Depart from Twinsburg for CJAG.
0835 Arrive back at 1036 and remobilize.
0950 Depart from 1036 for LL1mw-079.
1015 Arrive at welland exchange equipment with Rich.
1017 Depart from LL1mw-079 for LL1mw-081.
1040 Arrive at well and set up equipment.
Water level is 30.58 ft
1106 Begin Pre Purge: first three readings are invalid, flow cell empty.
CPM 2 26:4 30 psi
Pre purge volume: 1,397.82 mL
water is ~~clear~~ Cloudy DA 04/26/21 with slight orange tint, and odorless
Flow Rate 150 mL/min
1120 Begin Purge: CPM 2 ~~25:5~~ 26:4 DA 04/26/21 30 psi, Flow Rate: 150 mL/min
water is cloudy, with slight orange tint and odorless, slight oil sheen.
Depth to water 31.5 ft. Total water Purged: 7.88 L

Daily Weather Condition: A.M. 43° F sunny, 50% humidity

P.M. 52° F Sunny

ecorded By: 04/26/21 (Signature) QC Checked by: 4/26/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

Date: (mm/dd/yy): 04/26/21 Page 2 of 2

Task Team Members:

Danielle Anderson Lindsey Moyer
Ryan Laurich Rich Sprinzl
Jasmine Stefansky DA 04/26/21

Narrative (include time and location):

1140 Water is clear, empty flow cell to correct turbidity reading. Still has a slight orange tint.

1155 The tablet closed my Low-Flow Test 48:24 is a correct reading, but taken too early

1157 Stable, taking sample LLlmw-081-210401-GW sample for explosives.

1230 Report completed and sent to Ryan. On my way to LLlmw-063 after equipment was packed.

1236 Arrive at LLlmw-063 and set up equipment.
depth to water: 27.11 ft

1249 Begin Pre-Purge: CPM2 26:4 25psi Flow Rate: 75 mL/min
Pre Purge Volume: 1284.5 mL
water is clear, colorless, odorless.

1319 Begin Purge: CPM1 58:2 20psi Flow Rate: 20 mL/min
Depth to water: 27.45 ft
Water is clear, colorless, odorless

1331 (41.42) Reading is erronious, empty flow cell to reduce turbidity Reading since Water is clear.

1355 Well went dry, total Volume Purged: 3.18 L. Talk to Ryan and Pack up equipment.

1415 Depart from LLlmw-063 for 1036 to demob and help pack samples.

1550 Offsite for the day.

Daily Weather Condition: A.M. 43°F, sunny, 50% humidity

P.M. 52°F, sunny

Recorded By: 04/26/21 (Signature) QC Checked by: 4/26/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 4/26/21

Page 1 of 2

Task Team Members:

Jasmine Stefansky

JS 4/26/21

Narrative (include time and location):

0700 arrive @ 1036

0745 H+S mtg and load equipment

0840 Arrive at LL-087

WL: 4.72

20:13 is the re-set reading

3 min Readings begin @ 20:13

* Having trouble w/ flow cell leaking out of top tried to fix manytimes

29:13 well is stable

0928 Collect Sample

0845 Started purge

1043 Done filling bottles (2 1-L Ambers and 8 500mL ambers for explosives) (Split, normal, FD, ms/msd)

1055 Depart LLmw087

1105 Arrive @ LLmw089

WL: 24.91

1117 Start purge

6:36 = Stability Criteria begins

24:36 well stable

1145 Collect sample for explosives (normal, dupe, split) 4 500mL Ambers

* My flow cell is missing an O-ring Purge into bucket (flow cell in Bucket

Daily Weather Condition: A.M. 45 Sunny

P.M. 68 Sunny

Recorded By: 4/26/21 (Signature)

QC Checked by: 4/26/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

ate: (mm/dd/yy): 4/26/21 Page 2 of 2

Task Team Members:

Jasmine Stefansky

JS 4/26/21

Narrative (include time and location):

2 1L Ambers

1205 Done Filling bottles

1220 Depart LL1mw-089 for LL1mw064

1230 Arrive @ LL1mw-064

1237 Set up for purge * Rust Color on

WL: 0.27 PVC + tubing

1243 Start purge

water Orange at beginning of purge

4:31 pre-purge complete

4:45 Begin 3min intervals

36:45 Well Stable

1325 Collect sample for explosives in 2 500ml Ambers

1350 Head back to 1036

1410 Decon pumps + help prep Coolers

JS 4/26/21

Daily Weather Condition: A.M. 45 Sunny

P.M. 60 Sunny

ecorded By: 4/26/21 (Signature) QC Checked by: 4/26/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 04/26/21

Page 1 of 2

Task Team Members:

Lindsey Meyer

LM 4/26/21

LM 4/26/21

Narrative (include time and location):

0830 Depart 1036 for LL1.

0845 Set up on LLI84

~~0900~~ 0907 LM 4/26/21 Begin purge (100mL/min) PSI 25 CPM 1 R-40 D-20

0938 End purge, Parameters stabilized

0940 Collect sample LLlmw-084-210401-GW for expanded explosives, sulfide, nitrate/nitrite/sulfate, alkalinity and TOC. Collect LLlmw-084-210401-GWMSD for sulfide, nitrate/nitrite/sulfate, and alkalinity. Collect LLlmw-084-210402-GW for expanded explosives sulfide, nitrate/nitrite/sulfate, and alkalinity. Collect LLlmw-084-210403-GW for expanded explosives, sulfide, and Alkalinity

1135 Secure well, decon equipment

1148 Set up on LLlmw-083

1205 Begin purge (200mL/min) CPM 2 R-20 D-10 PSI-29

1216 End stagnant water purge (2,200mL)

1232 Parameter stabilized - error message came up on screen and got disconnected, so reading were not recorded - ~~error~~ LM 4/26/21 had to call R.Lowrich to figure out how to find low flow log (5,400)

1235 Collect sample LLlmw-083-210401-GW for expanded explosives

1247 Secure well, decon equipment

1305 Set up on LLlmw-080

1320 Begin purge (125mL/min) CPM 2 R-21 D-9 PSI-19, got error message about sensor change

Daily Weather Condition: A.M. 37 F, Sunny, clear, light winds

P.M. 54 F Sunny, clear

Recorded By: LM 4/26/21 (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

ate: (mm/dd/yy): 04/26/21

Page 2 of 2

Task Team Members:

Lindsey Maar

LM 4/26/21

LM 4/26/21

Narrative (include time and location):

1329 End stagnant water purge (1,125mL)
1339 End purge, parameters stabilize (2,375mL)
1340 Collect LL1mw-080-210401-GW for expanded explosives
1427 Arrive back at Building 1036, unload and help pack samples.

LM 4/26/21

Daily Weather Condition: A.M. 37°F Sunny, clear

P.M. 54°F Sunny, clear

ecorded By: LM 4/26/21 (Signature)

QC Checked by: (Signature)

leidos

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 4/27/2021	**Temperature:** 48°F	**Wind:** SSW 5 MPH

Weather:

Safety Moment Topic:

Task Descriptions:	**Associated Hazards:**
GWS	SLIPS / TRIPS / FALLS
WELL DEVELOPMENT	HEAT STRESS
SET PUMPS AT	BIOLOGICAL
DEVELOPED WELLS	LIFTING
	DEFENSIVE DRIVING

Subcontractors Onsite:	**Equipment Onsite:**
NA	Re/ 4/27/2021
Re/ 4/27/2021	NA

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*
- ☐ Hard Hat
- ☒ Safety Boots
- ☐ Hearing Protection
- ☒ Safety Glasses
- ☐ Tyvek
- ☐ Respirator
- ☒ Gloves

Review of Site-Specific Conditions
- ☐ Accessibility
- ☐ Dig Permit
- ☒ Site Controls
- ☒ Site Hazards
- ☒ Decontamination Procedure/Hazard
- ☒ IDW Management
- ☒ Driving

Monitoring Equipment, Calibration and Communication
- ☐ PID
- ☐ OVA
- ☐ CGI
- ☒ Horiba
- ☒ Calibration
- ☐ Phones/Radios
- ☐ Emergency #'s
- ☐ Hospital Map

Hazard Control Measures and Equipment
- ☒ 1st Aid Kit
- ☒ Eyewash
- ☒ Fire Extinguisher
- ☒ HASP
- ☐ Exclusion Zone
- ☒ Chain of command
- ☐ Certification of personnel

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason: ______________________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	Appropriate Emergency Response Procedures
HEAT STRESS	- COOLING BREAKS - HYDRATE - IF SERIOUS GET MEDICAL ATTENTION. NOTIFY FM
	CONTACT WORK CARE 911 IF REQUIRED.
	4/27/2021

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Jasmine Stefansky/Leidos		4/27/21
Danielle Anderson/Leidos	Danielle An	4/27/21
Lindsey Maor/Leidose		4/27/21

Site Safety and Health Officer: Ryan Larkin (Printed Name) ______ (Signature) 4/27/2021 (Date)

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL 2021 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
	X		If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RUMP FACILITY WIDE GWS APRIL 2024 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

RYAN LAURICH 4/17/2024

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/27/2021

Page 1 of 2

Task Team Members:

RYAN LANNING
DANIELLE ANDERSON
LINDSEY MOYER
RICH SPENZEL
JASMINE STEFANSKI
TW/ 4/27/2021

Narrative (include time and location):

0700 - LEIDOS STAFF ONSITE. KEVIN ONSITE. (AT 1036)

0730 - RYAN OVER TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES. KEVIN OFF SITE

0750 - COMPLETE H+S TAILGATE.

0815 - LINDSEY DEPARTS FOR GWS AT FWGmw-011 + FWGmw-012 JASMINE DEPARTS FOR GWS AT WBG, AND RICH DEPARTS FOR DEVELOPMENT AT LL. DANIELLE HAS ISSUES W/ AQUA TROLL TABLET, CALLS SUPPORT AND A REPLACEMENT TABLET WILL BE SHIPPED OUT, WILL USE iPHONE APP UNTIL REPLACEMENT IS RECEIVED.

0949 - DANIELLE DEPARTS FOR GWS AT WBG.

0952 - RICH BACK AT 1036, WELL DEVELOPMENT IS COMPLETE.

1100 - RICH DEPARTS TO SET PORTABLE SS PUMPS LL1mw-085 LL1mw-079, LL3mw-245, LL12mw-256, AND ~~FBQ~~ [illegible] FBQmw-170

1300 - RYAN DEPARTS TO MEET LINDSEY NEAR SCFmw-004 TO DROP OFF PURGE CONTAINERS + PICK UP SAMPLES. JASMINE ARRIVES AT 1036 TO DROP SAMPLES + PURGE WATER, AND PICKS UP PUMP FOR DETmw-004 TO INSTALL.

1314 - NOTIFIED BY JASMINE THAT THERE IS A TREE DOWN IN THE ROAD / ENTRANCE TO DA2.

1346 - JASMINE RETURNS TO 1036. BEGINS TO DEMOB + HELP RYAN W/ SAMPLE PREP.

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

P.M. 77°F, SUNNY

Recorded By: RL 4/27/2021
(Signature)

QC Checked by: 05/08/21
(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP** **RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

ate: (mm/dd/yy): 4/27/2021 Page 2 of 2

Task Team Members:

R. LAURICH D. ANDERSON
L. MOYER R. SPRINZL
J. STEFANSKY RL / 4/27/2021

Narrative (include time and location):

1400 - NOTIFY KEVIN SEDLAK ~~OH~~ RL 4/27/2021 OF DOWN TREE AT DEMOLITION AREA NO. 2

1430 - DANIELLE + LINDSEY RETURN TO 1036 + BEGIN DEMOB / SAMPLE PREP FOR COURIER PICK UP

1507 - RICH BACK AT 1036, NOTIFIED RYAN OF AN OBSTRUCTION IN ~~CC, MW-085~~ RL 4/27/2021 CC, MW-085. COULD NOT SET PORTABLE QED PUMP AT THIS LOCATION

1530 - COURIER PICK-UP, DANIELLE / LINDSEY / JASMINE OFF SITE FOR DAY.

1600 - RICH + RYAN OFFSITE, RYAN NOTIFIES RANGE CONTROL THAT LEIDOS IS FINISHED FOR THE DAY + 1036 IS LOCKED UP.

RL

4/27/2021

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

P.M. 77°F SUNNY

ecorded By: 4/27/2021 (Signature) QC Checked by: Daniel 05/07/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 04/27/21

Page 1 of 2

Task Team Members:

Danielle Anderson
Lindsey Moyer
Ryan Lawrich
Rich Sprinzl
Jasmine Stefansky
DA 04/27/21

Narrative (include time and location):

0700 Arrive at CJAG and 1036 to mob for the day.
0735 Discover problem with tablet for AquaTroll.
0740 H&S tailgate hosted by Ryan.
0800 Call insitu to correct problem, after hours, left a message.
0805 Work on equipment log and help prep bladder pumps.
0830 Call insitu again. We need a new tablet sent to us. I work on downloading app and low-flow logs to my phone
0935 Every thing downloaded. Work out plan with Ryan for my well that went dry.
1000 Arrive at LL1mw-063 and set up equipment.
WL: 26.95 ft.
~~1018~~ DA 04/27/21 After first reading, take Samples because well went dry and we are sampling within 24 hours of pre-purge.
1018 Sample LL1MW-063-210401-GW for explosives.
Total Volume removed today: 1.34L
~~CPM2~~ DA 04/27/21 CPM1 58:2 PSI: 23 Flow Rate: 20mL/min.
1048 Sample Collection complete. Pack equipment and complete report.
1115 Depart from LL1 and lock gate behind me. Heading towards WBG.
1135 Arrive at WBGmw-009 and set up equipment.
1158 Begin Pre-Purge: CPM 2 28:2 25psi depth to water: 13.50 ft.
Pre-purge volume: 1,52665 mL Flow Rate: 125 ml/min
water is clear, colorless, odorless.

Daily Weather Condition: A.M. 60°F Sunny

P.M. 75°F partly cloudy, light breeze

Recorded By: 04/27/21 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 04/27/21

Page 2 of 2

Task Team Members:

Danielle Andersen

Ryan Laurich

Jasmine Stefansky

Lindsey Moyer

Rich Sprinzl

DA 04/27/21

Narrative (include time and location):

1209 Begin Purge! CPM2 28:2 22psi Flow Rate: 125mL/mn Water Level: 14.19ft
Total Volume Purged: 4.705L
Water is clear, colorless, odorless
1220 (2204) communication issue, reconnected Aquatroll
1228 Collect sample WBGMW-009-210401-GW for explosives
1240 Sample collection complete, pass samples to Jasmine to bring back.
Set up on WBGMW-020 and send report.
1313 Begin Pre-purge depth to water 12.76 ft Flow Rate: 175mL/min
CPM2 2:28 30psi
Water is clear, colorless, odorless.
Pre-purge volume: 2,160.5mL
1320 Turbidity and an orange tint in the water is noticable.
1325 Begin Purge: depth to water: 12.95ft Flow Rate: 175mL/min Total Volume: 6.83L
CPM2 3:27 32psi
Water is orange, turbid, and odorless and becomes clear and
colorless throughout Purge.
1343 Stable, collect sample WBGMW-020-210401-GW for explosives.
1350 Samples Collected. Pack up equipment and send report.
1405 Depart from WBGMW-020 for 1036 to demob. and pack samples.
1430 Arrive back at 1036.
1545 Offsite for the day.

DA 04/27/21

Daily Weather Condition: A.M. 60 °F sunny

P.M. 75°F partly Cloudy, light breeze

Recorded By: (Signature) 04/27/21 QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP JS 4/27/21
RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): ~~8~~ 4/27/21

Page 1 of 2

Task Team Members:
Jasmine Stefansky
~~JS 4/27/21~~

Narrative (include time and location):

0700 arrive onsite
0745 Have H+S mtg, load equipment
0830 Arrive @ Winklepeck and wait for gate to be opened by range control
0900 get let in
0910 set up on WBGmw-008, no label on outside or inside, blast barrier, one ballard loose, no freeze line
WL: 19.65
0925 Start purge
2:38 pre purge complete
2:59 Start 3min readings
11:59 stable
0942 Collect sample in 2 500ml Ambers for explosives
0950 Pack up
1000 Arrive @ WBGmw 014, no label in or out
WL: 16.25 Ballards are frost Heaved
1013 Start purge
2:45 pre purge complete
2:59 Start 3 min readings
1:47:59 well stable

Daily Weather Condition: [✓ A.M.] Sunny 56°
[✓ P.M.] Sunny 80°

Recorded By: ____ (Signature)

QC Checked by: 4/27/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 4/27/21

Page 2 of 2

Task Team Members:

Jasmine Stefansky

B 4/27/21

Narrative (include time and location):

1210 collect sample in ~~2500~~ 2 500mL Ambers BY 4/27/21

1220 Depart well

1230 grab Danielle's samples

1245 Pump purge water and drop samples @ 1036

1300 ~~set~~ BY 4/27/21 Drive to Det-004 (tree in way)

1315 set pump @ Det-004

1400 @ 1036 to help pack coolers + QA

B 4/27/21

Daily Weather Condition: [✓ A.M.] Sunny 60°

P.M. Sunny 80°

ecorded By: (Signature)

QC Checked by: 4/27/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**
PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/27/21
Page 1 of 2

Task Team Members:

Lindsey Moner

LM 4/27/21

LM 4/27/21

Narrative (include time and location):

0815 Depart 1036
0840 Arrive at FWGmw-011. Set up CPM 2 D-8 R-22 PSI-19
0858 Begin purge (300mL/min) water is cloudy orange tint, odorless
0905 End stagnant water purge water still has orange tint, not as dark
water continues to become clearer throughout purge. (2,100mL)
0948 Clean out flow cell.
1035 Clean out flow cell
1105 End purge. Parameters stabilized except for turbidity, no metals
sample collected so no filtered sample taken. Turbidity did go below
10NTU on last reading. (38,100mL Total)
1110 Collect sample FWGmw-011-210401-GW for expanded explosives.
1115 Secure well decon equipment
1131 Set up on FWGmw-012 D-8 R-22
1144 Begin stagnant water purge PSI-25 CPM2 ~~D-8 R-22~~ LM 4/27/21
water has orange tint and is cloudy (400mL/min)
1152 End stagnant water purge (3,200 mL) water cleared up throughout.
1207 Parameters stabilized (19,200mL)
1210 Collect FWGmw-012-210401-GW for expanded explosives
water is clear colorless odorless
1214 Secure well decon equipment
1235 Call R. Laurich to meet and get battery/purge containers.
1245 Meet Ryan give samples/purge water

Daily Weather Condition: A.M. Sunny, clear, 54F
P.M. 81°F Sunny clear

Recorded By: LM 4/27/21
(Signature)

QC Checked by:
(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP**
RVAAP-66

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/27/21

Page 2 of 2

Task Team Members:

Lindsey Moor

LM 4/27/21

LM 4/27/21

Narrative (include time and location):

1309 Set up on SCF-004. water is already flowing out from well,
Removed packer. Put pump in well. water level 000
1329 Begin purge (500 mL/min) water is clear, colorless, odorless
CPM 3 R-12.5 D-7.5 PSI-52. Did not need to
do stagnant water purge since well was already flowing
1342 End purge Parameters stable (6,500 mL)
1345 Collect sample SCFmw-004-210401-GW for
explosives.
1348 Secure well decon equipment Put packer back in well, well still flowing
1429 Arrive at 1036, unload. Help pack up samples.

LM 4/27/21

Daily Weather Condition: A.M. 54°F Sunny, clear

P.M. 81°F Sunny, Clear

Recorded By: LM 4/27/21 (Signature) QC Checked by: (Signature)

07-162(NE)/102507 FTP-1215, Revision 0, 4/07/99

leidos

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 4/28/2021	**Temperature:** 65 °F	**Wind:** SSW @ 7MPH

Weather:

Safety Moment Topic:

Task Descriptions:	**Associated Hazards:**
GWS	SLIPS / TRIPS / FALLS
	DRIVING
TL / 4/28/2021	LIFTING
	BIOLOGICAL - STINGING INSECTS
	POSSIBLE T-STORMS
	HEAT STRESS

Subcontractors Onsite:	**Equipment Onsite:**
NA	
TL / 4/28/2021	TL / 4/28/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	**Review of Site-Specific Conditions**	**Monitoring Equipment, Calibration and Communication**	**Hazard Control Measures and Equipment**
☐ Hard Hat	☒ Accessibility	☐ PID	☒ 1st Aid Kit
☒ Safety Boots	☐ Dig Permit	☐ OVA	☒ Eyewash
☐ Hearing Protection	☒ Site Controls	☐ CGI	☒ Fire Extinguisher
☒ Safety Glasses	☒ Site Hazards	☒ Horiba	☒ HASP
☐ Tyvek	☒ Decontamination Procedure/Hazard	☒ Calibration	☐ Exclusion Zone
☐ Respirator	☒ IDW Management	☒ Phones/Radios	☒ Chain of command
☒ Gloves	☒ Driving	☒ Emergency #'s	☐ Certification of personnel
		☒ Hospital Map	

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason: ____________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	Appropriate Emergency Response Procedures
TICK BITE	- NOTIFY FM - CONTACT WORKCARE FOR SUPPORT - SAVE TICK FOR LATER ANALYSIS
Re	
4/28/2021	

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Lindsey Meier /Leidos		4/28/21
Danielle Anderson /Leidos		4/28/21
Jasmine Stefonsky/Leidos		4/28/21
Rich Spinard Leidos		4/28/21

Site Safety and Health Officer: Ryan [illegible] **(Printed Name)** _______________ **(Signature)** 4/28/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL 2021 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
	X		If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL 2021 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
	X		Site hazards and controls consistent with SSHP
	X		Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

Ryan Lachner 4/28/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 4/28/2021

Page 1 of 2

Task Team Members:

RYAN LANIER	DANIELLE ANDERSON
LINDSEY MOYER	RICH SPRANZL
JASMINE STEFANSKI	RL / 4/28/2021

Narrative (include time and location):

0700 - LEIDOS ONSITE AT 1036, RICH WILL BE COMING LATER IN THE MORNING TO DEMOB WELL REDEVELOPMENT.

0745 - RYAN TO RANGE CONTROL TO DISCUSS DAY'S ACTIVITIES.

0800 - COMPLETE H+S TAILGATE.

0805 - LINDSEY DEPARTS FOR PERIMETER WELLS ON EAST SIDE LL2MW-059 + LL1MW-086. DANIELLE + JASMINE HEAD TO WBG.

0819 - RICH ONSITE. COMPLETE H+S TAILGATE.

0836 RICH DEPARTS 1036 TO DROP OFF EQUIPMENT AT WBG.

0902 - RICH RETURNS TO 1036.

1040 - JASMINE STOPS AT 1036 TO DROP SAMPLES + PURGE WATER. WILL HEAD OUT TO LL3 FOR GWLS

1148 - DANIELLE STOPS AT 1036 TO DROP SAMPLES + PURGE WATER. HEADS OUT TO LL3 TO HELP JASMINE.

1234 - RYAN DEPARTS FOR LL1 TO ASSESS LL1MW-085 + WHY PUMP CANNOT BE SET.

1500 - TEST LL1MW-085 W/ TAG TAPE AT ~10' BTOC TO SEE IF AN OBSTRUCTION CAN BE DETECTED. NO OBSTRUCTION WAS DETECTED W/ TAG TAPE, PROCEEDING TO ATTEMPT TO LOWER 12" OED SS BLADDER PUMP DOWN WELL. THE PUMP WOULD DESCEND BELOW 10' BTOC, TRIED TO CONTINUE TO DEPLOY LOWER AND PUMP BECAME STUCK.

Daily Weather Condition: A.M. 65° F CLOUDY

P.M. 75° F P. CLOUDY, WINDY

Recorded By: 4/28/2021 (Signature)

QC Checked by: 05/07/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

ate: (mm/dd/yy): 4/28/2021 Page 2 of 2

Task Team Members:

R. LAURICH D. ANDERSON
L. MOYER R. SPRINZL
J. STEFANSKY RL/4/28/2021

Narrative (include time and location):

1312 - NOTIFY JED THOMAS OF ISSUE W/ PUMP AT LL1MW-085. JED RECOMMENDED CALLING AMANDA SPRINZL FOR ADDITIONAL SUPPORT.

1328 - CALL A. SPRINZL AND NOTIFY HER OF THE SITUATION AT LL1MW-085. AMANDA RECOMMENDED USING FISHING LINE AND A HOOK TO GRAB THE PUMP, AND ~~THEN~~ 4/28/21 SECURE IT, THEN DROP DISTILLED OR POTABLE WATER DOWN THE WELL. THE WATER MAY LUBRICATE THE PUMP AND ALLOW IT TO SLIDE ITS POSITION IN THE CASING, ONCE LOOSE IT COULD BE HOISTED UP.

1408 - RYAN CALLS JED THOMAS TO NOTIFY HIM OF POTENTIAL RESOLUTION. JED CONCURRED W/ PLAN.

1420 - RYAN DEPARTS LL1

1430 - RYAN RETURNS TO 1036, JASMINE/LINDSEY/DANIELLE RETURN FROM GWS AND BEGIN TO DEMOB + PREP SAMPLES FOR COURIER.

1530 - COURIER ARRIVES AT 1036 + PICKS UP SAMPLES.

1600 - LEIDOS TEAM (RYAN, DANIELLE, JASMINE, LINDSEY) OFFSITE RYAN CALLS RANGE CONTROL TO NOTIFY THAT LEIDOS IS OFF SITE + 1036 SECURED.

RL 4/28/2021

Daily Weather Condition: A.M. 65°F CLOUDY

P.M. 75°F P. CLOUDY, WINDY

ecorded By: 4/28/2021 QC Checked by: 05/07/21

(Signature) (Signature)

07-162(NE)102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

ate: (mm/dd/yy): 4/28/21

Page 1 of 3

Task Team Members:
Jasmine Stefansky
JS 4/28/21

Narrative (include time and location):

0700 arrive onsite
0740 Have H&S mtg
0805 get let in to WBG
0820 Arrive @ WBG 006
WL: 7.10
0830 Start purge
11:05 pre purge complete
11:20 3 min ready start
23:20 well stable
0900 collect sample WBGmw006-210401-gw in 2 500ml Amber (expanded explosives) 1 500ml poly (alk/sulfate/Nitrate/nitrite), 1 250ml amber H2SO4 pres (TOC) and 1 250ml poly ZnAc+NaOH Pres (sulfide)
PSI 15 CPM 2 R 27 D 3.
0920 move over to WBG mw021
WL: 9.32
0927 Start purge
well started clear, about 5 mins in had orange tint, 8 minutes Clearing
10 minutes orange, 12 clear
11:35 pre purge complete

Daily Weather Condition: [✓ A.M.] Sunny 60
P.M. N/A

ecorded By: (Signature)

QC Checked by: Dale Ard 04/28/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**
PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/28/21
Page 2 of 3

Task Team Members:
Jasmine Stefansky
JS 4/28/21

Narrative (include time and location):
12:01 Begin 3 min readings
48:01 Stable
1020 collect Sample WBgmw-021-210401-gw
in 2 500ml Ambers for expanded explosives
PSI: 38 Cpm 3 R 17.5 D 25
1030 pack up equipment
1035 meet w/ Danielle + grab samples
to take back to 1036
1050 Drop Samples @ 1036 + get LL3 Bottles
1120 Arrive @ LL3 238
WL: 15.78
1128 Start purge
21:34 Pre-purge complete
21:52 Start 3 min readings
Cpm 3, R 19 D1 PSI 20
30:52 Stable
1202 Collect Sample LL3mw-238-210401-gw
in 2 500ml Ambers (expanded exp), 1 500ml
poly (alk, sulfate, nitrate, nitrite), 1 250ml amber
H2SO4 (TOC) and 1 250ml poly ZnAc + NaOH for sulfide
1350 Pack up
1300 arrive @ LL3mw241

Daily Weather Condition: [✓ A.M.] 70 Sunny
[✓ P.M.] " "

Recorded By: (Signature)
QC Checked by: 04/28/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/28/21

Page 3 of 3

Task Team Members:

Jasmine Stefansky

JS 4/28/21

Narrative (include time and location):

WL: 10.27

1308 start purge

8:27 prepurge complete

8:53 start 3 min readings

* I cleaned flow cell @ 54:53 to see if it could fix turbidity

PSI: 20 cpm 3 R 17.5 D 2.5

1:05:53 stable

1415 collect sample U3mw-241-210411.gw in 2 500mL amber bottles for ext + exp

1130 leave U3 + return to 1036 to pack coolers + do paperwork.

JS 4/28/21

Daily Weather Condition: A.M. N/A

P.M. Cloudy, 70

Recorded By: (Signature)

QC Checked by: 04/28/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/28/21

Page 1 of 3

Task Team Members:

Danielle Anderson

Ryan Laurich

Jasmine Stefansky

DA 04/28/21

Lindsey Moyer

Narrative (include time and location):

0700 Arrive at CJAG and 1036 to begin mobilization for the day.

0745 H+S tailgate hosted by Ryan.

0805 Depart from 1036 Heading to WBG.

0808 Call Range Control for them to unlock gate.

0815 Range Control unlocks gate. I head to WBGmw-018 and WBGmw-019.

0823 Arrive at wells and begin to set up equipment on WBGmw-019

WL: 17.68ft

0857 Begin Pre purge: CPM4 4:11 35psi 650mL/min

clear colorless odorless

Pre purge volume 2,421.33

0902 Begin purge: CPM4 3:12 30psi depth to water: 17.84 400 mL/min

clear colorless odorless

Total volume Purged: 6.83L

0912 Well stable collect sample WBGmw-019-210401-GW for explosives.

0915 Samples collected, move equipment to WBGmw-018 and complete report

0943 Begin Pre-Purge: CPM 4 12:4 30psi 450mL/min

Clear colorless odorless, depth to water: 18.30ft

Pre purge volume: 1,320.61mL

0946 Begin Purge: CPM 4 11:4 30psi 475mL/min

Clear colorless odorless, depth to water: 18.48ft

Total Volume purged: 9.230L

0958 Well stable, Collect sample WBGmw-018-210401-GW for explosives, TOC, Alkalinity, + Sulfide

Daily Weather Condition: A.M. 68° F mostly cloudy, 53% humidity

P.M. 75°F mostly cloudy

Recorded By: 04/28/21 (Signature)

QC Checked by: 4/28/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/28/21 Page 2 of 3

Task Team Members:

Danielle Anderson Ryan Laurich
Jasmine Stefansky DA 04/28/21
Lindsey Moyer

Narrative (include time and location):

1020 Samples collected and equipment packed. Working on report.
1040 Arrive at WBGmw-007 and set up equipment.
depth to water: 17.25
1052 Begin Pre-Purge: CPM 4 11:4 28psi Flow Rate 400 mL/min
Cloudy, slight yellow tint, odorless.
Pre-Purge volume: 1,358.47mL
1056 Begin Purge: CPM4 11:4 30psi Flow Rate: 450 mL/min depth to water: 17.25
Clear, colorless, odorless
Total Volume Purged: 7.005L
1106 Well Stable, sample WBGmw-007-210401-GW collected for explosives.
1126 Equipment packed up and report sent to Ryan. Heading back to 1036.
1135 Arrive back at 1036 to drop samples and purge water.
1138 Depart from 1036 for LL3 to grab bottles from Jasmine
1157 Arrive at LL3mw-238 to get bottles for 239.
1200 Arrive at LL3mw-239 and set up equipment. Depth to water: 24.80ft
1217 Begin Pre-Purge: CPM 2 27:3 30psi Flow rate: 125 mL/min
Orange, turbid, odorless
Pre-Purge volume: 1,404.82 mL
1230 Begin Purge: CPM2 28:2 30psi Flow Rate: 80mL/min depth to water: 26.22
Orange, turbid, odorless and becomes clear and colorless throughout.
Total Purge Volume
1320 Lost connection with Aqua troll (01:02:44)

Daily Weather Condition: A.M. 68°F mostly Cloudy, 53% humidity

P.M. 75°F mostly cloudy

Recorded By: 04/28/21 QC Checked by: 4/28/21
(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

ate: (mm/dd/yy): 04/28/21

Page 3 of 3

Task Team Members:

Daniello Anderson

Jasmine Stefansky

Lindsey Moyer

Ryan Lavrich

DA 04/28/21

Narrative (include time and location):

1406 (01:47:44) Erroneous reading. Flow cell empty to help with turbidity.
Water is clear, but it is reading 65 NTU
1417 Well stable, collect Sample LL3mw-239-210401-GW for
explosives, alkalinity, sulfide & TOC. And pack equipment
quickly.
1436 Samples collected and equipment packed. Depart from LL3mw-239
for 1036.
1445 Arrive back at 1036 and demob. Also, complete report
for LL3mw-239.
1550 Offsite for the day.

DA 04/28/21

Daily Weather Condition: A.M. 68°F mostly cloudy, 53% humidity

P.M. 75°F mostly cloudy

ecorded By: 04/28/21 (Signature) QC Checked by: 4/28/21 (Signature)

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 4/28/21

Page 1 of 2

Task Team Members:

Lindsey Moyer

DM 4/28/21

DM 4/28/21

Narrative (include time and location):

0802 Depart Building 1036.
0819 Arrive at LL1-086.
0840 Begin stagnant water ~~all~~ purge (120 mL/min) PSI-40
CPM-2 R-25 D-50 water is slightly cloudy, colorless, odorless
0914 Disconnect, had to reconnect, put 7 min left for
stagnant water purge.
0923 End stagnant water purge (5,160 mL) stagnant water purge
went a little longer due to Aqua troll being disconnect, was
still pursing, but calculated time left wrong. only supposed to go
for 37 min.
1123 End purge after 2 hours, turbidity did not
go below 50 NTU, ok to sample not collecting a metals sample (19,560 ml
1125. Collect LL1mw-086-210401-GW for expanded explosives
water is still cloudy, colorless, odorless
1136 Secure well, decon equipment.
1210 set up on LL2-059, WL-13.14'.
1230 Begin purge (125 mL/min) PSI-20 CPM 2 R-26 D-4
water is clear, colorless, odorless.
1239 End stagnant water purge (1,125mL)
1248 Parameters stabilized (2,250mL)
1250 Collect sample LL2mw-059-210401-GW for explosives.
1303 Secure well, decon equipment
1317 Meet Danielle and set bottles for LL3-237

Daily Weather Condition: A.M. Partly cloudy 68°F

P.M. Cloudy 74°F

Recorded By: D.M. 4/28/21 (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

LM 4/28/21

Date: (mm/dd/yy): 04/28/21 Page 2 of 2

Task Team Members:

Lindsey Mayer

LM 4/28/21

LM 4/28/21

Narrative (include time and location):

1320 Arrive at LL3-237, set up WL-14.64'

1333 Begin purge (75mL/min) CPM-1 R-490-11 PSI-20

1348 End stagnant water purge (1,125mL)

LM 4/28/21
~~1~~ 1401 End purge, Parameters stabilize (Total 2,100mL)

1405 Collect sample LL3mw-237-210401-GW for expanded explosives. Water is clear, colorless, odorless throughout purge

1417 Secure well, decon equipment

1425 Depart LL3

1433 Arrive at Building 1036 to unload and help pack samples

LM 4/28/21

Daily Weather Condition: A.M. Partly Cloudy 68°F

P.M. Cloudy 74°F

Recorded By: L.M. 4/28/21 QC Checked by:

(Signature) (Signature)

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 4/29/2021	**Temperature:** 66°F	**Wind:** SE [illegible] 2 mph
Weather:		

Safety Moment Topic:	
Task Descriptions:	**Associated Hazards:**
GWS	TRAFFIC - Rt. 5 WELLS
	BIOLOGICAL
RL / 4/29/2021	LIFTING
	SLIPS / TRIPS / FALLS
	RL / 4/29/2021

Subcontractors Onsite:	**Equipment Onsite:**
AWP - FOR ROUTE 5 WELLS	TRAFFIC CONTROL
	SIGNAGE
RL / 4/29/2021	RL / 4/29/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	Review of Site-Specific Conditions	Monitoring Equipment, Calibration and Communication	Hazard Control Measures and Equipment
☐ Hard Hat ☒ Safety Boots ☐ Hearing Protection ☒ Safety Glasses ☐ Tyvek ☐ Respirator ☒ Gloves	☒ Accessibility ☐ Dig Permit ☒ Site Controls ☒ Site Hazards ☒ Decontamination Procedure/Hazard ☒ IDW Management ☒ Driving	☐ PID ☐ OVA ☐ CGI ☒ Horiba ☒ Calibration ☒ Phones/Radios ☒ Emergency #'s ☒ Hospital Map	☒ 1st Aid Kit ☒ Eyewash ☐ Fire Extinguisher ☐ HASP ☐ Exclusion Zone ☐ Chain of command ☐ Certification of personnel

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason: ____________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	Appropriate Emergency Response Procedures
TRAFFIC ACCIDENT WHILE WORKING ON RT. 5 WELLS	- 911 FOR SERIOUS ACCIDENT SINCE RT. 5 WELLS ARE OFFSITE - NOTIFY FM / PM / H+S
	4/29/2021

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Lindsey Meyer / Leidos		4/29/21
Jasmine Stefonsky/Leidos		4/29/21
Danielle Andersen / Leidos		4/29/21

Site Safety and Health: Officer Ryan Cahan **(Printed Name)** ________ **(Signature)** 4/29/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RUMP FWGWMP APRIL 2021 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL 2021 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

Ryan Laurie 4/29/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

ate: (mm/dd/yy): ~~4~~ lm 4/29/2021 4/29/2021

Page 1 of 2

Task Team Members:

RYAN LAWRENCE	DANIELLE ANDERSON
LINDSEY MOYER	lh/4/29/2021
JASMINE STEFANSKY	

Narrative (include time and location):

0700 - LEIDOS STAFF AT 1036, KEVIN ONSITE.

0706 - RYAN TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES.

0720 - CONDUCT H+S TAILGATE, JASMINE DEPARTS FOR FWG-WELLS IN ADMIN AREA, LINDSEY / DANIELLE / RYAN DEPART FOR BULLPEN TO MEET AWP (TRAFFIC CONTROL FOR RT. 5 WELL)

0820 - AWP ONSITE, BRIEF AWP ON TODAY'S ACTIVITIES + SUPPORT REQUIREMENTS.

0847 - RYAN DEPARTS FOR LL1MW-083 TO ATTEMPT TO ~~RECOVER~~ lm 4/29/2021 RECOVER PUMP STUCK IN WELL. ATTEMPT TO PULL PUMP W/ FISHING LINE / HOOK + DISTILLED WATER TO LUBRICATE THE SPACE BETWEEN THE PUMP + PVC CASING. ADDED A TOTAL OF 2 GALLONS TO LL1MW-091 IN AN ATTEMPT TO RETRIEVE THE STUCK 12" SS QED BLADDER PUMP.

1225 - ATTEMPTS TO REMOVE THE PUMP AT LL1MW-085 WERE NOT SUCCESSFUL. OVERCAST SKIES ALLOWED FOR BETTER VISION DOWN WELL THAN THE PREVIOUS DAY. IT IS APPARENT THAT THERE IS A BEND IN THE CASING THAT WAS NOT PREVIOUSLY VISIBLE, IT APPEARS THAT THE PUMP IS LODGED IN THE PVC DUE TO THE BEND IN THE PIPE

Daily Weather Condition: A.M. 62°F, OVERCAST, LT. RAIN

P.M. 65°F, LIGHT RAIN

ecorded By: RL 4/29/2021 (Signature)

QC Checked by: Danielle 05/07/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

ate: (mm/dd/yy): 4/29/2021 Page 2 of 2

Task Team Members:

R. LYNCH D. ANDERSON
L. MOYER
J. STEFANSKY

R 4/29/2021

Narrative (include time and location):

1250 - RYAN + JASMINE RETURN TO 1036
1300 - JASMINE DEPARTS TO SAMPLE LL10MW-003.
1310 - NOTIFY JED BOMAR THAT PUMP COULD NOT BE EXTRACTED AT LL1MW-095
1330 - LINDSEY NOTIFIES RYAN THAT RT. 5 LANE SAMPLING IS COMPLETE, AWP (TRAFFIC CONTROL) IS DEMOBILIZING
1346 - LINDSEY + DANIELLE RETURN TO 1036.
1425 - JASMINE RETURNS TO 1036.
1430 - BEGIN TO DEMOB FOR WEEK + PREP SAMPLES FOR COURIER PICK-UP.
1515 - LINDSEY, DANIELLE, + JASMINE OFFSITE - END OF DAY.
1530 - COURIER PICK-UP
1550 - RYAN OFFSITE, NOTIFIES RANGE CONTROL 1036 IS SECURED

R
4/29/2021

Daily Weather Condition: A.M. 62°F OVERCAST, LT. RAIN

P.M. 65°F LT. RAIN

ecorded By: 4/29/2021 QC Checked by: 05/07/21

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

Date: (mm/dd/yy): 04/29/21 Page 1 of 2

Task Team Members:

Danielle Anderson	Jasmine Stefansky
Lindsey Moyer	AWP
Ryan Laurich	DA04/29/21

Narrative (include time and location):

0700 Arrive onsite at CJAG and 1036 to mobilize for the day.

0720 H&S Tailgate hosted by Ryan.

0730 Exit main gate and wait for AWP.

0810 AWP returns and we drive by the first well location.

0830 AWP Set up zones and flags.

0855 Set up equipment. depth to water 21.10

0911 Begin Pre-purge on FWGmw-020. CPM2 3:27 30psi
Flow rate 200 mL/min Pre-purge volume: 2,066.34mL

0924 Begin Purge: CPM 2 27:3 30psi depth to water: 21.81
Flow rate 200 mL/min Total volume purged: 4.15L
Water starts as cloudy with slight brown tint, odorless and becomes clear throughout purge.

0930 Stable. Collect FWGmw-020-210401-GW sample for VOC and Nitrate. Pack up equipment.

0950 Move with Lindsey and AWP to FWGmw-021 and set up.
- see Lindsey's Log.

1130 Depart from FWGmw-021 for 1036 to drop off purge water and samples.

1200 Arrive back at FWGmw-021 to help Lindsey. See her logs.

1255 Depart from FWGmw-021 for FWGmw-024 with Lindsey and AWP.

1300 Arrive at FWGmw-024 and set up equipment.

Daily Weather Condition: A.M. 62°F cloudy, rainy.

P.M. 68°F cloudy, rain

Recorded By: 04/29/21 (Signature) QC Checked by: 4/29/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP** **PROJECT NO:** **April 2021 Sampling Event**
RVAAP-66

Date: (mm/dd/yy): 04/29/21 Page 2 of 2

Task Team Members:

Danielle Anderson Ryan Laurich
Lindsey Meyer AWP
Jasmine Stefansky DA 04/29/21

Narrative (include time and location):

1308 Begin pre-purge: CPM 4 12:3 30 psi 600 mL/min
depth to water: 13.25 ft
Pre-purge volume: 2009.95 mL
Water was initially clear, colorless, odorless but became
turbid and orange throughout pre-purge.
1311 Begin Purge: CPM 4 12:3 25psi 500 mL/min
depth to water: 13.30 ft
Total volume purged: 7.38 L
Water is clear, colorless, odorless.
1321 Collect Sample FWGmw-024-210401-GW for explosives.
1324 Pack up equipment.
1328 Depart from Well for 1036 to demob.
1340 Arrive at 1036.
1530 Offsite for the week.

DA 04/29/21

Daily Weather Condition: A.M. 62°F cloudy, rain
P.M. 68°F cloudy, rain

Recorded By: 04/29/21 QC Checked by: 4/29/21
(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP** **PROJECT NO:** **April 2021 Sampling Event**
RVAAP-66

Date: (mm/dd/yy): 4/29/21 Page 1 of 3

Task Team Members:

Jasmine Stefansky

JS 4/29/21

Narrative (include time and location):

0700 arrive onsite
0730 H&S mtg
0740 Arrive @ FWGmw-015
WL: 5.60
0750 Start purge
28:30 pre purge complete
31:44 changed flow from 75 to 50 due to drawdown
37:44 Stable
0835 collect sample FWGmw-015-210401-gw in 2 500ml Ambers for Exp exp
PSI: 15 CPM 3 R 18 D 2
0855 move to FWGmw016
WL: 16.45
0900 Start purge
26:18 pre purge complete
32:36 Stable
0938 Collect Sample FWGmw-016-210401-gw for exp exp in 2 500mL Ambers
PSI 50 CPM 3 R 8.5 D 1.5
0950 Depart wells
1000 Drop samples @ 1036 + pick up more bottles

Daily Weather Condition: [✓ A.M.] Rain 55

P.M. N/A

Recorded By: (Signature) QC Checked by: David 04/29/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

ate: (mm/dd/yy): 4/29/21

Page 2 of 3

Task Team Members:

Jasmine Stefansky JS 4/29/21

Narrative (include time and location):

1007 Arrive @ Fwgmw004
WL: 13.52
1015 start purge Pre purge complete: 17:47
21:07 reduced flow due to draw down
from 150 to 125
Stable @ : XX
1054 collect sample Fwgmw-004 - 210401-gw
in 2500 mL Ambers for explosives w/
volume for ms/msd
Also collected Fwgmw-004-210402-gw
PSI 20 CPM 3 R 18.5 D 1.5
1100 Ryan out to get DI water for LL1
1115 Depart fwmgw 004
1120 Drop Samples @ 1036 -
1130 meet Ryan @ LL1mw085 to try to
dislodge pump
1250 Back @ 1036 get Bottles for LL10mw003
1307 Arrive @ LL10mw003, very rainy
WL: 20.80
1315 Start purge
7:38 prepurge done
7:52 Start 3 m readings

Daily Weather Condition: [✓ A.M.] Rainy 60
[✓ P.M.] " "

ecorded By: (Signature)

QC Checked by: (Signature) 04/29/21

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

ate: (mm/dd/yy): 4/29/21 Page 3 of 3

Task Team Members: Jasmine Stefansky

JS 4/29/21

Narrative (include time and location):

Stable @ 10:52
1337 Collect Sample U10mw-003-210401-gw
in 3 HCL voas for CCL4 only
0805 Am trip Blank: FWGTB-210402-TB
PSF 20 cpm 3 R 18.0 D2
1400 Back @ 1036
1410 Ryan sends to Ulmwees to tie off
downed pump
1435 Back @ 1036 to un load

JS 4/29/21

Daily Weather Condition: A.M. N/A
[✓ P.M.] Rain 60

ecorded By: ______ (Signature) QC Checked by: 04/29/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/29/21

Page 1 of 2

Task Team Members:

Lindsey Moser

dm 4/29/21

Narrative (include time and location):

0700 Arrive at 1036, load truck, calibrate Aqua Troll
0735 Go to meet AWP security guard stated they went to use restroom.
0815 AWP shows up R. Louvich gives them map/instructions Danielle is going to drive them to locations to show them.
0830 AWP begins to set up road signs for FWGmw-020 and 018
0850 Set up FWG--018
0905 Begin purge (375mL/min) CPM-1 R-50 D-10 PSI-70
0923 End stagnant water purge (6,750mL) water has been clear, colorless, odorless
0932 Parameters stabilize (12,000mL)
0935 Collect sample FWGmw-018-210401-GW for VOCs and nitrate. And 0900 FWGTB-210401-TB
0940 Secure well, decon equipment
1000 Set up on FWGmw-021 WL-19.81'
1017 Begin purge (300mL/min) water is orange and cloudy PSI-30 CPM 2 R-22 D-8
1024 End stagnant water purge (2,400 mL) water is starting to clear up, will need to empty cell, there are small orange particulates clinging to flow cell
1039 Clean out flow cell, water has slowly begun to clear throughout purge, but still has light orange tint.

Daily Weather Condition: A.M. 61°F Cloudy / Rain

P.M. 64°F cloudy / Rain dm 4/29/21

Recorded By: 4/29/21
(Signature)

QC Checked by: 04/29/21
(Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

ate: (mm/dd/yy): 04/29/21

Page 2 of 2

Task Team Members:

Danielle Andersen

Lindsey Maier

DA 4/29/21

DA 4/29/21

Narrative (include time and location):

1126 Clean out flow cell. water is slightly cloudy, slight orange tint, odorless

1215 Tablet disconnected from Aqua Troll had to reset it.

1223 Tablet disconnected again from Aqua Troll, could not reconnect. Got Danielle's Aqua Troll.

1237 Danielle started a new form with her Aqua Troll and will have 2 Forms for FWGMW-021-~~210401~~ DA 4/29/21 will need 3 stable readings. Turbidity is still not below 10NTU

1244 End purge, parameters stable except turbidity; purge over 2 hours (total 44,100mL)

1245 Collect FWGMW-021-210401-GW for explosives.

1250 Secure well decon equipment.

1300 See Danielle's logs/notes for sampling of FWGMW-024.

1340 Arrive back at 036 to unload, finish up paperwork, etc

DA 4/29/21

Daily Weather Condition: A.M. 61°F Cloudy | Rain

P.M. 64°F Cloudy | Rain

ecorded By: L. Ma 4/29/21 (Signature)

QC Checked by: 04/29/21 (Signature)

leidos

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 5/3/2024	**Temperature:** 55°F	**Wind:** SE AT 4 MPH

Weather:

Safety Moment Topic:

Task Descriptions:	**Associated Hazards:**
GWS	SLIPS / TRIPS / FALLS
	LIFTING
TE 5/3/2024	BIOLOGICAL
	T-STORMS
	DRIVING

Subcontractors Onsite:	**Equipment Onsite:**
NA	
TE 5/3/2024	TE 5/3/2024

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	Review of Site-Specific Conditions	Monitoring Equipment, Calibration and Communication	Hazard Control Measures and Equipment
☐ Hard Hat ☒ Safety Boots ☐ Hearing Protection ☒ Safety Glasses ☐ Tyvek ☐ Respirator ☒ Gloves	☐ Accessibility ☐ Dig Permit ☒ Site Controls ☒ Site Hazards ☒ Decontamination Procedure/Hazard ☒ IDW Management ☒ Driving	☐ PID ☐ OVA ☐ CGI ☒ Horiba ☒ Calibration ☒ Phones/Radios ☒ Emergency #'s ☒ Hospital Map	☒ 1st Aid Kit ☒ Eyewash ☒ Fire Extinguisher ☒ HASP ☐ Exclusion Zone ☒ Chain of command ☐ Certification of personnel

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason:

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	Appropriate Emergency Response Procedures
VEHICLE ACCIDENT w/ DEER	- NOTIFY FM - FM CONTACTS RANGE CONTROL - FM NOTIFIES PM + CORP. H+S
R	5/3/2021

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
/ Leidos	Jasmine Stefansky	5/3/21
Danielle Anderson / Leidos		5/3/21
Lindsey Moyer / Leidos		5/3/2021

Site Safety and Health: Officer Ryan Lancy **(Printed Name)** ______ **(Signature)** 5/3/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP Fieldwork April - May 2024 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: Pump Fishway April- May 2021 Page 2 of 2

N	Y	NA	Item
	✓		Portable electrical equipment plugged to a GFCI
	✓		Electrical wiring covered by insulation or enclosure
	✓		Three wire, UL approved, extension cords used
	✓		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	✓		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		✓	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		✓	Moving (rotating) machinery guarded to prevent employee contact
		✓	Fall protection provided for work at elevations greater than 4 ft
		✓	All containers of hazardous material labeled to indicate contents and hazards
	✓		MSDSs for hazardous materials on-site
	✓		All vehicles equipped with two-way radios and cellular phones
	✓		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	✓		Potable and non-potable water labeled
		✓	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		✓	Visitor access controlled
		✓	Site hazards and controls consistent with SSHP
		✓	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

Ryan Lamm 5/3/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 5/3/2021

Page 1 of 1

Task Team Members:

RYAN CAURICH

DANIELLE ANDERSON

LINDSEY MOYER

RC / 5/3/2021

JASMINE STEFANSKY

Narrative (include time and location):

0700 - RYAN, DANIELLE, LINDSEY, AND JASMINE ARRIVE AT 1036.

0750 - RYAN GOES TO ~~1036~~ RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES. RC 5/3/2021

0751 - COMPLETE H+S TAILGATE

0805 - DANIELLE, LINDSEY, JASMINE DEPART FOR LLR FOR GWS.

0850 - KATIE TAIT ONSITE AT 1036, KATIE NOTIFIES RYAN

~~0856~~ RC 5/3/2021 THAT THE WELL LID + QED CAP AT WBGMW-007 WAS OFF AND ON THE WELL PAD. ALSO STOPPED IN TO CHECK STATUS OF GWS EVENT

0856 - KATIE OFFSITE

0915 - RYAN TO WBG TO RE-INSTALL WELL LID + QED CAP AT WBGMW-007

0957 - RYAN RETURNS TO 1036

1250 - PUMP RESET AT LL3MW-245, QED BLADDER PUMP WAS NOT SET UP FOR 3/8" x 1/4" CONFIGURATION.

1432 - DANIELLE RETURNS TO 1036 DROP SAMPLES + DEMOBS FOR DAY.

1500 - JASMINE RETURNS TO 1036, QED PUMP AT FBQMW-170 WAS SET UP INCORRECTLY.

1530 - LINDSEY RETURNS TO 1036 - BEGIN DEMOB FOR DAY + PACK SAMPLES FOR SHIPPING.

1551 - COURIER PICKUP + LINDSEY + JASMINE OFFSITE.

1600 - RYAN + DANIELLE OFF SITE END OF DAY.

RC / 5/3/2021

Daily Weather Condition: A.M. 55°F, OVERCAST, LT. RAIN

P.M. 61°F OVERCAST

Recorded By: 5/3/2021 (Signature)

QC Checked by: 05/06/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

Date: (mm/dd/yy): 05/03/21 Page 1 of 2

Task Team Members:

Danielle Anderson
Ryan Laurich
Lindsey Moyer
DA 05/03/21
Jasmine Stefansky

Narrative (include time and location):

0700 Arrive at CJAG and mobilize for the day.
0750 H+S meeting hosted by Ryan.
0810 Depart from ~~CJ~~ DA05/03/21 1036 for LL12
0825 Arrive at LL12 mw-246 and set up equipment.
depth to water: 15.75 ft
0842 Begin Pre-Purge: CPM 2 27:3 30psi flow Rate: 200 mL/min
Pre purge volume: 1,482.39 mL
Water is Brown, turbid, odorless
0850 Begin Purge CPM 2 27:3 25psi flow rate: 175 mL/min
Water level: 17.03 ft
Total Volume removed: 11.33L
Water became clear, colorless, odorless throughout purge.
1032 ~~[illegible]~~ Sample LL12mw-246-210401-GW collected for Nitrate and Ammonia.
DA05/03/21 1055 Equipment packed and report sent. Depart from LL12mw-246 for LL12 mw-244.
1103 Arrive at LL12 mw-244 and set up equipment.
Depth to water: 9.11 ft
1124 Begin pre-purge: CPM 2 27:3 25 psi 175 mL/min
Gray slurry, turbid odorless
Pre-purge Volume: 1,929.69 mL
1126 Connection issue with Aqua troll DA05/03/21 ~~01:24~~ 01:31
1133 Begin Purge: CPM 1 58:2 75 mL/min Gray slurry, turbid odorless.

Daily Weather Condition: A.M. 55°F cloudy, rain

P.M. 55°F cloudy, rain

Recorded By: 05/03/21 QC Checked by:
(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

Date: (mm/dd/yy): 05/03/21 Page 2 of 2

Task Team Members:

Danielle Anderson

Ryan Lavrich

Lindsey Moyer

DA 05/03/21

Jasmine Stefansky

Narrative (include time and location):

(1133) depth to water: 11.85ft Total Volume removed: 10.28L

1336. Collect sample LL12mw-244-210401-GW for Nitrate and ammonia. We waited two hours due to turbidity of the well. All other perameters were stable. Turbidity over 7,000 NTU. Samples collected and equipment packed.

1415 Report sent to Ryan. Depart from LL12mw-244 for 1036.

1430 Arrive back at 1036 and demob, pack samples, and complete paperwork.

1440 Depart 1036 for LL3mw-245 to check on pump.

1445 Arrive at well and set up equipment.

1450 Pump is fine, inform Ryan. Pack up equipment.

1505 Equipment packed. Head back to 1036.

1515 Arrive back at 1036 to demob.

JS 5/3/21

Daily Weather Condition: A.M. 55°F cloudy, rain

P.M. 55°F cloudy, rain

Recorded By: Dan And 05/03/21 QC Checked by:
(Signature) (Signature)

JS 5/3/21 ~~[illegible] ued te R~~

TASK TEAM ACTIVITY LOG SHEET JS 5/3/21 ~~10910 Kisstonpke~~

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 5/3/21

Page 1 of 3

Task Team Members:

Jasmine Stefansky

JS 5/3/21

Narrative (include time and location):

0700 Arrive onsite

0730 cal equipment

0745 H&S mtg

0815 Arrive @ U12 mw185

WL: 6.71'

0829 Start purge

pre purge done @ 33:15 begin 3 m readings

* pre - purge was set @ 79 mins, did 33:15 after talking to amanda + ryan

* @ ~~45:17~~ JS 5/3/21 switched over to a flow rate of 100 so I did not have to pre-purge for 79 minutes got okay from ryan +

42:15 amanda. readings 36:15 => 42.15 do not count towards stabilization

* 1:00:17 pre purge done

1:00:28 start 3 m readings

-> Decrease flow to 25ml/min

* 1:06:28 cleaned flow cell to try to reduce turbidity, That is why 1:09:28 is not stabilized

1:24:28 purge complete

1005 Collect Sample U12mw-185-210501-gw

Daily Weather Condition: [✓ A.M.] 55 rain / cloudy

P.M. " "

Recorded By: (Signature)

QC Checked by: 5/3/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

ate: (mm/dd/yy): 5/3/21 Page 2 of 3

Task Team Members:
Jasmine Stefansky
JS 5/3/21

Narrative (include time and location):
for nitrate + ammonia, Collect ms/msd
for ammonia. Collect CU12 mw-185-210402-gw
(dupe) for nitrate + ammonia
collect CC12-185-210403-gw (split
cpm 2, R 29, D 1, psi 12
1120 Done filling bottles
1130 @ 1036 to get bottles + drop samples
1150 Arrive @ FWGmw007
WL: 24.51'
1157 Start purge
11:39 ~~the~~ purge complete
11:53 3 mm readings
20:53 I clean flow cell to try to reduce turbidity.
41:53 Stable
1242 collect sample FWGmw-007-210403-gw and FWGmw-007-210401-gw for explosives
(normal + split)
Cpm 2 R27 D3 PSI 22
1315 Done filling bottles
1330 Drop bottles @ 1036 + get other bottles
1345 Arrive @ FBQ mw 170

Daily Weather Condition: [✓ A.M.] Rain 55
[✓ P.M.] " "

ecorded By: (Signature) QC Checked by: D.M 5/3/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**
PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 5/3/21
Page 3 of 3

Task Team Members:
Jasmine Stefansky

JS 5/3/21

Narrative (include time and location):
WL: 19.68'
1415 Could not get pump working properly.
Pull pump
1430 Head back to 1036
1445 test pump
1500 Decon Pump
1515 Unload equipment

JS 5/3/21

Daily Weather Condition: A.M. N/A
[✓ P.M.] 55 Rain

Recorded By: (Signature)
QC Checked by: DM 5/3/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

ate: (mm/dd/yy): 05/03/21 Page 1 of 2

Task Team Members:

Lindsey Moyer

LM 5/3/21

LM 5/3/21

Narrative (include time and location):

0700 Arrive onsite, calibrate equipment, load vehicle, have H+S meeting.
0810 Depart for LL12.
0820 Set up on LL12mw-187. WL-8.81'
0842 Begin purge (175mL/min) CPM-1 R-470-13 PSI-20
0856 End stagnent water purge. (2,450mL) water has been clear, colorless, odorless, until end of stagnent water purge got cloudy
0903 Clean out flow cell.
0927 Clean out flow cell.
0935 End purge-parameters stabilized. (Total - 9,275 LM 5/3/21 mL)
0940 collect LL12mw-187-210401-GW for nitrate and ammonia.
0945 Secure well, decon equipment.
1015 Arrive at LL3mw-245. Set up. WL- ~~12.84'~~ LM 5/3/21 12.34'.
1034 Call R. Laurich, tubing diameters are the same and are not marked Air or water. Try to figure it out normally colored is water
1040 Start purge with clear line connected to water.
1046 Still no water listen close to well can hear a bubble, switch lines.
1048 Start purge with ~~to~~ LM 5/3/21 air line connected to grey line.
1109 Still no water call R. Laurich he states to pull pump.
1122 water line diameter the connector is too large and is

Daily Weather Condition: A.M. Rain/cloudy 55°F

P.M. Rain/cloudy 58°F

ecorded By: L.M 5/3/21 (Signature) QC Checked by: (Signature)

07-162(NE) 102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 5/3/21

Page 2 of 2

Task Team Members:

Lindsey Mayer

LM 5/3/21

LM 5/3/21

Narrative (include time and location):

not allowing water, to come up. Need different tubing or correct fitting for bladder pump. Call R. Laurich He states to come back to 1036.

1136 Arrive back at 1036, Go back to well, realize need another plate.

1250 set pump at LL-3mw-245.

1315 Arrive back at 1036 to get bottleware

1330 Set up on FWG-010mw.

1342 Begin purge (75 mL/min) water is slightly cloudy, colorless, odorless. ~~[illegible]~~ 5/3/21 CPM 2 R-25 D-5 PSI-520. C

1401 End stagnant water purge (1,425mL).

1440 Parameters stabilize (4,350mL).

1445 Collect sample FWGMW-010-210401-GW for expanded explosives.

1455 Secure well, decon equipment.

1500 Lock gate and put sawhorse back across entrance.

1510 Arrive back at 1036 unload, finish paperwork.

LM 5/3/21

Daily Weather Condition: A.M. rain / cloudy 55°F

P.M. rain / cloudy 58°F

Recorded By: L.M 5/3/21 (Signature)

QC Checked by: (Signature)

leidos

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: ~~4/5/2021~~ 5/4/2021 RL 5/4/2021	**Temperature:** 61°F	**Wind:** S 4 MPH
Weather:		

Safety Moment Topic:	
Task Descriptions:	**Associated Hazards:**
GWS	T-STORMS
	SLIPS / TRIPS / FALLS
RL / ~~4/5~~ 5/4/2021	LIFTING
5/4/2021	DRIVING
	BIOLOGICAL

Subcontractors Onsite:	**Equipment Onsite:**
NA	NA
RL / 5/4/2021	RL / 5/4/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	Review of Site-Specific Conditions	Monitoring Equipment, Calibration and Communication	Hazard Control Measures and Equipment
☐ Hard Hat	☐ Accessibility	☐ PID	☑ 1st Aid Kit
☑ Safety Boots	☐ Dig Permit	☐ OVA	☑ Eyewash
☐ Hearing Protection	☑ Site Controls	☐ CGI	☑ Fire Extinguisher
☑ Safety Glasses	☐ Site Hazards	☑ Horiba	☑ HASP
☐ Tyvek	☒ Decontamination Procedure/Hazard	☑ Calibration	☐ Exclusion Zone
☐ Respirator	☑ IDW Management	☑ Phones/Radios	☑ Chain of command
☑ Gloves	☑ Driving	☑ Emergency #'s	☐ Certification of personnel
		☑ Hospital Map	

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason: ______________________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	**Appropriate Emergency Response Procedures**
– BROKEN BONE / SPRAIN WHILE SAMPLING	– ~~911~~ 5/4/2021 RANGE CONTROL IF SERIOUS MEDICAL ATTENTION REQUIRED – CALL WORKCARE
R	– NOTIFY FM – CALL PM + H&S – STABILIZE INJURY
5/4/2021	

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Danielle Anderson / Leidos		5/4/21
Jasmine Stefonsky/Leidos		5/4/21
Lindsey Mayer / Leidos		05/04/21

Site Safety and Health Officer: Ryan Laurich **(Printed Name)** ____________ **(Signature)** 5/4/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL - MAY 2024 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
	X		If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL - MAY 2021 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

[illegible] 5/4/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO: April 2021 Sampling Event**

ate: (mm/dd/yy): 5/4/2021 Page 1 of 1

Task Team Members:

RYAN LAURICH DANIELLE ANDERSON

LINDSEY MOYER

JASMINE STEFANSKY

R / 5/4/2021

Narrative (include time and location):

0700 - RYAN, DANIELLE, JASMINE, + LINDSEY AT 1036.

0725 - RYAN GOES TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES.

~~730~~ 0735 - CONDUCT H+S TAILGATE AT 1036.

0753 - DANIELLE + LINDSEY DEPART FOR DEMOLITION AREA 2 + JASMINE FOR FBQ

1200 - RYAN TO ~~O~~DA #2 DROP EQUIPMENT TO LINDSEY + DANIELLE, PICK UP SAMPLES

DA 05/06/21

1230 - RYAN PREP DET-003 SAMPLES FOR SHIPMENT. LINDSEY BACK AT 1036, DROPS REMAINING DET-003 SAMPLES THEN HEADS TO FBQ W/ JASMINE

1400 - JASMINE RETURNS TO 1036.

1418 - DANIELLE RETURNS TO 1036.

1430 - ~~LINDSEY~~ 4/5/2021 LINDSEY RETURNS TO 1036, BEGIN TO DEMOB FOR DAY + PACK SAMPLES FOR SHIPMENT.

1500 - COURIER PICK UP.

1530 - LEIDOS TEAM OFF SITE, END OF DAY.

R

5/4/2021

Daily Weather Condition: A.M. 61°F OVERCAST, LT. RAIN

P.M. 70°F RAIN

ecorded By: 5/4/2021 QC Checked by: 05/06/21

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**
PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 05/04/21
Page 1 of 2

Task Team Members:

Lindsay Major
on 5/4/21

on 5/4/21

Narrative (include time and location):

0700 Arrive onsite, calibrate equipment, load vehicle.
0800 Depart 1036 for Demolition Area.
0815 Set up on DET-003 WL-8.64' ~~DET 003 with~~ on 5/4/21
~~Need to~~ on 5/4/21 Should make sure grass is cut next time due to ticks
0831 Begin purge (225ml/min) PSI-20 CPM-2 R-25 D-5
water has light orange tint, slightly cloudy, odorless.
0836 End stagnant water purge (1,125mL).
water cleared up throughout purge, clear, colorless, odorless
0854 Parameters stabilized (5,175mL).
0855 Collect sample DET-003-210401-GW for VOCS, phthalates/nitroaromatics/phenols, PAHs, PCBs, Pesticides, explosives, cyanide, TAL metals,
DET-003-210401-GWMSD sampled for VOCs, phthalates/nitroaromatics/phenols, PAHs, PCBs, Pesticides, cyanide, explosives TAL metals.
DET-003-210402-GW sampled for VOCs, phthalates/nitroaromatics/phenols, PAHs, PCBs, Pesticides, cyanide and TAL metals.
FWGTB-210403-TB collected for VOCs
DET-003-210403-GW collected for VOCs, phthalates/nitroaromatics/phenols, PAHs, PCBS, Pesticides, cyanide, + TAL metals
FWGTB-210404-TB collected for VOCs (split sample)
Trip Blank time - 0830 for both labs.

Daily Weather Condition: A.M. 63°F, partly cloudy
P.M. 69°F Cloudy

Recorded By: 5/4/21 (Signature)
QC Checked by: 05/04/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 05/04/21

Page 2 of 2

Task Team Members:

Lindsey Moyer

LM 5/4/21

LM 5/4/21

Narrative (include time and location):

1150 ~~Set~~ LM 5/4/21 Secure well, decon equipment. Well needs longer frost tube and repainted w/ ID.

1218 Arrive back at 1036.

1246 Arrive at Fuze + Booster.

1304 Arrive at FBQ-173, set up WL-45.14'

1319 Start purge (300mL/min) PSI-40 CPM-3 R-12 D-8

1324 End stagnant water purge (1,500mL)

water started off with red tint, slightly cloudy, odorless, cleared up throughout stagnant water purge.

1400 Parameters stabilize. water clear, colorless, odorless (12,300mL)

1405 Collect sample FBQmw-173-210401-GW for expanded explosives, sulfide, nitrate/nitrite/sulfate, alkalinity, and TOC.

1418 Secure well, decon equipment.

1430 Arrive back at 1036 to finish paperwork and drop samples.

LM 5/4/21

Daily Weather Condition: A.M. 63°F ~~partly~~ partly cloudy 5/4/21

P.M. 69°F cloudy

Recorded By: L.M. 5/4/21 (Signature)

QC Checked by: 05/04/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP ~~19.10~~ BS 5/4/21 **PROJECT NO:** April 2021 Sampling Event
AAP-66

Date: (mm/dd/yy): 5/4/21 Page 1 of 2

Task Team Members:
Jasmine Stefanszky

~~5/4/21~~ BS

Narrative (include time and location):

0700 Arrive onsite
0730 H&S mts
0805 Arrive @ FBQ-MW 170 to set pump
0815 set pump
0830 Arrive @ mw175 (FBQ)
WL: 18.79
0841 Start purge
14.43 pre purge complete
15.11 3m readings
1:48:11 cleaned flow cell since turb going up.
Slight hydro carbon odor during purge
Stable @ xx
1050 collect Sample FBQmw-175-210401-gw +ms/msd
FBQmw-175-210403-gw split sample for CT
all explosives sampling + FBQmw-175-210402-gw
Cpm 2 K 26 D 4 PST 15
1235 finally done filling bottles
1240 arrive @ FBQ mw 174
1245 Lindsey comes to set bottles
WL: N/A Hit top of pump
1300 Start purge

Daily Weather Condition: [✓ A.M.] Cloudy 60
" "

Recorded By: (Signature) QC Checked by: 14,21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

ate: (mm/dd/yy): 5/4/21 Page 2 of 2

Task Team Members:

Jasmine Stefansky

JS 5/4/21

Narrative (include time and location):

14:05 prepurge complete

14:19 3 min readings start

1325 Collect Sample FBQmw-174-210401-gw for explosives, sulfide, nitrate/nitrite, alkalinity & TOC

CPM 2 R 25 D 5 PSI 20 & sulfate

1400 Done filling bottles

1420 Back at 1036 to prep coolers + unpack.

JS 5/4/21

Daily Weather Condition: A.M. N/A

[✓ P.M.] Cloudy 60

ecorded By: (Signature) QC Checked by: 5/4/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO: April 2021 Sampling Event**

Date: (mm/dd/yy): 05/04/21 Page 1 of 1

Task Team Members:

Danielle Anderson Ryan Laurich

Lindsey Moyer ~~DA05/04/21~~

Jasmine Stefansky

Narrative (include time and location):

0700 Arrive onsite at CJAG for the day and mobilize at 1036

0740 H&S meeting hosted by Ryan.

0755 Depart from 1036 for DA2mw-004.

0805 Arrive at well locations and walk the path to see if it can be driven.

0815 Drive back to DA2mw-004 and set up equipment.

depth to water: 9.63 ft

0831 Begin Pre-purge: CPM 1 59:1 12psi Flow Rate 50mL/min

Water is clear, colorless, odorless → turbidity reading is an error

Pre-purge Volume: 1,286.95 mL

0922 Begin Purge: CPM 1 59:1 12psi Flow Rate ~~50~~ 25 mL/min DA05/04/21

depth to water: below top of pump Total Volume Purged: 8.15L

Water is clear, colorless, odorless, flow cell needed to be cleaned.

0931 Well stable, collect samples DET-004-210401-GW for VOCs, phthalates/ Nitroaromatics/Phenols, LLPAHs, PCBs, Pesticides, Explosives, Cyanide, and TAL metals.

1059 Air compressor stops working, possibly overheated. Asked Ryan to bring a new one.

1102 Compressor ~~[illegible]~~ DA05/04/21 cooled down slightly and started working again

1333 Sampling complete. Pack up equipment and send report to Ryan

1350 Depart from DA2 and lock gate.

1357 Check on Lindsey at FBQmw-173 and head back to 1036.

1410 Arrive back at 1036, demob, pack samples, and complete paperwork.

1530 Depart 1036 and CJAG for the day.

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

P.M. 66°F cloudy, humid, rain

Recorded By: Dan A 05/04/21 (Signature) QC Checked by: (Signature)

leidos

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 5/5/2021	**Temperature:** 47°F	**Wind:** NNW at 7 MPH
Weather: OVERCAST		

Safety Moment Topic:

Task Descriptions:	**Associated Hazards:**
GWS	SLIPS / TRIPS / FALLS
RL / 5/5/2021	BIOLOGICAL
	DRIVING
	LIFTING
	T-STORMS

Subcontractors Onsite:	**Equipment Onsite:**
NA	NA
RL / 5/5/2021	RL / 5/5/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*

- ☐ Hard Hat
- ☒ Safety Boots
- ☐ Hearing Protection
- ☑ Safety Glasses
- ☐ Tyvek
- ☐ Respirator
- ☒ Gloves

Review of Site-Specific Conditions

- ☒ Accessibility
- ☐ Dig Permit
- ☒ Site Controls
- ☒ Site Hazards
- ☒ Decontamination Procedure/Hazard
- ☒ IDW Management
- ☑ Driving

Monitoring Equipment, Calibration and Communication

- ☐ PID
- ☐ OVA
- ☐ CGI
- ☒ Horiba
- ☒ Calibration
- ☒ Phones/Radios
- ☒ Emergency #'s
- ☒ Hospital Map

Hazard Control Measures and Equipment

- ☒ 1st Aid Kit
- ☒ Eyewash
- ☒ Fire Extinguisher
- ☒ HASP
- ☐ Exclusion Zone
- ☒ Chain of command
- ☐ Certification of personnel

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason: ____________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	**Appropriate Emergency Response Procedures**
- FLAT TIRE	- NOTIFY FM - GET VEHICLE OFFSITE IF POSSIBLE IF NOT POSSIBLE PROCURE TOW TRUCK IF OFFSITE CALL RENTAL CO. FOR ROADSIDE ASSISTANCE
5/5/2021	

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Jasmine Stefanski / Leidos		5/5/21
Danielle Anderson / Leidos		5/5/21
Lindsey Mayer / Leidos		05/05/21

Site Safety and Health: Officer Ryan Lanna **(Printed Name)** ____________ **(Signature)** 5/5/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RUMP FLUSHING APRIL - MAY 2021

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RVAAP - FWGWMP April - Aug 2021 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

Ryan [illegible] 5/5/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

Date: (mm/dd/yy): 5/5/2021 Page 1 of 1

Task Team Members:

RYAN LANNING	DANIELLE ANDERSON
LINDSEY BOYER	RL / 5/5/2021
JASMINE STEFANSKY	

Narrative (include time and location):

0700 - LINDSEY, JASMINE, + DANIELLE ONSITE AT 1036

0712 - RYAN ONSITE AT 1036.

0750 - RYAN TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES.

RL 5/5/2021
~~70~~ 0740 - COMPLETE H+S TAILGATE AT 1036.

0813 - DANIELLE DEPARTS FOR LL_{12} + LL_1, LINDSEY + JASMINE DEPART FOR FBQ.

1200 - RYAN DEPARTS TO ASSIST JASMINE AT FWGMW-023, ISSUES W/CONTROLLER + COMPRESSOR.

1245 - RYAN DEPARTS TO LL_1 AND ~~RETRIEV~~ RL 5/5/2021 RETRIEVE STUCK QED 12" SS PUMP AT LL_1MW-085.

1445 - RYAN DEPARTS LL_1, COULD NOT RETRIEVE STUCK PUMP AT LL_1MW-085.

1500 RYAN RETURNS TO 1036, LINDSEY / JASMINE / DANIELLE ALL PRESENT BEGIN DEMOB.

1515 - COURIER PICKS UP SAMPLES, LINDSEY / JASMINE / DANIELLE OFFSITE END OF DAY.

1535 - RYAN SECURES 1036 + NOTIFIES RANGE CONTROL LEIDOS IS DONE FOR THE DAY.

1540 - RYAN OFFSITE.

RL 5/5/2021

Daily Weather Condition: A.M. 47° F, OVERCAST

P.M. 48°F, LIGHT RAIN / MIST

Recorded By: RL 5/5/2021 (Signature) QC Checked by: Dan 05/06/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

CT NAME: FWGWMP **PROJECT NO: April 2021 Sampling Event**
-66

e: (mm/dd/yy): 5/5/21 Page 1 of 3

ask Team Members:
Jasmine Stefansky
JS 5/5/21

Narrative (include time and location):
0700 Arrive onsite
0745 H+S mtg
0800 realize Fwgmw023 has no purge template
0820 meet w/ Lindsey to get FBQ bottleware
0830 talk w/ Amanda to know how to set up
Purge form for Fwgmw023
0855 arrive @ FBQmw171
WL: 18.83
0909 Start purge
0912 pre purge complete
10:00 Start 3 m readings
19:00 Stable
0932 collect sample FBQmw-171-2104d-gw
for expanded explosives in 2 500mL ambers
cpm 4 R 12 D 3 PSI 18
0930 ~~1035~~ Back @ 1036, get 200' wl from Daniel Yed
5/5/21 drop samples
1100 arrive @ Fwgmw023
WL: 116.92
1115 Begin purge
1122 Having trouble getting flow, call Ryan
1125 call ryan and adjust settings

Daily Weather Condition: [✓ A.M.] Rainy 50
P.M. N/A

ecorded By: (Signature) QC Checked by: 05/05/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

Date: (mm/dd/yy): 5/5/21 Page 2 of 3

Task Team Members:
Jasmine Stefansky
JS 5/5/21

Narrative (include time and location):

1138 Still noflow, Ryan says to Stop so donot burn pump up.
1150 wait for Ryan to come to well
1220 Ryan arrives, could not get flow.
1240 Ryan Departs
1250 I Break down equipment + wait for help to pull pump
1345 Lindsey arrives w/ MPSO
1348 getting water flow!
JS 5/5/21
1345 Start purge
1355 getting tons of bubbles cwl only dropped by 0.05
Variable flow until bubbles leave (13.58)
The highest flow rate I am able to obtain is 350 due to pressure. Pre-purge longer due to reduced flow from 450
17:29 pre purge complete
* Cleaned flow cell @ 12 mins to try to lower turbidity
Cpm 1 R20 D40 PSI 110
26:29 Stable

Daily Weather Condition: A.M. ~~N/A~~ JS 5/5/21 45 Cloudy

[✓ P.M.] " "

Recorded By: (Signature) QC Checked by: 05/05/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

Date: (mm/dd/yy): 5/5/21 Page 3 of 3

Task Team Members:

Jasmine Stefansky

JS 5/5/21

Narrative (include time and location):

1420 Collect Sample FWGMW-023-210401-GW for expanded explosives

1445 back @ 1036 to unload + pack coolers

JS 5/5/21

Daily Weather Condition: A.M. N/A

[✓ P.M.] 45 Cloudy

Recorded By: (Signature) QC Checked by: 05/05/21 (Signature)

07-162(NE) 102507 FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 05/05/21

Page 1 of 2

Task Team Members:

Danielle Anderson

Ryan Laurich

Lindsey Moyer

Jasmine Stefansky

DA 05/05/21

Narrative (include time and location):

0700 Arrive at CJAG and 1036.

0710 Ryan arrives and team begins to mobilize

0750 H&S Tailgate hosted by Ryan.

0820 Help Jasmine find field form for FWGmw-023.

0830 Depart 1036 for LL1mw-079.

0845 Arrive at well and set up equipment. Depth to water: 32.67 ft.

0909 Begin pre-purge: CPM 2 26:4 35psi Flow Rate: 200 mL/min

Pre-Purge volume: 1,430.1 mL

Water is clear, colorless, odorless

0917 Begin Purge: CPM 2 25:5 30psi Flow Rate: 225 mL/min

depth to water: 33.11ft Total volume Purged: 6.58L

Water is clear, colorless odorless

0947 Collect sample LL1mw-079 for explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC.

0947 (cont.) Controller stops working, only going at CPM 2 29:1 for sampling

1000 Lindsey Calls about bottleware and 200ft Water level for Jasmine.

1025 Depart from well for 1036 to bring back samples, water level, and bottle ware.

1028 Close and lock LL1 gate.

1042 Arrive back at 1036. Decon bladder pump from LL1mw-079.

1200 Call Pine about MP-10 controller that stopped working.

1230 Depart from 1036 for LL3mw-245.

Daily Weather Condition: A.M. 46°F rain, humid

P.M. 48°F cloudy

Recorded By: 05/05/21 (Signature)

QC Checked by: 5/5/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 05/05/21

Page 2 of 2

Task Team Members:

Darelle Anderson
Lindsey Moyer
Jasmine Stefansky
Ryan Lawich
DA 05/05/21

Narrative (include time and location):

1230 Arrive at LL3mw-245 and set up equipment.
Depth to water: 12.54 ft
1245 Discover that new MP-10 does not work either. Call Lindsey to obtain her MP-50 # 042344
1255 Begin Pre-Purge: CPM4 11:4 40psi Flow Rate: 375 mL/min
Water is clear, colorless, odorless
Pre-Purge volume: 1,807.06 mL
1301 Begin Purge: CPM4 10.5:4.5 40psi Flow Rate: 400 mL/min
Water is clear, colorless, odorless
Total Volume Purged: 10,380 mL
depth to water: 12.80 ft.
1322 Well stable, collect sample LL3mw-245-210401-GW for explosives.
1330 Lindsey stops by to pick up MP-50 for Jasmine.
1350 Equipment packed, pump pulled, report sent. Head back to 1036.
1402 Arrive back at 1036 and call Pine about MP-10 Replacement
1406 Unload Equipment, pack Sampler, and Complete paperwork.
1530 Offsite for the day.

DA 05/05/21

Daily Weather Condition: A.M. 46°F cloudy, rain

P.M. 48°F cloudy

Recorded By: 05/05/21 (Signature)

QC Checked by: 5/5/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 05/05/21

Page 1 of 2

Task Team Members:

Lindsey Moyer

LM 5/5/21

LM 5/5/21

Narrative (include time and location):

0700 Arrive at 1036 to load equipment, calibrate Aqua Troll, and attend H+S meeting.
0823 Depart 1036.
0835 Set up on FBQmw-172. WL-26.99'.
0840 Jasmine comes to get sample bottles.
0852 Begin purge (100mL/min) PSI - 25 CPM 1 R-49 D-11 water is clear, colorless, odorless.
0905 End stagnant water purge (1,300mL).
0914 Parameters stabilize (2,200mL)
0915 Collect sample FBQmw-172-210401-GW for expanded explosives.
0926 Secure well, decon equipment.
0945 Drop bottles at 1036.
0959 Call D.Anderson. she stated she was finishing sampling and would come back to 1036.
1045 Depart 1036 for LL12.
1103 Arrive at LL12mw-245. WL-9.74' water is clear, faint red tint, odo
1110 Begin purge (~~250~~ 350mL/min) PSI - 25 CPM-2 R-23 D-7.
LM 5/5/21
1113 End stagnant water purge. water clear, colorless, odorless (1,050mL) water level still dropping.
1116 Change flow rate (100mL/min) CPM-1 R-56 D-4 PSI-25
1119 water level still dropping (50mL/min) CPM1. R-58 D-2 PSI-22

Daily Weather Condition: A.M. 46°F Rain / clouds

P.M. 48°F clouds / damp

Recorded By: L.M 5/5/21 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

Date: (mm/dd/yy): 05/05/21 Page 2 of 2

Task Team Members:

Lindsey Moyer

5/5/21

5/5/21

Narrative (include time and location):

1125 Still dropping Lower to 25mL/min CPM 1 R-59 D-1 PSI-20

1137 Parameters stabilize along with water level. (3000mL).

1140 Collect sample LL12mw-245-210401-GW for nitrate and ammonia.

1208 Secure well decon equipment.

1240 Place dedicated tubing back in LL12mw-246, tied off with string.

1247 Lock gate.

1250 Drop off MP50 with D. Anderson.

1300 Arrive back at 1036, unload.

1310 Talk to R. Laurich, he states to get MP50 from Danielle and take to Jasmine.

1317 Call D. Anderson, she states she should be stable soon.

1331 Get MP-50 from D. Anderson.

1342 Give MP-50 to J. Stephansky.

1405 Arrive back at 1036.

5/5/21

Daily Weather Condition: A.M. 46°F Rain / cloudy

P.M. 48°F Cloudy / damp

ecorded By: 5/5/21 (Signature) QC Checked by: (Signature)

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 5/6/2021	**Temperature:** 39°F	**Wind:** S at 1 mph
Weather:		

Safety Moment Topic:	
Task Descriptions:	**Associated Hazards:**
GWS + DEMOB	SLIPS TRIPS, FALLS
	COLD STRESS
	BIOLOGICAL
TR / 5/6/2021	LIFTING
	DRIVING

Subcontractors Onsite:	**Equipment Onsite:**
NA	NA
TR / 5/6/2021	TR / 5/6/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	Review of Site-Specific Conditions	Monitoring Equipment, Calibration and Communication	Hazard Control Measures and Equipment
☐ Hard Hat	☒ Accessibility	☐ PID	☒ 1st Aid Kit
☒ Safety Boots	☐ Dig Permit	☐ OVA	☒ Eyewash
☐ Hearing Protection	☒ Site Controls	☐ CGI	☒ Fire Extinguisher
☒ Safety Glasses	☒ Site Hazards	☒ Horiba	☒ HASP
☐ Tyvek	☒ Decontamination Procedure/Hazard	☒ Calibration	☐ Exclusion Zone
☐ Respirator	☒ IDW Management	☒ Phones/Radios	☒ Chain of command
☒ Gloves	☒ Driving	☒ Emergency #'s	☐ Certification of personnel
		☒ Hospital Map	

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**

Reason: ______________________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	Appropriate Emergency Response Procedures
POISON IVY EXPOSURE	– WASH HAND + EXPOSED SKIN 1-2 HRS AFTER EXPOSURE - USE TECNU, DAWN, SCRUBS
	W/ WASH CLOTH TO REMOVE OILS - NOTIFY FM, CALL WORKCARE - MEDICAL ATTENTION IF REQUIRED
	5/6/2021

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Lindsey Meyer / Leidos		05/06/21
Danielle Anderson / Leidos		05/06/21

Site Safety and Health: Officer RYAN LAUNCH ______________ 5/6/2021

(Printed Name) **(Signature)** **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL - MAY

Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP April - May 2021 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

Ryan Laurin RL 5/6/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 5/6/2021

Page 1 of 1

Task Team Members:

RYAN LYNCH
LINDSEY BOYER
DANIELLE ANDERSON

RL / 5/6/2021

Narrative (include time and location):

0715 - LINDSEY + DANIELLE ARRIVE AT 1036.
0745 - RYAN ONSITE AT 1036.
0815 - RYAN TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES.
0825 - CONDUCT H+S TAILGATE.
0905 - LINDSEY DEPARTS FOR FBQ, DANIELLE STARTS DEMOBS FOR PROJECT END.
1030 - LINDSEY RETURNS TO 1036.
1124 - LINDSEY DEPARTS TO SET PUMP AT LL1mw-082
1205 - DANIELLE OFFSITE - END OF DAY
1230 - COURIER PICK-UP
1255 - RYAN CALLS RANGE CONTROL, NOTIFIES LEIDOS OFFSITE.
1300 RYAN OFFSITE

RL
5/6/2021

Daily Weather Condition: A.M. 39°F SUNNY

P.M. 56°F, SUNNY

Recorded By: 5/6/2021 (Signature)

QC Checked by: 05/19/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 05/06/21

Page 1 of 2

Task Team Members:

Lindsey Moor

am 5/6/21

am 5/6/21

Narrative (include time and location):

0730 Arrive onsite, Calibrate Aqua Troll, load vehicle, have H+S meeting
0901 Depart 1036 for Fuze + Booster, had issues with calibration log not working to send.
0913 Arrive at Fuze + Booser, Get set up on FBQmw-170, the pump was~~e~~ am5/6/21 set on 5/4/21 at 08.15. WL-19.47.
0929 Begin purge (400mL/min) PSI-45 CPM 4 R-8 D-7.
water is clear, colorless, odorless
0932 End stagnant water purge (1,200mL).
0938 Lowered purge rate (300 mL) PSI - 30 CPM-3 R-11 D-9.
water level was dropping
0944 Parameters stabilized (5,000mL)
0945 Collect sample FBQmw-170-210401-GW for expanded explosives.
0955 Pull pump, secure tubing in well, Secure well, decon equipment.
1030 Arrive back at 1036, unload.

am 5/6/21

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

P.M. N/A

Recorded By: 5/6/21 (Signature)

QC Checked by: 05/06/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 05/6/21

Page 2 of 2

Task Team Members:

Lindsey Mayer

am 5/6/21

am 5/6/21

Narrative (include time and location):

1130 Arrive at LL1, unlock gate

1135 Arrive at LL1mw-082, to set pump.

~~1140~~ 1143 Call R.Louvich tubing still in well, he states ~~as~~ as long as it is in good condition, ok to use. am 5/6/21 am 5/6/21

1145 Pulled, tubing is really stained, will use new tubing

WL-29.45' TD-41.39' soft bottom.

water line is the one with writing

1155 Pump is set and secured.

1205 Secure and lock Gate to LL1.

1216 Arrive back at 1036.

am 5/6/21

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

P.M. 55°F Partly cloudy

Recorded By: A.M 5/6/21 (Signature)

QC Checked by: 05/19/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

ate: (mm/dd/yy): 05/06/21

Page 1 of 1

Task Team Members:

Danielle Anderson

Lindsey Moyer

Ryan Lavrich

DA 05/06/21

Narrative (include time and location):

0715 Arrive at CJAG and wait at 1036.

0730 Lindsey Arrives

0745 Ryan Arrives, gain entry to 1036 and come up with plan for the day.

0830 H+S tailgate hosted by Ryan.

0840 Begin Demob. of field office and packing of equipment. Equipment inventory.

1215 Offsite for the day. Return equipment to pike, ship Aquatrolls and scan in paperwork.

DA 05/06/21

Daily Weather Condition: A.M. 44°F Sunny

P.M. N/A

ecorded By: 05/06/21 (Signature) QC Checked by: 5/6/21 (Signature)

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 5/7/2021	**Temperature:** 55°F	**Wind:** S at 5 mph

Weather:

Safety Moment Topic:

Task Descriptions:	**Associated Hazards:**
Well development	Slips, Trips, Falls
	Lifting
	Cold stress
JL/ 5/7/2021	Driving
	Biological

Subcontractors Onsite:	**Equipment Onsite:**
NA	NA
JL/ 5/7/2021	JL/ 5/7/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	**Review of Site-Specific Conditions**	**Monitoring Equipment, Calibration and Communication**	**Hazard Control Measures and Equipment**
☐ Hard Hat	☒ Accessibility	☐ PID	☒ 1st Aid Kit
☒ Safety Boots	☐ Dig Permit	☐ OVA	☒ Eyewash
☐ Hearing Protection	☒ Site Controls	☐ CGI	☒ Fire Extinguisher
☒ Safety Glasses	☒ Site Hazards	☒ Horiba	☒ HASP
☐ Tyvek	☒ Decontamination Procedure/Hazard	☒ Calibration	☐ Exclusion Zone
☐ Respirator	☒ IDW Management	☐ Phones/Radios	☒ Chain of command
☒ Gloves	☒ Driving	☐ Emergency #'s	☐ Certification of personnel
		☐ Hospital Map	

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**

Reason: ______________________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	Appropriate Emergency Response Procedures
5/7/2021	

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Danielle Anderson/Leidos		5/7/21

Site Safety and Health: Officer Ryan [illegible] **(Printed Name)** ____________ **(Signature)** 5/7/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL - MAY 2021 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL - MAY 2021 Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

RYAN CARSON 5/7/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 5/7/2021

Page 1 of 1

Task Team Members:

RYAN LAVRICH

DANIELLE ANDERSON

RL / 5/7/2021

RL / 5/7/2021

Narrative (include time and location):

0700 - RYAN + DANIELLE ARRIVE AT 1036

0744 - RYAN TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES

0745 - CONDUCT H+S TAILGATE AT 1036

0751 - DANIELLE DEPARTS FOR WELL DEVELOPMENT AT LL1mw-082

1511 - DANIELLE RETURNS FROM ~~FURTHER~~ REDEVELOPING LL1mw-082

COULD NOT COMPLETE REDEVELOPMENT, BUT DID DEMONSTRATE REMOVAL OF SUSPENDED FINES / SEDIMENT.

1520 - BEGIN DEMOB.

1600 - RYAN + DANIELLE OFFSITE - END OF DAY

RL 5/7/2021

Daily Weather Condition: A.M. 55°F, RAIN, OVERCAST

P.M. 51°F CLOUDY

Recorded By: RL 5/7/2021 (Signature)

QC Checked by: 05/19/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 05/07/21

Page 1 of 1

Task Team Members:

Danielle Anderson

Ryan Laurich

DA 05/07/21

DA 05/07/21

Narrative (include time and location):

0700 Arrive at CJAG @ 1036 to mobilize for well development.

0745 H&S tailgate hosted by Ryan.

0755 Depart for LL1.

0810 Arrive at LL1mw-082 and set up equipment.

0832 Begin development. Well goes dry frequently. Purge every 20-30mins and pull 2-3 gals per purge.

1440 Development completed, only 2.5 volumes pulled. Talked to Ryan about it. He says that's fine.

~~0~~ DA 05/07/21 1450 Set pump at LL1mw-082.

1455 Depart LL1 for 1036.

1510 Arrive back at 1036 and demob.

1555 Offsite for the day.

DA 05/07/21

Daily Weather Condition: A.M. 41°F cloudy, Rain

P.M. 46°F partly sunny

Recorded By: Danielle Anderson 05/07/21 (Signature)

QC Checked by:

leidos

Daily Tailgate Safety Briefing

Project/Site Location Name: Facility-wide Groundwater RVAAP-66

Date: 5/10/2021	**Temperature:** 48°F	**Wind:** W at 2mph
Weather: Sunny		

Safety Moment Topic:	
Task Descriptions:	**Associated Hazards:**
GWS	Slips / Trips / Falls
	Biological
TR / 5/10/2021	Lifting
	Driving

Subcontractors Onsite:	**Equipment Onsite:**
NA	NA
TR / 5/10/2021	TR / 5/10/2021

Discussion Topics: (Check all items that apply and ensure their availability and use).

Personal Protective Equipment*	**Review of Site-Specific Conditions**	**Monitoring Equipment, Calibration and Communication**	**Hazard Control Measures and Equipment**
☐ Hard Hat	☒ Accessibility	☐ PID	☒ 1st Aid Kit
☒ Safety Boots	☐ Dig Permit	☐ OVA	☒ Eyewash
☐ Hearing Protection	☒ Site Controls	☐ CGI	☒ Fire Extinguisher
☒ Safety Glasses	☒ Site Hazards	☒ Horiba	☒ HASP
☐ Tyvek	☒ Decontamination Procedure/Hazard	☒ Calibration	☐ Exclusion Zone
☐ Respirator	☒ IDW Management	☐ Phones/Radios	☒ Chain of command
☒ Gloves	☒ Driving	☐ Emergency #'s	☐ Certification of personnel
		☐ Hospital Map	

*** Check PPE required in HASP. If crew is not using checked protection, state reason:**
Reason: ____________

Task-specific Potential Emergencies (e.g., broken bone, drill rig hits power line, excavation cave-in)	Appropriate Emergency Response Procedures
TICK BITE	- CALL WORKCARE - NOTIFY FM - FM NOTIFY PM + H&S - MEDICAL ATTENTION IF NECESSARY
TL	
5/10/2021	

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Lindsey Myers/Leidos		5/10/21

Site Safety and Health Officer Ryan Lawson **(Printed Name)** ________ **(Signature)** 5/10/2021 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL - AUG 2021 Page 1 of 2

N	Y	NA	Item
	X		Daily safety briefing conducted
	X		Emergency numbers and route to hospital posted
	X		FWSHP and project-specific Addenda on-site, available to employees, and complete
		X	Required exposure monitoring conducted and documented
		X	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	X		First aid kit available and inspected weekly
	X		Personnel wearing PPE required by SSHP for fieldwork (at least safety shoes or boots, safety glasses with side shields, and nitrile or similar gloves to handle potentially contaminated material)
	X		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
		X	If temperature >70°F: heat stress training conducted, cool fluids available, pulse rates of personnel wearing Tyvek® are being monitored, work/rest cycle in SSHP being followed
		X	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	X		Personnel using appropriate biological hazard controls (See SSHP)
		X	Drill rig operating manual on-site
		X	Drill rigs inspected weekly and documented
		X	Personnel near drill rig or other overhead hazards wearing hardhats
		X	Each of two drill rig emergency shutdown devices tested daily
		X	Employees excluded from under lifted loads
		X	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		X	Radius of exclusion zone around drill rig at least equal to mast height
		X	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	X		Containers of flammable liquids closed and labeled properly
	X		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly
	X		Personnel exiting potentially contaminated areas washing hands before eating
		X	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGWMP APRIL - MAY Page 2 of 2

N	Y	NA	Item
	X		Portable electrical equipment plugged to a GFCI
	X		Electrical wiring covered by insulation or enclosure
	X		Three wire, UL approved, extension cords used
	X		Housekeeping adequate (walkways clear of loose, sharp or dangerous objects and trip hazards, work areas clear of objects that might fall on employees)
	X		Walking/working surfaces safe (not slippery, no unguarded holes, no trip hazards)
		X	Excavations deeper than 5 ft shored or sloped (if personnel will enter) and in compliance with SSHP
		X	Moving (rotating) machinery guarded to prevent employee contact
		X	Fall protection provided for work at elevations greater than 4 ft
		X	All containers of hazardous material labeled to indicate contents and hazards
	X		MSDSs for hazardous materials on-site
	X		All vehicles equipped with two-way radios and cellular phones
	X		15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured
	X		Potable and non-potable water labeled
		X	Chainsaws have anti kick-back protection, personnel wearing cut resistant gloves, protective chaps
		X	Visitor access controlled
		X	Site hazards and controls consistent with SSHP
		X	Site hazard controls appropriate and sufficient

Actions taken to correct or control any "N" responses

[illegible] 5/10/2021

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 5/10/2021

Page 1 of 1

Task Team Members:

RYAN LANICH

LINDSEY BOYER

R / 5/10/2021

Narrative (include time and location):

1004 - LINDSEY ARRIVES AT 1036.
1011 - RYAN ARRIVES AT 1036.
1035 - RYAN TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES.
1036 - CONDUCT H&S TAILGATE AT 1036.
1044 - LINDSEY DEPARTS FOR LL1 TO SAMPLE LL1mw-082
1150 - RYAN COLLECTS FWGIDW-210401-WW FOR TCLP VOCs, TCLP SVOCs, TCLP PESTICIDES / PCBs, TCLP HERBICIDES TCLP METALS, IGNITABILITY, pH, NITRATE, NITRITE, TOTAL CYANIDE, AND TOTAL SULFIDE
1315 - LINDSEY RETURNS TO 1036 + BEGINS TO DE-MOB FOR DAY, PREP SAMPLES FOR SHIPMENT.
1405 - COURIER PICK UP.
1443 - LINDSEY OFF SITE.
1444 - KEVIN ARRIVES TO PICK UP 1036 KEY.
1432 - RYAN NOTIFIES RANGE CONTROL, FINISHED FWG PROJECT.
1433 - RYAN OFFSITE

DA 05/19/21

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

P.M. 63°F partly cloudy

Recorded by: 5/10/2021 (Signature)

QC Checked by: 05/19/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 05/10/21

Page 1 of 1

Task Team Members:

Lindsey Mayer

DM 5/10/21

DM 5/10/21

Narrative (include time and location):

0950 Arrive onsite, Call Ryan, he states he will be onsite in 10 min

1000 Access 1036, load vehicle, calibrate equipment.

1047 Depart 1036 for LL1.

1057 Open LL1 gate

1105 Set up at LL1mw-082 WL-27.94'

1122 Call A. Sprinzel, to help set up purging log in tablet

1141 Begin purge (100ml/min) CPM 2 R-20 D-10 PSI-30 water has faint red tint, slightly cloudy, odorless

1149 End stagnant water purge (800mL)

1152 Lower~~ed~~ purge rate to (50mL/min) PSI-30 CPM 2 - R-24 D-6, water level was dropping DM 5/10/21 * Need to correct on purge log.

1159 Clean out flow cell, water is becoming clearer

1223 Parameters stabilize (2,650mL)

1225 Collect sample LL1mw-082-210401-GW for expanded explosives, water is clear, colorless, odorless.

1247 Pull pump, Secure well, decon equipment.

1305 Shut and Lock LL1 gate.

1315 Arrive back at 1036 to unload, and decon pump.

DM 5/10/21

Daily Weather Condition: A.M. 53°F Sunny

P.M. 63°F, Partly cloudy, winds

Recorded By: D. M. 5/10/21 (Signature)

QC Checked by: Daith 05/19/21 (Signature)

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B.2 Well Purge Forms (Low-Flow Test Reports)

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RVAAP-03 OPEN DEMOLITION AREA #2

Low-Flow Test Report:

Test Date / Time: 5/4/2021 8:30:48 AM
Project: DET-003
Sampler Name: Lindsey Moyer

Location Name: DET-003 **Well Diameter: 2 in** **Top of Screen: 7 ft** **Total Depth: 15 ft** **Initial Depth to Water: 8.64 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 12 ft** **Pump Intake From TOC: 12.4 ft** **Estimated Total Volume Pumped: 5,100 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 225 ml/min** **Final Draw Down: 0.1 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:

CPM 2 25:5 PSI 20

225mL/min

Weather Conditions:

63°F partly cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/4/2021 8:30 AM	00:00	7.17 pH	11.82 °C	0.63 mS/cm	5.74 mg/L	184.58 NTU	-49.5 mV	8.64 ft	225.00 ml/min
5/4/2021 8:35 AM	04:26	6.95 pH	9.87 °C	0.62 mS/cm	0.23 mg/L	17.03 NTU	-73.6 mV	8.75 ft	225.00 ml/min
5/4/2021 8:35 AM	04:40	6.94 pH	9.77 °C	0.63 mS/cm	0.22 mg/L	20.24 NTU	-73.1 mV	8.75 ft	225.00 ml/min
5/4/2021 8:38 AM	07:40	6.87 pH	9.59 °C	0.63 mS/cm	0.16 mg/L	3.75 NTU	-69.7 mV	8.77 ft	225.00 ml/min
5/4/2021 8:41 AM	10:40	6.87 pH	9.80 °C	0.62 mS/cm	0.14 mg/L	1.23 NTU	-70.8 mV	8.77 ft	225.00 ml/min
5/4/2021 8:44 AM	13:40	6.89 pH	9.72 °C	0.62 mS/cm	0.12 mg/L	1.12 NTU	-72.8 mV	8.74 ft	225.00 ml/min
5/4/2021 8:47 AM	16:40	6.91 pH	9.65 °C	0.62 mS/cm	0.11 mg/L	0.44 NTU	-72.4 mV	8.74 ft	225.00 ml/min
5/4/2021 8:50 AM	19:40	6.94 pH	9.56 °C	0.62 mS/cm	0.10 mg/L	0.00 NTU	-73.4 mV	8.74 ft	225.00 ml/min
5/4/2021 8:53 AM	22:40	6.96 pH	9.69 °C	0.63 mS/cm	0.10 mg/L	0.00 NTU	-74.7 mV	8.74 ft	225.00 ml/min

Samples

Sample ID:	Description:
DET-003-210401-GW DET-003-210401-GWMSD DET-003-210402-GW DET-003-210403-GW	Begin low flow purge at 0830 (PSI 20/CPM 2/25/5) Stagnant water volume: 1,125 mL Stagnant water volume removed at 0835 Stable at 0853 Water is clear, colorless, and odorless at end of purge. At the beginning of purge water has light orange tint, slightly cloudy, water cleared up through out purge. Measured total volume purged: 5,175 mL DET-003-210401-GW sampled for VOCs, phthalates/nitroaromatics/phenols, PAHs, PCBs, pesticides, explosives cyanide, and TAL metals at 0855 on 05/04/2021. DET-003-210401-GWMSD sampled for VOCs, phthalates/nitroaromatics/phenols, PAHs, PCBs, Pesticides, cyanide, and TAL metals DET-003-210402-GW sampled for VOCs, phthalates/nitroaromatics/phenols, PAHs, PCBs, pesticides, cyanide, and TAL metals DET-003-210403-GW sampled for VOCs, phthalates/nitroaromatics/phenols, PAHs, PCBs, pesticides, cyanide, and TAL metals

Sampled By: Lindsey Moyer ,5/04/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/4/2021 8:31:10 AM
Project: DETmw-004
Operator Name: Danielle Anderson

Location Name: DET-004 **Well Diameter: 2 in** **Initial Depth to Water: 9.63 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 11.9 ft** **Pump Intake From TOC: 11.9 ft** **Estimated Total Volume Pumped: 2499.583 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 25 ml/min** **Final Draw Down: 0 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 1 59:1 PSI 12
25 mL/min
Water level was below top of pump

Weather Conditions:
63°F partly sunny, humid

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/4/2021 8:31 AM	00:00	6.87 pH	16.03 °C	0.75 mS/cm	8.57 mg/L	704.03 NTU	218.4 mV	9.63 ft	50.00 ml/min
5/4/2021 8:51 AM	19:56	6.75 pH	16.22 °C	0.73 mS/cm	7.99 mg/L	803.22 NTU	209.6 mV	9.63 ft	50.00 ml/min
5/4/2021 9:11 AM	39:52	6.67 pH	15.74 °C	0.76 mS/cm	3.22 mg/L	1.10 NTU	196.9 mV	NA	25.00 ml/min
5/4/2021 9:22 AM	51:07	6.65 pH	15.29 °C	0.77 mS/cm	2.54 mg/L	0.00 NTU	191.9 mV	NA	25.00 ml/min
5/4/2021 9:25 AM	54:07	6.65 pH	15.22 °C	0.77 mS/cm	2.43 mg/L	0.00 NTU	191.0 mV	NA	25.00 ml/min
5/4/2021 9:28 AM	57:07	6.65 pH	15.16 °C	0.76 mS/cm	2.33 mg/L	0.00 NTU	190.0 mV	NA	25.00 ml/min
5/4/2021 9:31 AM	01:00:07	6.65 pH	15.17 °C	0.76 mS/cm	2.24 mg/L	0.00 NTU	189.5 mV	NA	25.00 ml/min

Samples

DET-004-210401-GW	Begin low flow purge at 8:31AM PSI 12 CPM (1/59/1) Stagnant water volume: 1,286.95 mL Stagnant water volume removed at 9:22 AM Flow rate changed to reduce draw down and to prevent the well from going dry since the water level was below the top of the pump Stable at 9:31AM Water is clear, colorless, and odorless throughout purge. The first two turbidity readings are erroneous, the flow cell needed to be cleaned Measured total volume purged: 8,150 mL Sample for VOCs, SVOCs, PAHs, PCBs, Pesticides, Explosives, Cyanide, and TAL metals at 0931 on 05/04/2021.

Sampled By: ,5/04/2021

QA Check By: ,5/17/2021

RVAAP-05 WINKLEPECK BURNING GROUNDS

Low-Flow Test Report:

Test Date / Time: 4/28/2021 8:33:10 AM
Project: WBGmw-006
Sampler Name: Jasmine Stefansky

Location Name: WBGmw-006 **Well Diameter: 2 in** **Initial Depth to Water: 7.1 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 28 ft** **Pump Intake From TOC: 16 ft** **Estimated Total Volume Pumped: 4,083.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 175 ml/min** **Final Draw Down: 0.22 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 2 27:3 PSI 15
175 mL/min

Weather Conditions:
Sunny 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 8:33 AM	00:00	7.30 pH	12.62 °C	0.54 mS/cm	5.23 mg/L	0.00 NTU	217.1 mV	7.10 ft	175.00 ml/min
4/28/2021 8:44 AM	11:05	6.99 pH	11.13 °C	0.53 mS/cm	0.33 mg/L	0.00 NTU	220.7 mV	7.10 ft	175.00 ml/min
4/28/2021 8:44 AM	11:20	6.99 pH	10.98 °C	0.53 mS/cm	0.32 mg/L	1.06 NTU	219.9 mV	7.31 ft	175.00 ml/min
4/28/2021 8:47 AM	14:20	7.00 pH	11.13 °C	0.53 mS/cm	0.26 mg/L	1.31 NTU	217.9 mV	7.32 ft	175.00 ml/min
4/28/2021 8:50 AM	17:20	7.02 pH	11.13 °C	0.53 mS/cm	0.22 mg/L	7.24 NTU	215.5 mV	7.32 ft	175.00 ml/min
4/28/2021 8:53 AM	20:20	7.04 pH	11.09 °C	0.53 mS/cm	0.19 mg/L	13.26 NTU	212.6 mV	7.32 ft	175.00 ml/min
4/28/2021 8:56 AM	23:20	7.05 pH	11.00 °C	0.53 mS/cm	0.18 mg/L	5.47 NTU	209.5 mV	7.32 ft	175.00 ml/min

Samples

Sample ID:	Description:
WBGmw-006-210401-GW	Begin low flow purge at 08:30 (PSI 15 CPM 2/27r/3d) Stagnant water volume: 2,012 mL Stagnant water removed at 11:05 (08:44) Stable at 23:20 (08:56) Water clear, colorless, odorless throughout purge. Measured total volume purged: 4,500mL Sample for expanded explosives, alkalinity, sulfate, sulfide, nitrate, nitrite, and TOC at 09:00 on 4/28/2021.

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Sampled By: ,4/28/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 10:52:51 AM
Project: WBGmw-007
Operator Name: Danielle Anderson

Location Name: WBGmw-007 **Well Diameter: 2 in** **Total Depth: 26.3 ft** **Initial Depth to Water: 17.25 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 24 ft** **Pump Intake From TOC: 24 ft** **Estimated Total Volume Pumped: 5126.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 400 ml/min** **Final Draw Down: 0 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 4 11:4 PSI 28
400mL

Weather Conditions:
73°F mostly cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 10:52 AM	00:00	7.21 pH	14.88 °C	0.36 mS/cm	3.42 mg/L	68.27 NTU	136.3 mV	17.25 ft	400.00 ml/min
4/28/2021 10:55 AM	02:47	7.02 pH	11.97 °C	0.37 mS/cm	1.24 mg/L	16.99 NTU	147.9 mV	17.25 ft	400.00 ml/min
4/28/2021 10:56 AM	03:49	6.97 pH	11.56 °C	0.37 mS/cm	1.16 mg/L	12.83 NTU	150.1 mV	17.25 ft	400.00 ml/min
4/28/2021 10:59 AM	06:49	6.88 pH	10.99 °C	0.38 mS/cm	1.12 mg/L	5.88 NTU	152.3 mV	17.25 ft	400.00 ml/min
4/28/2021 11:02 AM	09:49	6.86 pH	10.83 °C	0.38 mS/cm	1.04 mg/L	2.89 NTU	151.2 mV	17.25 ft	400.00 ml/min
4/28/2021 11:05 AM	12:49	6.86 pH	10.67 °C	0.38 mS/cm	1.00 mg/L	0.95 NTU	148.8 mV	17.25 ft	400.00 ml/min

Samples

WBGmw-007-210401-GW	Begin low flow purge at 10:52 AM PSI 28 CPM 4/11/4 Stagnant water volume: 1,358.47 mL Stagnant water volume removed at 10:56 AM Stable at 11:05 AM Water started as cloudy with a slight yellow tint and odorless. Throughout the duration of the purge the water became clear, colorless, and odorless Measured total volume purged: 7.005 mL Sample for explosives at 1106 on 4/28/2021. *Note: Well was redeveloped on 4/19/2021 at 11:40 AM

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Sampled By: ,4/28/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/27/2021 9:28:59 AM
Project: WBGmw-008
Sampler Name: Jasmine Stefansky

Location Name: WBGmw-008 **Well Diameter: 2 in** **Total Depth: 20.7 ft** **Initial Depth to Water: 14.62 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 18 ft** **Pump Intake From TOC: 18 ft** **Estimated Total Volume Pumped: 4,793.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 400 ml/min** **Final Draw Down: 0.23 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 4 11:4 PSI 35
400 mL/min

Weather Conditions:
Sunny 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/27/2021 9:28 AM	00:00	6.82 pH	9.80 °C	0.58 mS/cm	2.71 mg/L	39.47 NTU	206.7 mV	14.62 ft	400.00 ml/min
4/27/2021 9:31 AM	02:38	6.75 pH	9.43 °C	0.58 mS/cm	2.55 mg/L	21.68 NTU	209.0 mV	14.62 ft	400.00 ml/min
4/27/2021 9:31 AM	02:59	6.75 pH	9.51 °C	0.58 mS/cm	2.54 mg/L	19.46 NTU	209.3 mV	14.85 ft	400.00 ml/min
4/27/2021 9:34 AM	05:59	6.74 pH	9.37 °C	0.58 mS/cm	2.51 mg/L	7.32 NTU	208.0 mV	14.85 ft	400.00 ml/min
4/27/2021 9:37 AM	08:59	6.75 pH	9.42 °C	0.57 mS/cm	2.49 mg/L	4.54 NTU	206.8 mV	14.85 ft	400.00 ml/min
4/27/2021 9:40 AM	11:59	6.75 pH	9.27 °C	0.57 mS/cm	2.50 mg/L	2.45 NTU	204.9 mV	14.85 ft	400.00 ml/min

Samples

Sample ID:	Description:
WBGmw-008-210401-GW	Begin low flow purge at 09:25 PSI 35 CPM 4/11r/4d Stagnant water volume: 1,000mL Stagnant water removed at 2:38 (0931) Stable at 11:59 (09:40) Water clear, colorless, odorless throughout purge Measured total volume purged 4,800 mL Sampled for explosives at 09:42 on 4/27/21 Note: well redeveloped on 4/20/21 and pump reset at 10:14

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Sampled By: ,4/27/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 4/27/2021 11:57:40 AM
Project: WBGmw-009
Operator Name: Danielle Anderson

Location Name: WBGmw-009 **Well Diameter: 2 in** **Initial Depth to Water: 13.5 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 36 ft** **Pump Intake From TOC: 20.05 ft** **Estimated Total Volume Pumped: 3883.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 125 ml/min** **Final Draw Down: 0.69 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 2 28:2 PSI 25
125 mL/min

Weather Conditions:
73°F partly cloudy and slight breeze

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/27/2021 11:57 AM	00:00	7.06 pH	22.85 °C	0.55 mS/cm	7.77 mg/L	2.70 NTU	204.8 mV	13.50 ft	125.00 ml/min
4/27/2021 12:09 PM	11:21	5.80 pH	12.82 °C	0.26 mS/cm	1.31 mg/L	0.00 NTU	228.0 mV	13.50 ft	125.00 ml/min
4/27/2021 12:12 PM	14:21	5.75 pH	13.33 °C	0.25 mS/cm	1.10 mg/L	0.00 NTU	226.8 mV	13.50 ft	125.00 ml/min
4/27/2021 12:15 PM	17:21	5.77 pH	12.98 °C	0.25 mS/cm	0.99 mg/L	0.00 NTU	223.9 mV	13.50 ft	125.00 ml/min
4/27/2021 12:18 PM	20:21	5.75 pH	13.61 °C	0.24 mS/cm	0.84 mg/L	0.00 NTU	222.2 mV	13.50 ft	125.00 ml/min
4/27/2021 12:19 PM	22:04	5.75 pH	13.77 °C	0.24 mS/cm	0.78 mg/L	0.00 NTU	263.7 mV	13.50 ft	125.00 ml/min
4/27/2021 12:22 PM	25:04	5.77 pH	13.71 °C	0.24 mS/cm	0.73 mg/L	0.00 NTU	246.4 mV	13.50 ft	125.00 ml/min
4/27/2021 12:25 PM	28:04	5.77 pH	13.87 °C	0.23 mS/cm	0.69 mg/L	0.00 NTU	237.7 mV	13.50 ft	125.00 ml/min
4/27/2021 12:28 PM	31:04	5.81 pH	13.85 °C	0.23 mS/cm	0.68 mg/L	0.00 NTU	231.6 mV	13.50 ft	125.00 ml/min

Samples

Sample ID:	Description:
WBGmw-009-210401-GW	Begin low flow purge at 11:57 AM PSI 25 CPM 2/28/2 Stagnant water volume: 1,526.65 mL Stagnant water volume removed at 12:09PM Connection lost at 12:18 PM (20:21), reconnected at 12:19 PM(22:04) Stable at 12:28PM Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 4,705 mL Sample for explosives at 1228 on 04/27/2021

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Sampled By: ,4/27/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/27/2021 10:15:47
AM **Project:** WBGmw-014
Sampler Name: Jasmine Stefansky

Location Name: WBGmw-014 **Well Diameter: 2 in** **Total Depth: 25 ft** **Initial Depth to Water: 16.25 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 23 ft** **Pump Intake From TOC: 23 ft** **Estimated Total Volume Pumped: 43,193.332 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 400 ml/min** **Final Draw Down: 0 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 4 11.5:3.5 PSI 35
400 mL/min

Weather Conditions:
Sunny 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/27/2021 10:15 AM	00:00	7.17 pH	10.26 °C	0.48 mS/cm	2.68 mg/L	529.03 NTU	84.8 mV	16.25 ft	400.00 ml/min
4/27/2021 10:18 AM	02:45	7.08 pH	10.06 °C	0.48 mS/cm	2.29 mg/L	278.72 NTU	92.4 mV	16.25 ft	400.00 ml/min
4/27/2021 10:18 AM	02:59	7.07 pH	10.01 °C	0.48 mS/cm	2.21 mg/L	322.64 NTU	92.7 mV	16.25 ft	400.00 ml/min
4/27/2021 10:21 AM	05:59	6.98 pH	9.95 °C	0.48 mS/cm	1.44 mg/L	303.20 NTU	66.5 mV	16.25 ft	400.00 ml/min
4/27/2021 10:24 AM	08:59	6.96 pH	10.01 °C	0.49 mS/cm	1.11 mg/L	511.74 NTU	53.6 mV	16.25 ft	400.00 ml/min
4/27/2021 10:27 AM	11:59	6.96 pH	9.93 °C	0.49 mS/cm	1.05 mg/L	548.50 NTU	52.4 mV	16.25 ft	400.00 ml/min
4/27/2021 10:30 AM	14:59	6.96 pH	9.98 °C	0.49 mS/cm	1.01 mg/L	370.47 NTU	52.3 mV	16.25 ft	400.00 ml/min
4/27/2021 10:33 AM	17:59	6.97 pH	9.95 °C	0.49 mS/cm	0.95 mg/L	306.23 NTU	52.0 mV	16.25 ft	400.00 ml/min
4/27/2021 10:36 AM	20:59	6.99 pH	9.99 °C	0.49 mS/cm	0.90 mg/L	238.48 NTU	50.9 mV	16.25 ft	400.00 ml/min
4/27/2021 10:39 AM	23:59	7.00 pH	9.98 °C	0.49 mS/cm	0.82 mg/L	215.19 NTU	50.1 mV	16.25 ft	400.00 ml/min
4/27/2021 10:42 AM	26:59	7.01 pH	9.99 °C	0.49 mS/cm	0.78 mg/L	158.90 NTU	50.1 mV	16.25 ft	400.00 ml/min
4/27/2021 10:45 AM	29:59	7.02 pH	9.97 °C	0.49 mS/cm	0.65 mg/L	174.07 NTU	48.4 mV	16.25 ft	400.00 ml/min

4/27/2021 10:48 AM	32:59	7.03 pH	10.04 °C	0.49 mS/cm	0.59 mg/L	70.57 NTU	47.9 mV	16.25 ft	400.00 ml/min
4/27/2021 10:51 AM	35:59	7.05 pH	10.00 °C	0.49 mS/cm	0.53 mg/L	85.78 NTU	47.6 mV	16.25 ft	400.00 ml/min
4/27/2021 10:54 AM	38:59	7.06 pH	10.06 °C	0.49 mS/cm	0.51 mg/L	69.38 NTU	46.4 mV	16.25 ft	400.00 ml/min
4/27/2021 10:57 AM	41:59	7.07 pH	10.00 °C	0.49 mS/cm	0.49 mg/L	48.76 NTU	44.9 mV	16.25 ft	400.00 ml/min
4/27/2021 11:00 AM	44:59	7.09 pH	10.02 °C	0.49 mS/cm	0.41 mg/L	72.92 NTU	42.3 mV	16.25 ft	400.00 ml/min
4/27/2021 11:03 AM	47:59	7.12 pH	10.03 °C	0.49 mS/cm	0.34 mg/L	60.58 NTU	41.6 mV	16.25 ft	400.00 ml/min
4/27/2021 11:06 AM	50:59	7.14 pH	10.12 °C	0.49 mS/cm	0.26 mg/L	79.73 NTU	38.8 mV	16.25 ft	400.00 ml/min
4/27/2021 11:09 AM	53:59	7.17 pH	10.09 °C	0.49 mS/cm	0.34 mg/L	193.81 NTU	38.0 mV	16.25 ft	400.00 ml/min
4/27/2021 11:12 AM	56:59	7.20 pH	10.19 °C	0.49 mS/cm	0.47 mg/L	151.32 NTU	37.3 mV	16.25 ft	400.00 ml/min
4/27/2021 11:15 AM	59:59	7.22 pH	10.17 °C	0.49 mS/cm	0.48 mg/L	129.94 NTU	36.6 mV	16.25 ft	400.00 ml/min
4/27/2021 11:18 AM	01:02:59	7.24 pH	10.25 °C	0.49 mS/cm	0.41 mg/L	156.50 NTU	34.8 mV	16.25 ft	400.00 ml/min
4/27/2021 11:21 AM	01:05:59	7.26 pH	10.16 °C	0.49 mS/cm	0.38 mg/L	102.76 NTU	33.9 mV	16.25 ft	400.00 ml/min
4/27/2021 11:24 AM	01:08:59	7.27 pH	10.27 °C	0.48 mS/cm	0.41 mg/L	64.36 NTU	33.3 mV	16.25 ft	400.00 ml/min
4/27/2021 11:27 AM	01:11:59	7.28 pH	10.13 °C	0.49 mS/cm	0.40 mg/L	83.72 NTU	32.7 mV	16.25 ft	400.00 ml/min
4/27/2021 11:30 AM	01:14:59	7.29 pH	10.31 °C	0.48 mS/cm	0.35 mg/L	31.62 NTU	32.4 mV	16.25 ft	400.00 ml/min
4/27/2021 11:33 AM	01:17:59	7.30 pH	10.21 °C	0.49 mS/cm	0.33 mg/L	31.19 NTU	31.7 mV	16.25 ft	400.00 ml/min
4/27/2021 11:36 AM	01:20:59	7.31 pH	10.25 °C	0.48 mS/cm	0.32 mg/L	39.21 NTU	30.5 mV	16.25 ft	400.00 ml/min
4/27/2021 11:39 AM	01:23:59	7.32 pH	10.28 °C	0.49 mS/cm	0.31 mg/L	29.97 NTU	29.3 mV	16.25 ft	400.00 ml/min
4/27/2021 11:42 AM	01:26:59	7.32 pH	10.29 °C	0.49 mS/cm	0.31 mg/L	20.49 NTU	28.5 mV	16.25 ft	400.00 ml/min
4/27/2021 11:45 AM	01:29:59	7.33 pH	10.19 °C	0.49 mS/cm	0.33 mg/L	24.77 NTU	28.9 mV	16.25 ft	400.00 ml/min
4/27/2021 11:48 AM	01:32:59	7.33 pH	10.37 °C	0.49 mS/cm	0.23 mg/L	18.10 NTU	28.0 mV	16.25 ft	400.00 ml/min
4/27/2021 11:51 AM	01:35:59	7.34 pH	10.24 °C	0.49 mS/cm	0.22 mg/L	18.92 NTU	26.1 mV	16.25 ft	400.00 ml/min
4/27/2021 11:54 AM	01:38:59	7.33 pH	10.43 °C	0.49 mS/cm	0.32 mg/L	18.05 NTU	26.4 mV	16.25 ft	400.00 ml/min
4/27/2021 11:57 AM	01:41:59	7.34 pH	10.26 °C	0.49 mS/cm	0.29 mg/L	13.51 NTU	26.4 mV	16.25 ft	400.00 ml/min
4/27/2021 12:00 PM	01:44:59	7.34 pH	10.27 °C	0.49 mS/cm	0.29 mg/L	19.86 NTU	27.1 mV	16.25 ft	400.00 ml/min
4/27/2021 12:03 PM	01:47:59	7.35 pH	10.18 °C	0.49 mS/cm	0.33 mg/L	8.46 NTU	27.0 mV	16.25 ft	400.00 ml/min

Samples

Sample ID:	Description:
WBGmw-014-210401-GW	Begin low flow purge at 10:13 PSI 35, CPM 4, 11.5 r 3.5 d Stagnant water volume:1,200 mL Stagnant water volume removed at 2:45 (10:18) Stable at 1:47:59 (12:03) Water was cloudy during first hour of purge but then became clear, colorless, and odorless throughout purge Measured total volume purged: 33,000 mL Sampled for explosives at 12:10 on 4/27/21 *note: well was redeveloped on 4/20/21 and pump reset at 11:53

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Sampled By: ,4/27/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 9:42:51 AM
Project: WBGmw-018
Operator Name: Danielle Anderson

Location Name: WBGmw-018
Well Diameter: 2 in
Total Depth: 24.7 ft
Initial Depth to Water: 18.3 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.25 in
Tubing Length: 22.7 ft
Pump Intake From TOC: 22.7 ft
Estimated Total Volume Pumped: 7238.333 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 475 ml/min
Final Draw Down: 0.18 ft

Instruments Used:
Aqua TROLL 600 - 514551
Controller (MP10) - 14975
Compressor - 21426
Water Level Meter - 41832

Test Notes:
CPM 4 11:4 PSI 30
475 mL/min

Weather Conditions:
68°F partly cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 9:42 AM	00:00	6.91 pH	13.74 °C	0.13 mS/cm	7.32 mg/L	11.25 NTU	84.9 mV	18.30 ft	450.00 ml/min
4/28/2021 9:45 AM	02:45	6.00 pH	9.56 °C	0.09 mS/cm	5.84 mg/L	0.89 NTU	129.4 mV	18.48 ft	475.00 ml/min
4/28/2021 9:46 AM	03:23	5.92 pH	9.26 °C	0.09 mS/cm	5.87 mg/L	0.01 NTU	135.8 mV	18.48 ft	475.00 ml/min
4/28/2021 9:49 AM	06:23	5.71 pH	8.86 °C	0.09 mS/cm	5.90 mg/L	0.00 NTU	158.2 mV	18.48 ft	475.00 ml/min
4/28/2021 9:52 AM	09:23	5.65 pH	8.58 °C	0.09 mS/cm	5.89 mg/L	0.00 NTU	169.9 mV	18.48 ft	475.00 ml/min
4/28/2021 9:55 AM	12:23	5.62 pH	8.53 °C	0.09 mS/cm	5.84 mg/L	0.00 NTU	178.4 mV	18.48 ft	475.00 ml/min
4/28/2021 9:58 AM	15:23	5.62 pH	8.42 °C	0.09 mS/cm	5.88 mg/L	0.00 NTU	183.7 mV	18.48 ft	475.00 ml/min

Samples

WBGmw-018-210401-GW	Begin low flow purge at 9:34 AM PSI 30 CPM 4/11/4 Stagnant water volume: 1,320.61 mL Stagnant water volume removed at 9:46 AM Stable at 9:58 AM Water is clear, colorless, and odorless throughout purge. Flow rate increased at 2:45 because more water could be pulled without drawdown. Measured total volume purged: 9,230 mL Sample for explosives, TOC, Alkalinity, and Sulfide at 0958 on 04/28/2021.

Sampled By: ,4/28/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 8:57:45 AM
Project: WBGmw-019
Operator Name: Danielle Anderson

Location Name: WBGmw-019 **Well Diameter: 2 in** **Total Depth: 50.8 ft** **Initial Depth to Water: 17.67 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 60 ft** **Pump Intake From TOC: 47 ft** **Estimated Total Volume Pumped: 6745 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 400 ml/min** **Final Draw Down: 0.17 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 4 11:4 PSI 35
400 mL/min

Weather Conditions:
68°F partly cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 8:57 AM	00:00	7.31 pH	15.45 °C	0.44 mS/cm	6.42 mg/L	7.80 NTU	211.4 mV	17.67 ft	650.00 ml/min
4/28/2021 9:02 AM	04:46	6.84 pH	11.04 °C	0.50 mS/cm	0.55 mg/L	0.00 NTU	24.2 mV	17.84 ft	400.00 ml/min
4/28/2021 9:02 AM	04:53	6.83 pH	11.06 °C	0.50 mS/cm	0.53 mg/L	0.00 NTU	23.6 mV	17.84 ft	400.00 ml/min
4/28/2021 9:05 AM	07:53	6.79 pH	10.87 °C	0.51 mS/cm	0.32 mg/L	0.00 NTU	11.3 mV	17.84 ft	400.00 ml/min
4/28/2021 9:08 AM	10:53	6.80 pH	10.74 °C	0.51 mS/cm	0.25 mg/L	0.00 NTU	4.0 mV	17.84 ft	400.00 ml/min
4/28/2021 9:11 AM	13:53	6.81 pH	10.60 °C	0.51 mS/cm	0.21 mg/L	0.00 NTU	-1.3 mV	17.84 ft	400.00 ml/min

Samples

Sample ID:	Description:
WBGmw-019-210401-GW	Begin low flow purge at 8:57 AM (PSI 35/CPM 4/4/11) Stagnant water volume: 2,401.33 mL Stagnant water volume removed at 9:02 AM Stable at 9:11AM Water is clear, colorless, and odorless throughout purge. Flow rate reduced due to draw down Measured total volume purged: 6,830 mL Sample for explosives at 0912 on 4/28/2021.

Sampled By: ,4/28/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/27/2021 1:13:31 PM
Project: WBGmw-020
Operator Name: Danielle Anderson

Location Name: WBGmw-020 **Well Diameter: 2 in** **Initial Depth to Water: 12.76 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 64 ft** **Pump Intake From TOC: 34 ft** **Estimated Total Volume Pumped: 5282.083 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 175 ml/min** **Final Draw Down: 0.19 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 2 27:3 PSI 30
175 mL/min

Weather Conditions:
75°F partly cloudy and breezy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/27/2021 1:13 PM	00:00	7.01 pH	24.47 °C	0.22 mS/cm	1.50 mg/L	6.43 NTU	190.7 mV	12.76 ft	175.00 ml/min
4/27/2021 1:25 PM	12:11	6.47 pH	13.54 °C	0.23 mS/cm	0.06 mg/L	236.57 NTU	-15.1 mV	12.95 ft	175.00 ml/min
4/27/2021 1:28 PM	15:11	6.50 pH	13.28 °C	0.24 mS/cm	0.04 mg/L	59.81 NTU	-22.1 mV	12.95 ft	175.00 ml/min
4/27/2021 1:31 PM	18:11	6.55 pH	13.40 °C	0.24 mS/cm	0.04 mg/L	33.43 NTU	-29.5 mV	12.95 ft	175.00 ml/min
4/27/2021 1:34 PM	21:11	6.57 pH	13.11 °C	0.24 mS/cm	0.03 mg/L	30.93 NTU	-33.9 mV	12.95 ft	175.00 ml/min
4/27/2021 1:37 PM	24:11	6.57 pH	13.24 °C	0.24 mS/cm	0.04 mg/L	16.93 NTU	-37.0 mV	12.95 ft	175.00 ml/min
4/27/2021 1:40 PM	27:11	6.59 pH	12.97 °C	0.24 mS/cm	0.04 mg/L	10.84 NTU	-40.1 mV	12.95 ft	175.00 ml/min
4/27/2021 1:43 PM	30:11	6.60 pH	13.09 °C	0.24 mS/cm	0.05 mg/L	6.81 NTU	-42.8 mV	12.95 ft	175.00 ml/min

Samples

Sample ID:	Description:
WBGmw-020-210401-GW	Begin low flow purge at 1:13 PM PSI 30 CPM 2/3/27 Stagnant water volume: 2,160.5 mL Stagnant water volume removed at 1:25 PM Stable at 1:43 PM Water is clear, colorless, and odorless at beginning of purge and at 1:20-1:30 PM the water became turbid, orange, and odorless throughout the remainder of the purge the water became clear, colorless, and odorless. Measured total volume purged: 6,830 mL Sample for explosives at 1343 on 04/27/2021

Sampled By: ,4/27/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 9:29:37 AM
Project: WBGmw-021
Sampler Name: Jasmine Stefansky

Location Name: WBGmw-021 **Well Diameter: 2 in** **Initial Depth to Water: 9.32 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 72 ft** **Pump Intake From TOC: 38 ft** **Estimated Total Volume Pumped: 12,004.167 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 250 ml/min** **Final Draw Down: 0.05 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 3 17.5:2.5 PSI 38
250 mL/min

Weather Conditions:
Sunny 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 9:29 AM	00:00	7.32 pH	13.89 °C	0.47 mS/cm	5.63 mg/L	2.39 NTU	167.6 mV	9.32 ft	250.00 ml/min
4/28/2021 9:41 AM	11:35	6.90 pH	11.43 °C	0.47 mS/cm	0.41 mg/L	132.19 NTU	24.4 mV	9.32 ft	250.00 ml/min
4/28/2021 9:41 AM	12:01	6.90 pH	11.34 °C	0.47 mS/cm	0.41 mg/L	114.46 NTU	24.2 mV	9.34 ft	250.00 ml/min
4/28/2021 9:44 AM	15:01	6.92 pH	11.39 °C	0.47 mS/cm	0.37 mg/L	68.58 NTU	22.2 mV	9.36 ft	250.00 ml/min
4/28/2021 9:47 AM	18:01	6.94 pH	11.38 °C	0.48 mS/cm	0.34 mg/L	47.87 NTU	18.3 mV	9.37 ft	250.00 ml/min
4/28/2021 9:50 AM	21:01	6.96 pH	11.34 °C	0.48 mS/cm	0.30 mg/L	40.47 NTU	14.6 mV	9.37 ft	250.00 ml/min
4/28/2021 9:53 AM	24:01	6.99 pH	11.39 °C	0.48 mS/cm	0.29 mg/L	32.09 NTU	10.5 mV	9.37 ft	250.00 ml/min
4/28/2021 9:56 AM	27:01	7.02 pH	11.36 °C	0.48 mS/cm	0.27 mg/L	30.50 NTU	6.7 mV	9.37 ft	250.00 ml/min
4/28/2021 9:59 AM	30:01	7.04 pH	11.35 °C	0.48 mS/cm	0.29 mg/L	27.93 NTU	3.6 mV	9.37 ft	250.00 ml/min
4/28/2021 10:02 AM	33:01	7.07 pH	11.39 °C	0.49 mS/cm	0.26 mg/L	23.16 NTU	0.7 mV	9.37 ft	250.00 ml/min
4/28/2021 10:05 AM	36:01	7.10 pH	11.36 °C	0.49 mS/cm	0.25 mg/L	18.49 NTU	-2.1 mV	9.37 ft	250.00 ml/min
4/28/2021 10:08 AM	39:01	7.12 pH	11.40 °C	0.49 mS/cm	0.25 mg/L	15.51 NTU	-5.0 mV	9.37 ft	250.00 ml/min

4/28/2021 10:11 AM	42:01	7.15 pH	11.43 °C	0.49 mS/cm	0.21 mg/L	16.86 NTU	-8.5 mV	9.37 ft	250.00 ml/min
4/28/2021 10:14 AM	45:01	7.17 pH	11.34 °C	0.49 mS/cm	0.21 mg/L	10.28 NTU	-11.5 mV	9.37 ft	250.00 ml/min
4/28/2021 10:17 AM	48:01	7.19 pH	11.34 °C	0.49 mS/cm	0.17 mg/L	8.02 NTU	-13.7 mV	9.37 ft	250.00 ml/min

Samples

Sample ID:	Description:
WBGmw-021-210401-GW	Begin low flow purge at 09:27 PSI 38 CPM3 r17.5 d2.5 Stagnant water volume: 3,000mL Stagnant water removed at: 11:35 (09:41) Stable at 48:01 (10:17) Water was clear and colorless at beginning of purge, then orange about 5 mins in, then cleared up by 12 mins. No odor Measured total volume purged: 12,500 mL Sample for expanded explosives at 10:20 on 4/28/2021

Sampled By: ,4/28/2021

QA Check By: Lindsey Moyer , 5/26/2021

RVAAP-08 LOAD LINE 1

Low-Flow Test Report:

Test Date / Time: 4/26/2021-4/27/2021 12:47:40 PM
Project: LL1mw-063
Operator Name: Danielle Anderson

Location Name: LL1mw-063 **Well Diameter: 2 in** **Initial Depth to Water: 27.11 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 29.25 ft** **Pump Intake From TOC: 29.25 ft** **Estimated Total Volume Pumped: 2216.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 30 ml/min** **Final Draw Down: 0 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 1 58:2 PSI 25
30 mL/min
Well went dry

Weather Conditions:
52°F sunny

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 12:47 PM	00:00	5.00 pH	18.37 °C	0.14 mS/cm	6.66 mg/L	7.73 NTU	136.9 mV	27.11 ft	40.00 ml/min
4/26/2021 1:03 PM	15:34	4.16 pH	15.03 °C	0.11 mS/cm	6.90 mg/L	20.81 NTU	294.8 mV	27.11 ft	30.00 ml/min
4/26/2021 1:17 PM	29:42	4.21 pH	15.23 °C	0.12 mS/cm	5.52 mg/L	40.25 NTU	336.6 mV	27.11 ft	30.00 ml/min
4/26/2021 1:20 PM	32:42	4.26 pH	16.34 °C	0.13 mS/cm	5.79 mg/L	29.25 NTU	332.7 mV	27.11 ft	30.00 ml/min
4/26/2021 1:23 PM	35:42	4.29 pH	17.25 °C	0.13 mS/cm	5.67 mg/L	29.97 NTU	331.9 mV	27.11 ft	30.00 ml/min
4/26/2021 1:26 PM	38:42	4.29 pH	17.31 °C	0.13 mS/cm	5.59 mg/L	35.25 NTU	337.3 mV	27.11 ft	30.00 ml/min
4/26/2021 1:29 PM	41:42	4.41 pH	17.71 °C	0.10 mS/cm	9.91 mg/L	58.66 NTU	314.5 mV	27.11 ft	30.00 ml/min
4/26/2021 1:32 PM	44:42	4.28 pH	16.23 °C	0.13 mS/cm	5.91 mg/L	59.18 NTU	333.3 mV	27.11 ft	30.00 ml/min
4/26/2021 1:35 PM	47:42	4.26 pH	16.41 °C	0.13 mS/cm	5.65 mg/L	37.62 NTU	342.5 mV	27.11 ft	30.00 ml/min
4/26/2021 1:38 PM	50:42	4.26 pH	16.67 °C	0.13 mS/cm	5.59 mg/L	37.23 NTU	346.9 mV	27.11 ft	30.00 ml/min
4/26/2021 1:41 PM	53:42	4.27 pH	16.82 °C	0.13 mS/cm	5.62 mg/L	35.24 NTU	351.1 mV	27.11 ft	30.00 ml/min
4/26/2021 1:44 PM	56:42	4.28 pH	16.96 °C	0.13 mS/cm	5.66 mg/L	35.19 NTU	354.3 mV	27.11 ft	30.00 ml/min

4/26/2021 1:47 PM	59:42	4.28 pH	17.13 °C	0.13 mS/cm	5.66 mg/L	36.63 NTU	356.6 mV	27.11 ft	30.00 ml/min
4/26/2021 1:50 PM	01:02:42	4.29 pH	16.93 °C	0.12 mS/cm	5.64 mg/L	45.23 NTU	361.5 mV	27.11 ft	30.00 ml/min
4/26/2021 1:53 PM	01:05:42	4.29 pH	16.45 °C	0.12 mS/cm	6.55 mg/L	76.74 NTU	365.6 mV	27.11 ft	30.00 ml/min
4/26/2021 1:56 PM	01:08:42	4.30 pH	17.73 °C	0.13 mS/cm	7.24 mg/L	41.47 NTU	359.6 mV	27.11 ft	30.00 ml/min
4/27/2021 10:16 AM	00:00	5.08 pH	17.90 °C	0.14 mS/cm	9.38 mg/L	25.36 NTU	218.6 mV	26.95 ft	75.00 ml/min
4/27/2021 10:17 AM	00:31	4.82 pH	17.12 °C	0.13 mS/cm	9.38 mg/L	15.64 NTU	227.8 mV	26.95 ft	75.00 ml/min
4/27/2021 10:17 AM	01:01	4.73 pH	16.37 °C	0.12 mS/cm	9.16 mg/L	14.44 NTU	227.1 mV	26.95 ft	75.00 ml/min
4/27/2021 10:18 AM	01:31	4.49 pH	15.25 °C	0.10 mS/cm	8.57 mg/L	21.78 NTU	240.1 mV	26.95 ft	75.00 ml/min

Samples

Sample ID:	Description:
LL1mw-063-210401-GW	Begin low flow purge at 12:47 PM (PSI 25/CPM 1/58/2) Stagnant water volume: 1,284.5 mL Stagnant water volume removed at 1:20 PM on 4/26/2021, pre-purge extended due to lower than expected flow Well went dry at 1:56 PM (1:08:42) on 4/26/21, samples taken after sufficient recharge (within 24 hours of well going dry) on 4/27/21, stability criteria was not met due to well going dry. Initial Water Level on 4/27/21: 26.95ft Water is clear, colorless, and odorless throughout purge. Measured total volume purged (both days included): 4,520 mL Sample for explosive at 1018 (01:31) on 04/27/2021.

Sampled By: ,4/27/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/26/2021 12:43:34 PM
Project: LL1mw-064
Sampler Name: Jasmine Stefansky

Location Name: LL1mw-064 **Well Diameter: 2 in** **Initial Depth to Water: 0.27 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 22 ft** **Pump Intake From TOC: 13 ft** **Estimated Total Volume Pumped: 16,300 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 400 ml/min** **Final Draw Down: 0.99 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes: CPM

Weather Conditions:
Sunny 55°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 12:43 PM	00:00	7.00 pH	10.52 °C	0.40 mS/cm	0.28 mg/L	388.86 NTU	-27.6 mV	0.27 ft	400.00 ml/min
4/26/2021 12:48 PM	04:31	7.01 pH	10.74 °C	0.40 mS/cm	0.09 mg/L	150.20 NTU	-50.0 mV	1.26 ft	400.00 ml/min
4/26/2021 12:48 PM	04:45	7.02 pH	10.62 °C	0.40 mS/cm	0.09 mg/L	148.47 NTU	-50.5 mV	1.26 ft	400.00 ml/min
4/26/2021 12:51 PM	07:45	7.06 pH	10.64 °C	0.40 mS/cm	0.07 mg/L	157.70 NTU	-54.7 mV	1.26 ft	400.00 ml/min
4/26/2021 12:54 PM	10:45	7.12 pH	10.71 °C	0.40 mS/cm	0.06 mg/L	496.85 NTU	-60.8 mV	1.26 ft	400.00 ml/min
4/26/2021 12:57 PM	13:45	7.16 pH	10.62 °C	0.40 mS/cm	0.05 mg/L	263.84 NTU	-61.5 mV	1.26 ft	400.00 ml/min
4/26/2021 1:00 PM	16:45	7.18 pH	10.56 °C	0.40 mS/cm	0.06 mg/L	191.54 NTU	-69.3 mV	1.26 ft	400.00 ml/min
4/26/2021 1:03 PM	19:45	7.18 pH	10.64 °C	0.40 mS/cm	0.05 mg/L	333.22 NTU	-66.3 mV	1.26 ft	400.00 ml/min
4/26/2021 1:06 PM	22:45	7.17 pH	10.83 °C	0.39 mS/cm	1.30 mg/L	350.30 NTU	-49.3 mV	1.26 ft	400.00 ml/min
4/26/2021 1:09 PM	25:45	7.21 pH	10.53 °C	0.40 mS/cm	0.05 mg/L	175.70 NTU	-76.7 mV	1.26 ft	400.00 ml/min
4/26/2021 1:12 PM	28:45	7.21 pH	10.48 °C	0.40 mS/cm	0.04 mg/L	137.34 NTU	-81.0 mV	1.26 ft	400.00 ml/min
4/26/2021 1:15 PM	31:45	7.21 pH	10.67 °C	0.39 mS/cm	0.03 mg/L	36.09 NTU	-84.1 mV	1.26 ft	400.00 ml/min

4/26/2021 1:18 PM	34:45	7.22 pH	10.60 °C	0.40 mS/cm	0.03 mg/L	13.91 NTU	-85.7 mV	1.26 ft	400.00 ml/min
4/26/2021 1:21 PM	37:45	7.22 pH	10.56 °C	0.39 mS/cm	0.03 mg/L	15.54 NTU	-89.4 mV	1.26 ft	400.00 ml/min
4/26/2021 1:24 PM	40:45	7.23 pH	10.54 °C	0.40 mS/cm	0.03 mg/L	8.50 NTU	-90.8 mV	1.26 ft	400.00 ml/min

Samples

Sample ID:	Description:
Ll1mw-064-210401-GW	Begin low flow purge at 12:43 Stagnant water: 1,650 mL Stagnant water removed at 4:31 (12:48) Stable at 40:45 (1324) Water had orange tint at beginning of purge, but cleared and was clear, colorless, and odorless throughout purge Measured total volume purged: 20,000 mL Sampled for explosives at 13:25 on 4/26/21

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Sampled By: ,4/26/2021

QA Check By: Lindsey Moyer ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/5/2021 9:09:45 AM
Project: LL1mw-079
Operator Name: Danielle Anderson

Location Name: LL1mw-079 **Well Diameter: 2 in** **Total Depth: 42 ft** **Initial Depth to Water: 32.67 ft**	**Pump Type: QED Stainless Steel Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 37 ft** **Pump Intake From TOC: 37 ft** **Estimated Total Volume Pumped: 8226.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 225 ml/min** **Final Draw Down: 0.44 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 22487** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 2 25:5 PSI 35
225 mL/min

Weather Conditions:
46°F cloudy, rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/5/2021 9:09 AM	00:00	6.73 pH	12.89 °C	0.29 mS/cm	8.41 mg/L	31.44 NTU	208.7 mV	32.67 ft	200.00 ml/min
5/5/2021 9:16 AM	06:28	6.18 pH	10.43 °C	0.24 mS/cm	6.41 mg/L	0.00 NTU	232.2 mV	32.67 ft	200.00 ml/min
5/5/2021 9:17 AM	07:23	6.16 pH	10.37 °C	0.24 mS/cm	6.37 mg/L	0.00 NTU	233.3 mV	33.11 ft	225.00 ml/min
5/5/2021 9:20 AM	10:23	6.13 pH	10.28 °C	0.24 mS/cm	6.25 mg/L	3.22 NTU	234.7 mV	33.11 ft	225.00 ml/min
5/5/2021 9:23 AM	13:23	6.12 pH	10.22 °C	0.24 mS/cm	6.07 mg/L	1.75 NTU	234.5 mV	33.11 ft	225.00 ml/min
5/5/2021 9:26 AM	16:23	6.10 pH	10.23 °C	0.26 mS/cm	5.31 mg/L	1.14 NTU	234.9 mV	33.11 ft	225.00 ml/min
5/5/2021 9:29 AM	19:23	6.11 pH	10.23 °C	0.27 mS/cm	4.66 mg/L	1.02 NTU	234.9 mV	33.11 ft	225.00 ml/min
5/5/2021 9:32 AM	22:23	6.14 pH	9.86 °C	0.27 mS/cm	4.43 mg/L	1.45 NTU	234.0 mV	33.11 ft	225.00 ml/min
5/5/2021 9:35 AM	25:23	6.14 pH	9.77 °C	0.28 mS/cm	4.19 mg/L	0.22 NTU	234.6 mV	33.11 ft	225.00 ml/min
5/5/2021 9:38 AM	28:23	6.16 pH	9.70 °C	0.29 mS/cm	3.79 mg/L	0.00 NTU	233.7 mV	33.11 ft	225.00 ml/min
5/5/2021 9:41 AM	31:23	6.17 pH	9.59 °C	0.30 mS/cm	3.29 mg/L	0.00 NTU	234.5 mV	33.11 ft	225.00 ml/min
5/5/2021 9:44 AM	34:23	6.18 pH	9.52 °C	0.30 mS/cm	3.13 mg/L	0.00 NTU	234.4 mV	33.11 ft	225.00 ml/min

5/5/2021 9:47 AM	37:23	6.16 pH	9.56 °C	0.30 mS/cm	3.22 mg/L	0.00 NTU	234.0 mV	33.11 ft	225.00 ml/min

Samples

Sample ID:	Description:
LL1mw-079-210401-GW	Begin low flow purge at 9:09 AM (PSI 35/CPM 2/5/25) Stagnant water volume: 1,430.1 ml Stagnant water volume removed at 9:17 AM Stable at 9:47 AM Water is clear, colorless, and odorless throughout purge. Flow rate was increased to keep water level consistant Measured total volume purged: 6,580 ml Sample for explosives, sulfide, nitrate/nitrite/sulfate, alkalinity, and TOC at 0947 on 05/05/2021.

Sampled By: ,5/05/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/26/2021 1:20:14
PM **Project:** LL1mw-080
Sampler Name: Lindsey Moyer

Location Name: LL1mw-080 **Well Diameter: 2 in** **Initial Depth to Water: 11.84 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 20 ft** **Pump Intake From TOC: 20.2 ft** **Estimated Total Volume Pumped: 2,287.5 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 125 ml/min** **Final Draw Down: 0.66 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2 21:9, PSI 19,
125 mL/min

Weather Conditions:
Sunny, clear, 54°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 1:20 PM	00:00	6.65 pH	11.99 °C	0.29 mS/cm	8.12 mg/L	0.13 NTU	217.9 mV	11.84 ft	125.00 ml/min
4/26/2021 1:21 PM	01:38	6.63 pH	11.34 °C	0.27 mS/cm	8.01 mg/L	0.24 NTU	217.8 mV	11.84 ft	125.00 ml/min
4/26/2021 1:28 PM	08:26	6.60 pH	11.12 °C	0.25 mS/cm	8.01 mg/L	0.20 NTU	215.9 mV	11.84 ft	125.00 ml/min
4/26/2021 1:29 PM	09:18	6.60 pH	11.65 °C	0.25 mS/cm	7.94 mg/L	0.07 NTU	215.2 mV	12.45 ft	125.00 ml/min
4/26/2021 1:32 PM	12:18	6.60 pH	11.09 °C	0.25 mS/cm	8.03 mg/L	0.00 NTU	214.6 mV	12.47 ft	125.00 ml/min
4/26/2021 1:35 PM	15:18	6.59 pH	10.83 °C	0.25 mS/cm	8.07 mg/L	0.00 NTU	215.5 mV	12.50 ft	125.00 ml/min
4/26/2021 1:38 PM	18:18	6.58 pH	10.77 °C	0.25 mS/cm	8.06 mg/L	0.71 NTU	216.1 mV	12.50 ft	125.00 ml/min

Samples

Sample ID:	Description:
LL1mw-080-210401-GW	Begin low flow purge at 1320 (PSI 19/CPM 2/21/9) Stagnant water volume: 1,125 mL. Aqua Troll disconnected during stagnant water purge, multiple readings Stagnant water volume removed at 1329 Stable at 1338 Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 2,375 ml Sample for expanded explosives at 1340 on 04/26/2021.

Sampled By: Lindsey Moyer ,4/26/2021

QA Check By: ,5/13/2021

Low-Flow Test Report:

Test Date / Time: 4/26/2021 11:04:58 AM
Project: LL1mw-081
Operator Name: Danielle Anderson

Location Name: LL1mw-081
Well Diameter: 2 in
Initial Depth to Water: 30.58 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.25 in
Tubing Length: 38.71 ft
Pump Intake From TOC: 38.71 ft
Estimated Total Volume Pumped: 7710 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 150 ml/min
Final Draw Down: 0.92 ft

Instruments Used:
Aqua TROLL 600 - 514551
Controller (MP10) - 14975
Compressor - 21426
Water Level Meter - 41832

Test Notes:
CPM 2 26:4 PSI 30
150 mL/min

Weather Conditions:
43°F sunny

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 11:04 AM	00:00	5.34 pH	23.29 °C	0.00 mS/cm	8.93 mg/L	0.00 NTU	226.9 mV	30.58 ft	150.00 ml/min
4/26/2021 11:05 AM	00:59	5.18 pH	23.24 °C	0.00 mS/cm	8.92 mg/L	0.00 NTU	231.3 mV	30.58 ft	150.00 ml/min
4/26/2021 11:06 AM	01:50	6.92 pH	23.03 °C	0.00 mS/cm	8.90 mg/L	0.00 NTU	212.1 mV	30.58 ft	150.00 ml/min
4/26/2021 11:19 AM	14:09	6.14 pH	11.17 °C	0.35 mS/cm	0.50 mg/L	139.71 NTU	9.1 mV	30.58 ft	150.00 ml/min
4/26/2021 11:22 AM	17:09	6.12 pH	11.00 °C	0.35 mS/cm	0.36 mg/L	80.42 NTU	12.4 mV	30.58 ft	150.00 ml/min
4/26/2021 11:25 AM	20:09	6.12 pH	11.06 °C	0.35 mS/cm	0.49 mg/L	163.41 NTU	17.0 mV	30.58 ft	150.00 ml/min
4/26/2021 11:28 AM	23:09	6.14 pH	11.01 °C	0.35 mS/cm	0.89 mg/L	374.57 NTU	20.5 mV	30.58 ft	150.00 ml/min
4/26/2021 11:31 AM	26:09	6.16 pH	10.92 °C	0.35 mS/cm	1.08 mg/L	162.79 NTU	20.6 mV	30.58 ft	150.00 ml/min
4/26/2021 11:34 AM	29:09	6.18 pH	10.87 °C	0.35 mS/cm	1.16 mg/L	91.94 NTU	22.1 mV	30.58 ft	150.00 ml/min
4/26/2021 11:37 AM	32:09	6.19 pH	10.91 °C	0.35 mS/cm	1.13 mg/L	68.16 NTU	21.7 mV	30.58 ft	150.00 ml/min
4/26/2021 11:40 AM	35:09	6.21 pH	10.82 °C	0.35 mS/cm	1.08 mg/L	85.92 NTU	20.9 mV	30.58 ft	150.00 ml/min
4/26/2021 11:43 AM	38:09	6.25 pH	10.91 °C	0.35 mS/cm	2.56 mg/L	11.01 NTU	0.5 mV	30.58 ft	150.00 ml/min

4/26/2021 11:46 AM	41:09	6.25 pH	10.75 °C	0.35 mS/cm	0.99 mg/L	18.04 NTU	9.8 mV	30.58 ft	150.00 ml/min
4/26/2021 11:49 AM	44:09	6.26 pH	10.77 °C	0.35 mS/cm	0.87 mg/L	16.76 NTU	12.1 mV	30.58 ft	150.00 ml/min
4/26/2021 11:52 AM	47:09	6.28 pH	10.76 °C	0.35 mS/cm	0.76 mg/L	5.36 NTU	12.5 mV	30.58 ft	150.00 ml/min
4/26/2021 11:53 AM	48:24	6.29 pH	10.79 °C	0.35 mS/cm	0.72 mg/L	1.57 NTU	12.4 mV	30.58 ft	150.00 ml/min
4/26/2021 11:56 AM	51:24	6.32 pH	10.86 °C	0.36 mS/cm	0.63 mg/L	2.46 NTU	11.2 mV	30.58 ft	150.00 ml/min

Samples

Sample ID:	Description:
LL1mw-081-210401-GW	Begin low flow purge at 11:04 AM (PSI 30/CPM 2/26/4) Stagnant water volume: 1,397.82 mL Stagnant water volume removed at 11:19 AM, Aqua Troll Disconnected at 11:05 AM and 11:06 AM and reconnected for the duration of the purge. Stable at 11:56 AM Water is cloudy, orange, and odorless at the beginning of purge and became clear with a slight orange tint throughout purge, then became clear at the end of purge. Measured total volume purged: 7,880 mL Sample for explosives at 1157 on 04/26/2021.

Sampled By: ,4/26/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/10/2021 11:42:36 AM
Project: LL1mw-082
Sampler Name: Lindsey Moyer

Location Name: LL1mw-082 **Initial Depth to Water: 27.94 ft**	**Pump Type: QED stainless steel Portable bladder pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 27.6 ft** **Pump Intake From TOC: 39 ft** **Estimated Total Volume Pumped: 2550.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.58 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:

CPM 2 20:10 PSI 30

100 mL/min

Weather Conditions:

53°F, sunny

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/10/2021 11:42 AM	00:00	6.64 pH	13.03 °C	0.29 mS/cm	3.91 mg/L	89.03 NTU	-98.3 mV	27.94 ft	100.00 ml/min
5/10/2021 11:48 AM	06:21	6.27 pH	11.86 °C	0.27 mS/cm	0.87 mg/L	63.43 NTU	-56.4 mV	28.51 ft	100.00 ml/min
5/10/2021 11:49 AM	07:19	6.26 pH	11.60 °C	0.27 mS/cm	0.71 mg/L	60.10 NTU	-53.1 mV	28.51 ft	100.00 ml/min
5/10/2021 11:52 AM	10:19	6.24 pH	11.82 °C	0.27 mS/cm	0.58 mg/L	54.35 NTU	-51.1 mV	28.52 ft	50.00 ml/min
5/10/2021 11:55 AM	13:19	6.23 pH	12.61 °C	0.27 mS/cm	0.67 mg/L	41.89 NTU	-41.9 mV	28.52 ft	50.00 ml/min
5/10/2021 11:58 AM	16:19	6.24 pH	12.27 °C	0.27 mS/cm	0.50 mg/L	35.94 NTU	-37.4 mV	28.52 ft	50.00 ml/min
5/10/2021 12:01 PM	19:19	6.26 pH	12.46 °C	0.27 mS/cm	1.74 mg/L	36.77 NTU	-32.5 mV	28.52 ft	50.00 ml/min
5/10/2021 12:04 PM	22:19	6.23 pH	12.14 °C	0.27 mS/cm	0.54 mg/L	27.85 NTU	-24.4 mV	28.52 ft	50.00 ml/min
5/10/2021 12:07 PM	25:19	6.21 pH	12.04 °C	0.27 mS/cm	0.41 mg/L	18.75 NTU	-19.4 mV	28.52 ft	50.00 ml/min
5/10/2021 12:10 PM	28:19	6.21 pH	11.92 °C	0.27 mS/cm	0.38 mg/L	14.01 NTU	-19.0 mV	28.52 ft	50.00 ml/min

5/10/2021 12:13 PM	31:19	6.20 pH	11.89 °C	0.27 mS/cm	0.37 mg/L	11.92 NTU	-18.2 mV	28.52 ft	50.00 ml/min
5/10/2021 12:16 PM	34:19	6.22 pH	11.75 °C	0.27 mS/cm	0.34 mg/L	9.40 NTU	-19.2 mV	28.52 ft	50.00 ml/min
5/10/2021 12:19 PM	37:19	6.23 pH	11.84 °C	0.27 mS/cm	0.29 mg/L	8.01 NTU	-18.8 mV	28.52 ft	50.00 ml/min
5/10/2021 12:22 PM	40:19	6.24 pH	11.85 °C	0.27 mS/cm	0.30 mg/L	7.08 NTU	-18.3 mV	28.52 ft	50.00 ml/min

Samples

LL1mw-082-210401-GW	Begin low flow purge at 1142 (PSI 30/CPM 2/20/10. Stagnant water volume: 800 mL Stagnant water volume removed at 1148 Stable at 1222 Water is clear, colorless, and odorless at end of purge. Water started out with red tint, slightly cloudy, and odorless. Reduced purge volume to 50mL at 1152 (PSI 30/CPM 2/24/6). Measured total volume purged: 2,650 mL Sample for expanded explosives at 1225 on 05/10/2021.

Sampled By: Lindsey Moyer ,5/10/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/26/2021 12:05:30 PM
Project: LL1mw-083
Sampler Name: Lindsey Moyer

Location Name: LL1mw-083 **Well Diameter: 2 in** **Initial Depth to Water: 33.85 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 40 ft** **Pump Intake From TOC: 40 ft** **Estimated Total Volume Pumped: 5,173.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 200 ml/min** **Final Draw Down: 0.36 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 1923** **Water Level Meter - 39082**

Test Notes:
CPM 2 20:20, PSI 29
200 mL/min

Weather Conditions:
Sunny, clear, 48°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	*RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 12:05 PM	00:00	4.54 pH	10.80 °C	0.28 mS/cm	sensor malfunction	0.00 NTU	271.7 mV	33.85 ft	200.00 ml/min
4/26/2021 12:16 PM	11:00	4.45 pH	10.60 °C	0.28 mS/cm	sensor malfunction	3.60 NTU	361.6 mV	34.21 ft	200.00 ml/min
4/26/2021 12:16 PM	11:09	4.46 pH	10.59 °C	0.28 mS/cm	sensor malfunction	3.02 NTU	361.5 mV	34.21 ft	200.00 ml/min
4/26/2021 12:19 PM	14:09	4.47 pH	10.54 °C	0.28 mS/cm	sensor malfunction	4.40 NTU	367.3 mV	34.21 ft	200.00 ml/min
4/26/2021 12:28 PM	22:52	4.53 pH	10.75 °C	0.28 mS/cm	sensor malfunction	4.27 NTU	381.4 mV	34.21 ft	200.00 ml/min
4/26/2021 12:31 PM	25:52	4.54 pH	10.64 °C	0.28 mS/cm	sensor malfunction	3.18 NTU	386.6 mV	34.21 ft	200.00 ml/min

Samples

Sample ID:	Description:
LL1mw-083-210401-GW	Begin low flow purge at 1205 (PSI 29/CPM 2/20/10) Stagnant water volume: 2,200 mL Stagnant water volume removed at 1216 Stable at 1231 Water is clear, colorless, and odorless throughout the purge. Measured total volume purged: 5,400 mL Sample for expanded explosives at 1235 on 04/26/2021. *Error message came up during purge about sensors being changed, had to call R.Laurich to find log in tablet, so there is a 8min period between the one reading.

Sampled By: Lindsey Moyer ,4/26/2021

QA Check By: ,5/13/2021

Low-Flow Test Report:

Test Date / Time: 4/26/2021 9:07:26 AM
Project: LL1mw-084
Sampler Name: Lindsey Moyer

Location Name: LL1mw-084 **Well Diameter: 2 in** **Initial Depth to Water: 28.94 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 37 ft** **Pump Intake From TOC: 37 ft** **Estimated Total Volume Pumped: 3,071.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 1.61 ft**	**Instruments Used: Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 1 40:20, PSI 25
100mL/min

Weather Conditions:
Sunny, clear, 39°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 9:07 AM	00:00	5.58 pH	10.52 °C	0.30 mS/cm	5.87 mg/L	0.00 NTU	246.3 mV	28.94 ft	100.00 ml/min
4/26/2021 9:28 AM	21:22	5.55 pH	10.03 °C	0.30 mS/cm	4.13 mg/L	0.00 NTU	232.1 mV	30.54 ft	100.00 ml/min
4/26/2021 9:29 AM	22:05	5.55 pH	10.42 °C	0.30 mS/cm	4.13 mg/L	0.00 NTU	231.7 mV	30.54 ft	100.00 ml/min
4/26/2021 9:32 AM	24:43	5.57 pH	10.08 °C	0.30 mS/cm	4.10 mg/L	0.00 NTU	231.2 mV	30.54 ft	100.00 ml/min
4/26/2021 9:35 AM	27:43	5.57 pH	10.03 °C	0.30 mS/cm	4.07 mg/L	0.00 NTU	231.4 mV	30.55 ft	100.00 ml/min
4/26/2021 9:38 AM	30:43	5.57 pH	9.99 °C	0.30 mS/cm	4.06 mg/L	0.00 NTU	231.6 mV	30.55 ft	100.00 ml/min

Samples

LL1mw-084-210401-GW	Begin low flow purge at 0907 (PSI 25/CPM 1/40/20) Stagnant water volume: 2,200mL Stagnant water volume removed at 0929 Stable at 0938 Water is clear, colorless, and odorless throughout the purge. Measured total volume purged: 3,300 ml Sample for expanded explosives, sulfide, nitrate/nitrite/sulfate, and TOC at 0940 on 04/26/2021. LL1mw-084-210401-GWMSD sampled for sulfide, nitrate/nitrite/sulfate, and alkalinity. LL1mw-084-210402-GW sampled for expanded explosives, sulfide, nitrate/nitrite/sulfate, and alkalinity. LL1mw-084-210403-GW sampled for expanded explosives, sulfide, and alkalinity.

Sampled By: Lindsey Moyer ,4/26/2021

QA Check By: ,5/13/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 8:40:30 AM
Project: LL1mw-086
Sampler Name: Lindsey Moyer

Location Name: LL1mw-086 **Well Diameter: 2 in** **Total Depth: 77.95 ft** **Initial Depth to Water: 7.31 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 141 ft** **Pump Intake From TOC: 73 ft** **Estimated Total Volume Pumped: 19,446 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 120 ml/min** **Final Draw Down: 0.05 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2 25:5 PSI 40
120 mL/min

Weather Conditions:
Partly cloudy 64°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 8:40 AM	00:00	11.43 pH	12.70 °C	0.70 mS/cm	4.96 mg/L	64.56 NTU	114.1 mV	7.31 ft	120.00 ml/min
4/28/2021 9:14 AM	33:51	11.21 pH	11.78 °C	0.65 mS/cm	2.65 mg/L	63.12 NTU	92.8 mV	7.36 ft	120.00 ml/min
4/28/2021 9:15 AM	34:54	11.16 pH	11.79 °C	0.63 mS/cm	2.59 mg/L	59.41 NTU	72.0 mV	7.36 ft	120.00 ml/min
4/28/2021 9:22 AM	41:54	10.84 pH	11.54 °C	0.49 mS/cm	2.26 mg/L	67.96 NTU	5.7 mV	7.36 ft	120.00 ml/min
4/28/2021 9:22 AM	42:03	10.84 pH	11.66 °C	0.49 mS/cm	2.23 mg/L	74.91 NTU	4.6 mV	7.36 ft	120.00 ml/min
4/28/2021 9:25 AM	45:03	10.15 pH	11.72 °C	0.43 mS/cm	1.76 mg/L	84.04 NTU	2.5 mV	7.36 ft	120.00 ml/min
4/28/2021 9:28 AM	48:03	9.68 pH	11.87 °C	0.42 mS/cm	1.40 mg/L	88.26 NTU	1.2 mV	7.36 ft	120.00 ml/min
4/28/2021 9:31 AM	51:03	9.51 pH	11.86 °C	0.43 mS/cm	1.21 mg/L	78.72 NTU	-4.2 mV	7.36 ft	120.00 ml/min
4/28/2021 9:34 AM	54:03	9.32 pH	11.93 °C	0.43 mS/cm	1.07 mg/L	81.40 NTU	-7.7 mV	7.36 ft	120.00 ml/min
4/28/2021 9:37 AM	57:03	9.20 pH	11.83 °C	0.44 mS/cm	0.99 mg/L	141.19 NTU	-13.3 mV	7.36 ft	120.00 ml/min

4/28/2021 9:40 AM	01:00:03	9.00 pH	12.01 °C	0.44 mS/cm	0.85 mg/L	101.33 NTU	-16.3 mV	7.36 ft	120.00 ml/min
4/28/2021 9:43 AM	01:03:03	8.89 pH	12.07 °C	0.45 mS/cm	0.74 mg/L	83.06 NTU	-21.9 mV	7.36 ft	120.00 ml/min
4/28/2021 9:46 AM	01:06:03	8.77 pH	12.01 °C	0.46 mS/cm	0.67 mg/L	97.64 NTU	-32.0 mV	7.36 ft	120.00 ml/min
4/28/2021 9:49 AM	01:09:03	8.61 pH	11.95 °C	0.47 mS/cm	0.61 mg/L	104.36 NTU	-89.3 mV	7.36 ft	120.00 ml/min
4/28/2021 9:52 AM	01:12:03	8.52 pH	12.04 °C	0.47 mS/cm	0.56 mg/L	115.75 NTU	-151.9 mV	7.36 ft	120.00 ml/min
4/28/2021 9:55 AM	01:15:03	8.48 pH	12.05 °C	0.48 mS/cm	0.52 mg/L	116.62 NTU	-178.4 mV	7.36 ft	120.00 ml/min
4/28/2021 9:58 AM	01:18:03	8.41 pH	12.09 °C	0.48 mS/cm	0.49 mg/L	118.95 NTU	-186.6 mV	7.36 ft	120.00 ml/min
4/28/2021 10:01 AM	01:21:03	8.34 pH	11.92 °C	0.49 mS/cm	0.48 mg/L	131.00 NTU	-187.2 mV	7.36 ft	120.00 ml/min
4/28/2021 10:04 AM	01:24:03	8.25 pH	12.13 °C	0.49 mS/cm	0.45 mg/L	108.16 NTU	-185.7 mV	7.36 ft	120.00 ml/min
4/28/2021 10:07 AM	01:27:03	8.21 pH	12.20 °C	0.49 mS/cm	0.43 mg/L	81.95 NTU	-182.9 mV	7.36 ft	120.00 ml/min
4/28/2021 10:10 AM	01:30:03	8.17 pH	12.10 °C	0.49 mS/cm	0.41 mg/L	88.62 NTU	-181.8 mV	7.36 ft	120.00 ml/min
4/28/2021 10:13 AM	01:33:03	8.22 pH	12.06 °C	0.50 mS/cm	0.40 mg/L	94.87 NTU	-186.0 mV	7.36 ft	120.00 ml/min
4/28/2021 10:16 AM	01:36:03	8.24 pH	12.18 °C	0.50 mS/cm	0.39 mg/L	104.79 NTU	-186.2 mV	7.36 ft	120.00 ml/min
4/28/2021 10:19 AM	01:39:03	8.24 pH	12.26 °C	0.50 mS/cm	0.39 mg/L	89.23 NTU	-186.0 mV	7.36 ft	120.00 ml/min
4/28/2021 10:22 AM	01:42:03	8.27 pH	12.18 °C	0.50 mS/cm	0.39 mg/L	98.02 NTU	-188.8 mV	7.36 ft	120.00 ml/min
4/28/2021 10:25 AM	01:45:03	8.36 pH	11.94 °C	0.50 mS/cm	0.40 mg/L	112.26 NTU	-192.8 mV	7.36 ft	120.00 ml/min
4/28/2021 10:28 AM	01:48:03	8.45 pH	12.09 °C	0.49 mS/cm	0.40 mg/L	123.27 NTU	-189.5 mV	7.36 ft	120.00 ml/min
4/28/2021 10:31 AM	01:51:03	8.48 pH	12.11 °C	0.50 mS/cm	0.41 mg/L	126.24 NTU	-187.6 mV	7.36 ft	120.00 ml/min
4/28/2021 10:34 AM	01:54:03	8.45 pH	12.00 °C	0.50 mS/cm	0.41 mg/L	127.81 NTU	-187.8 mV	7.36 ft	120.00 ml/min
4/28/2021 10:37 AM	01:57:03	8.42 pH	12.06 °C	0.50 mS/cm	0.41 mg/L	134.73 NTU	-189.6 mV	7.36 ft	120.00 ml/min
4/28/2021 10:40 AM	02:00:03	8.39 pH	12.15 °C	0.50 mS/cm	0.40 mg/L	99.75 NTU	-190.0 mV	7.36 ft	120.00 ml/min
4/28/2021 10:43 AM	02:03:03	8.41 pH	12.25 °C	0.50 mS/cm	0.39 mg/L	88.05 NTU	-191.3 mV	7.36 ft	120.00 ml/min
4/28/2021 10:46 AM	02:06:03	8.39 pH	12.12 °C	0.50 mS/cm	0.38 mg/L	83.46 NTU	-192.3 mV	7.36 ft	120.00 ml/min
4/28/2021 10:49 AM	02:09:03	8.38 pH	12.03 °C	0.50 mS/cm	0.37 mg/L	82.32 NTU	-193.3 mV	7.36 ft	120.00 ml/min
4/28/2021 10:52 AM	02:12:03	8.37 pH	12.04 °C	0.50 mS/cm	0.36 mg/L	85.05 NTU	-193.1 mV	7.36 ft	120.00 ml/min
4/28/2021 10:55 AM	02:15:03	8.37 pH	12.30 °C	0.50 mS/cm	0.36 mg/L	83.12 NTU	-193.8 mV	7.36 ft	120.00 ml/min
4/28/2021 10:58 AM	02:18:03	8.35 pH	12.37 °C	0.50 mS/cm	0.35 mg/L	77.59 NTU	-193.9 mV	7.36 ft	120.00 ml/min
4/28/2021 11:01 AM	02:21:03	8.32 pH	12.29 °C	0.50 mS/cm	0.35 mg/L	82.53 NTU	-193.8 mV	7.36 ft	120.00 ml/min
4/28/2021 11:04 AM	02:24:03	8.29 pH	12.53 °C	0.50 mS/cm	0.33 mg/L	90.62 NTU	-193.7 mV	7.36 ft	120.00 ml/min

4/28/2021 11:07 AM	02:27:03	8.28 pH	12.71 °C	0.51 mS/cm	0.32 mg/L	83.75 NTU	-193.6 mV	7.36 ft	120.00 ml/min
4/28/2021 11:10 AM	02:30:03	8.23 pH	12.69 °C	0.51 mS/cm	0.32 mg/L	92.73 NTU	-191.1 mV	7.36 ft	120.00 ml/min
4/28/2021 11:13 AM	02:33:03	8.19 pH	12.62 °C	0.51 mS/cm	0.31 mg/L	101.90 NTU	-190.0 mV	7.36 ft	120.00 ml/min
4/28/2021 11:16 AM	02:36:03	8.14 pH	12.55 °C	0.50 mS/cm	0.30 mg/L	108.66 NTU	-186.7 mV	7.36 ft	120.00 ml/min
4/28/2021 11:19 AM	02:39:03	8.13 pH	12.64 °C	0.51 mS/cm	0.29 mg/L	109.22 NTU	-184.6 mV	7.36 ft	120.00 ml/min
4/28/2021 11:22 AM	02:42:03	8.11 pH	12.62 °C	0.51 mS/cm	0.28 mg/L	131.30 NTU	-184.3 mV	7.36 ft	120.00 ml/min

Samples

LL1mw-086-220401-GW	Begin low flow purge at 0840 (PSI 40/CPM 2/25/5) Stagnant water volume: 5,160 mL Stagnant water volume removed at 0922. Stagnant water purge went a few minutes longer due to flow cell disconnecting during stagnant water purge and calculated time left wrong. End purge at 1123, after 2 hours. Turbidity never went below 50 NTU, not sampling for metals, OK to sample. Water is cloudy, colorless, and odorless throughout purge. Measured total volume purged: 19,560 mL Sampled for expanded explosives at 1125 on 04/28/2021.

Created using VuSitu from In-Situ, Inc.

Sampled By: Lindsey Moyer ,4/28/2021

QA Check By: ,5/13/2021

Low-Flow Test Report:

Test Date / Time: 4/26/2021 8:55:26 AM
Project: LL1mw-087
Sampler Name: Jasmine Stefansky

Location Name: LL1mw-087 **Well Diameter: 2 in** **Initial Depth to Water: 4.72 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 12 ft** **Pump Intake From TOC: 12 ft** **Estimated Total Volume Pumped: 2,337.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 80 ml/min** **Final Draw Down: -0.81 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 1 56:4 PSI 12
80 mL/min

Weather Conditions:
Sunny 45°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 8:55 AM	00:00	7.18 pH	11.97 °C	0.76 mS/cm	8.58 mg/L	4.24 NTU	223.3 mV	4.72 ft	80.00 ml/min
4/26/2021 9:15 AM	19:55	6.72 pH	9.24 °C	0.52 mS/cm	1.20 mg/L	12.70 NTU	228.9 mV	5.12 ft	80.00 ml/min
4/26/2021 9:15 AM	20:13	6.71 pH	9.33 °C	0.52 mS/cm	1.08 mg/L	9.31 NTU	229.0 mV	5.24 ft	80.00 ml/min
4/26/2021 9:18 AM	23:13	6.72 pH	9.24 °C	0.52 mS/cm	0.53 mg/L	9.33 NTU	227.7 mV	5.37 ft	80.00 ml/min
4/26/2021 9:21 AM	26:13	6.74 pH	9.39 °C	0.52 mS/cm	0.45 mg/L	9.16 NTU	225.3 mV	5.51 ft	80.00 ml/min
4/26/2021 9:24 AM	29:13	6.76 pH	9.40 °C	0.52 mS/cm	0.45 mg/L	6.16 NTU	222.3 mV	5.53 ft	80.00 ml/min

Samples

LL1mw-087-210401-GW LL1mw-087-210401-GWMSD LL1mw-087-210402-GW LL1mw-087-210403-GW	Begin low flow purge at 08:55 PSI 12 CPM 1/56r/4d Stagnant water volume: 1,600 mL Stagnant water removed 20:13 (0915) Stable at 29:13 (0924) Water is clear, colorless, odorless throughout purge Measured total volume purged 2,500 mL Sample for explosives at 09:28 on 4/26/21 Collected normal, FD, msd, and split sample

Sampled By: ,4/26/2021

QA Check By: Lindsey Moyer ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/26/2021 11:17:24 AM
Project: LL1mw-089
Sampler Name: Jasmine Stefansky

Location Name: LL1mw-089
Well Diameter: 2 in
Initial Depth to Water: 24.91 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.25 in
Tubing Length: 38 ft
Pump Intake From TOC: 38 ft
Estimated Total Volume Pumped: 4,920 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 200 ml/min
Final Draw Down: -22.828 ft
*note this is 1.9 feet, aqua troll was not changed to feet.

Instruments Used:
Aqua TROLL 600 - 532229
Controller (MP10) - 3564
Compressor - 18421
Water Level Meter - 39350

Test Notes:
CPM 2 26:4 PSI 38
200 mL/min

Weather Conditions:
Sunny 50°F

Low-Flow Readings:

Note DTW is in feet not inches.

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/26/2021 11:17 AM	00:00	5.50 pH	11.71 °C	0.09 mS/cm	6.09 mg/L	1.11 NTU	237.5 mV	24.91 in	200.00 ml/min
4/26/2021 11:23 AM	06:15	4.74 pH	10.60 °C	0.08 mS/cm	1.27 mg/L	6.21 NTU	42.0 mV	24.98 in	200.00 ml/min
4/26/2021 11:24 AM	06:36	4.69 pH	10.50 °C	0.08 mS/cm	1.27 mg/L	9.82 NTU	43.8 mV	24.98 in	200.00 ml/min
4/26/2021 11:27 AM	09:36	4.60 pH	10.42 °C	0.08 mS/cm	1.25 mg/L	3.73 NTU	58.8 mV	24.98 in	200.00 ml/min
4/26/2021 11:30 AM	12:36	4.67 pH	10.55 °C	0.08 mS/cm	1.24 mg/L	3.24 NTU	75.0 mV	24.98 in	200.00 ml/min
4/26/2021 11:33 AM	15:36	4.66 pH	10.48 °C	0.08 mS/cm	1.20 mg/L	4.66 NTU	88.6 mV	24.98 in	200.00 ml/min
4/26/2021 11:36 AM	18:36	4.65 pH	10.49 °C	0.08 mS/cm	1.18 mg/L	4.84 NTU	100.6 mV	24.98 in	200.00 ml/min
4/26/2021 11:39 AM	21:36	4.65 pH	10.42 °C	0.08 mS/cm	1.16 mg/L	6.67 NTU	109.7 mV	24.98 in	200.00 ml/min
4/26/2021 11:42 AM	24:36	4.67 pH	10.56 °C	0.08 mS/cm	1.14 mg/L	8.92 NTU	116.3 mV	24.98 in	200.00 ml/min

Samples

Sample ID:	Description:
LL1mw-089-210401-GW, LL1mw-089-210402-GW, LL1mw-089-210403-GW	Begin low flow purge at 11:17 CPM 2/26r/4d PSI 38 Stagnant water volume: 1,200mL Stagnant water removed at 6:15 (11:23) Stable at 24:36 (11:42) Water is clear, colorless, odorless throughout purge Measured total volume purged: 4,900 mL Sampled for explosives on 4/26/21 at 11:45 Collected normal, FD, split samples

Sampled By: ,4/26/2021

QA Check By: Lindsey Moyer, 5/24/2021

RVAAP-09 LOAD LINE 2

Low-Flow Test Report:

Test Date / Time: 4/28/2021 12:29:43 PM
Project: LL2mw-059
Sampler Name: Lindsey Moyer

Location Name: LL2mw-059 **Well Diameter: 2 in** **Initial Depth to Water: 13.14 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 20 ft** **Pump Intake From TOC: 20 ft** **Estimated Total Volume Pumped: 2,233.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 125 ml/min** **Final Draw Down: 0.29 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2 26:4 PSI 20
125 mL/min

Weather Conditions:
Cloudy 73°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 12:29 PM	00:00	6.28 pH	13.32 °C	0.29 mS/cm	4.05 mg/L	4.26 NTU	131.8 mV	13.14 ft	125.00 ml/min
4/28/2021 12:38 PM	08:37	5.80 pH	11.45 °C	0.29 mS/cm	1.30 mg/L	0.37 NTU	196.4 mV	13.42 ft	125.00 ml/min
4/28/2021 12:38 PM	08:52	5.81 pH	11.58 °C	0.29 mS/cm	1.31 mg/L	0.23 NTU	196.6 mV	13.42 ft	125.00 ml/min
4/28/2021 12:41 PM	11:52	5.82 pH	11.30 °C	0.30 mS/cm	1.30 mg/L	0.71 NTU	201.1 mV	13.43 ft	125.00 ml/min
4/28/2021 12:44 PM	14:52	5.83 pH	11.56 °C	0.30 mS/cm	1.23 mg/L	0.68 NTU	205.4 mV	13.43 ft	125.00 ml/min
4/28/2021 12:47 PM	17:52	5.83 pH	11.65 °C	0.30 mS/cm	1.22 mg/L	0.43 NTU	208.5 mV	13.43 ft	125.00 ml/min

Samples

Sample ID:	Description:
LL2mw-059-210401-GW	Begin low flow purge at 1230 (PSI 20/CPM 2/26/4) Stagnant water volume: 1,125 ml Stagnant water volume removed at 1238 Stable at 1247 Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 2,250 mL Sample for explosives at 1250 on 04/28/2021.

Created using VuSitu from In-Situ, Inc.

Sampled By: Lindsey Moyer ,4/28/2021

QA Check By: ,5/17/2021

RVAAP-10 LOAD LINE 3

Low-Flow Test Report:

Test Date / Time: 4/28/2021 1:32:52 PM
Project: LL3mw-237
Sampler Name: Lindsey Moyer

Location Name: LL3mw-237 **Well Diameter: 2 in** **Initial Depth to Water: 14.64 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 25 ft** **Pump Intake From TOC: 25.55 ft** **Estimated Total Volume Pumped: 2058.75 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 75 ml/min** **Final Draw Down: 0.83 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 1 49:1 PSI 20
75 mL/min

Weather Conditions:
Cloudy 75°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 1:32 PM	00:00	6.57 pH	14.35 °C	0.29 mS/cm	6.90 mg/L	11.24 NTU	155.6 mV	14.64 ft	75.00 ml/min
4/28/2021 1:47 PM	15:01	6.26 pH	11.33 °C	0.29 mS/cm	5.81 mg/L	4.21 NTU	183.8 mV	15.41 ft	75.00 ml/min
4/28/2021 1:48 PM	15:27	6.26 pH	11.79 °C	0.30 mS/cm	5.86 mg/L	3.18 NTU	183.6 mV	15.41 ft	75.00 ml/min
4/28/2021 1:51 PM	18:27	6.26 pH	11.82 °C	0.30 mS/cm	5.81 mg/L	8.26 NTU	184.6 mV	15.43 ft	75.00 ml/min
4/28/2021 1:54 PM	21:27	6.26 pH	11.59 °C	0.30 mS/cm	5.78 mg/L	1.56 NTU	185.3 mV	15.45 ft	75.00 ml/min
4/28/2021 1:57 PM	24:27	6.26 pH	11.51 °C	0.30 mS/cm	5.76 mg/L	1.41 NTU	186.0 mV	15.47 ft	75.00 ml/min
4/28/2021 2:00 PM	27:27	6.27 pH	11.79 °C	0.29 mS/cm	5.65 mg/L	0.86 NTU	186.5 mV	15.47 ft	75.00 ml/min

Samples

Sample ID:	Description:
LL3mw-237-210401-GW	Begin low flow purge at 1332(PSI 20/CPM 1/49/11). Stagnant water volume: 1,125 mL Stagnant water volume removed at 1347 Stable at 1400 Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 2,100 mL Sample for expanded explosives at 1405 on 04/28/2021.

Created using VuSitu from In-Situ, Inc.

Sampled By: Lindsey Moyer ,4/28/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 11:30:08 AM
Project: LL3mw-238
Sampler Name: Jasmine Stefansky

Location Name: LL3mw-238
Well Diameter: 2 in
Total Depth: 23.16 ft
Initial Depth to Water: 15.78 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.25 in
Tubing Length: 20 ft
Pump Intake From TOC: 19.91 ft
Estimated Total Volume Pumped: 1,543.333 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 50 ml/min
Final Draw Down: 0.3 ft

Instruments Used:
Aqua TROLL 600 - 532229
Controller (MP10) - 3564
Compressor - 18421
Water Level Meter - 39350

Test Notes: CPM

Weather Conditions:
Sunny 70°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 11:30 AM	00:00	7.06 pH	16.40 °C	0.34 mS/cm	7.77 mg/L	4.02 NTU	200.9 mV	15.78 ft	50.00 ml/min
4/28/2021 11:51 AM	21:34	6.71 pH	14.15 °C	0.34 mS/cm	4.83 mg/L	1.58 NTU	197.3 mV	15.78 ft	50.00 ml/min
4/28/2021 11:52 AM	21:52	6.71 pH	14.01 °C	0.34 mS/cm	4.83 mg/L	1.94 NTU	197.3 mV	16.03 ft	50.00 ml/min
4/28/2021 11:55 AM	24:52	6.70 pH	14.27 °C	0.34 mS/cm	4.81 mg/L	2.51 NTU	196.9 mV	16.04 ft	50.00 ml/min
4/28/2021 11:58 AM	27:52	6.72 pH	14.18 °C	0.34 mS/cm	4.81 mg/L	2.23 NTU	195.0 mV	16.06 ft	50.00 ml/min
4/28/2021 12:01 PM	30:52	6.71 pH	14.02 °C	0.34 mS/cm	4.76 mg/L	3.16 NTU	194.6 mV	16.08 ft	50.00 ml/min

Samples

Sample ID:	Description:
LL3mw-238-210401-GW	Begin low flow purge at 11:28 Stagnant water volume: 1,050 mL Stagnant water removed at 21:34 (11:51) Stable at 30:52 (12:01) Water clear, colorless, odorless throughout purge Measured total volume purged: 1,650 mL Sample for expanded explosives, alkalinity, sulfate, sulfide, nitrate, nitrite, and TOC at 12:02 on 4/28/2021

Created using VuSitu from In-Situ, Inc.

Sampled By: ,4/28/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 12:17:08 PM
Project: LL3mw-239
Operator Name: Danielle Anderson

Location Name: LL3mw-239 **Well Diameter: 2 in** **Total Depth: 36.59 ft** **Initial Depth to Water: 24.8 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 31.42 ft** **Pump Intake From TOC: 31.42 ft** **Estimated Total Volume Pumped: 10185.417 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 80 ml/min** **Final Draw Down: 1.55 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 2 27:3 PSI 30
80 mL/min

Weather Conditions:
73°F mostly cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 12:17 PM	00:00	6.77 pH	19.50 °C	0.18 mS/cm	6.81 mg/L	12.21 NTU	143.9 mV	24.80 ft	125.00 ml/min
4/28/2021 12:30 PM	13:29	5.62 pH	12.62 °C	0.19 mS/cm	0.54 mg/L	347.28 NTU	200.9 mV	26.22 ft	80.00 ml/min
4/28/2021 12:33 PM	16:29	5.62 pH	12.86 °C	0.19 mS/cm	0.57 mg/L	166.15 NTU	200.9 mV	26.22 ft	80.00 ml/min
4/28/2021 12:36 PM	19:10	5.63 pH	12.54 °C	0.19 mS/cm	0.46 mg/L	154.66 NTU	202.2 mV	26.22 ft	80.00 ml/min
4/28/2021 12:39 PM	22:10	5.63 pH	12.46 °C	0.19 mS/cm	0.39 mg/L	153.41 NTU	202.3 mV	26.35 ft	80.00 ml/min
4/28/2021 12:42 PM	25:10	5.65 pH	12.49 °C	0.19 mS/cm	0.37 mg/L	116.07 NTU	202.4 mV	26.35 ft	80.00 ml/min
4/28/2021 12:45 PM	28:10	5.67 pH	12.76 °C	0.19 mS/cm	0.36 mg/L	68.46 NTU	201.7 mV	26.35 ft	80.00 ml/min
4/28/2021 12:48 PM	31:10	5.78 pH	12.81 °C	0.19 mS/cm	2.97 mg/L	38.10 NTU	194.6 mV	26.35 ft	80.00 ml/min
4/28/2021 12:51 PM	34:10	5.75 pH	12.79 °C	0.19 mS/cm	0.54 mg/L	51.39 NTU	195.1 mV	26.35 ft	80.00 ml/min
4/28/2021 12:54 PM	37:10	5.77 pH	12.83 °C	0.19 mS/cm	0.34 mg/L	94.40 NTU	193.9 mV	26.35 ft	80.00 ml/min
4/28/2021 12:57 PM	40:10	5.81 pH	12.83 °C	0.19 mS/cm	0.30 mg/L	57.78 NTU	192.3 mV	26.35 ft	80.00 ml/min
4/28/2021 1:00 PM	43:10	5.85 pH	12.76 °C	0.19 mS/cm	0.29 mg/L	40.26 NTU	191.2 mV	26.35 ft	80.00 ml/min

4/28/2021 1:03 PM	46:10	5.88 pH	12.52 °C	0.19 mS/cm	0.28 mg/L	19.62 NTU	190.7 mV	26.35 ft	80.00 ml/min
4/28/2021 1:06 PM	49:10	5.88 pH	12.27 °C	0.19 mS/cm	0.26 mg/L	13.31 NTU	191.4 mV	26.35 ft	80.00 ml/min
4/28/2021 1:09 PM	52:10	5.88 pH	12.18 °C	0.19 mS/cm	0.25 mg/L	17.08 NTU	192.0 mV	26.35 ft	80.00 ml/min
4/28/2021 1:12 PM	55:10	5.93 pH	12.36 °C	0.19 mS/cm	1.03 mg/L	9.13 NTU	187.1 mV	26.35 ft	80.00 ml/min
4/28/2021 1:15 PM	58:10	5.92 pH	12.81 °C	0.19 mS/cm	0.32 mg/L	10.96 NTU	186.9 mV	26.35 ft	80.00 ml/min
4/28/2021 1:18 PM	01:01:10	5.94 pH	12.77 °C	0.19 mS/cm	0.28 mg/L	10.89 NTU	186.8 mV	26.35 ft	80.00 ml/min
4/28/2021 1:19 PM	01:02:44	5.94 pH	12.70 °C	0.19 mS/cm	0.28 mg/L	11.53 NTU	296.9 mV	26.35 ft	80.00 ml/min
4/28/2021 1:22 PM	01:05:44	5.93 pH	12.67 °C	0.19 mS/cm	0.40 mg/L	14.88 NTU	233.1 mV	26.35 ft	80.00 ml/min
4/28/2021 1:25 PM	01:08:44	5.94 pH	12.74 °C	0.19 mS/cm	0.34 mg/L	9.95 NTU	217.3 mV	26.35 ft	80.00 ml/min
4/28/2021 1:28 PM	01:11:44	5.96 pH	12.81 °C	0.19 mS/cm	0.34 mg/L	11.19 NTU	210.6 mV	26.35 ft	80.00 ml/min
4/28/2021 1:31 PM	01:14:44	5.96 pH	12.70 °C	0.19 mS/cm	0.29 mg/L	16.76 NTU	206.4 mV	26.35 ft	80.00 ml/min
4/28/2021 1:34 PM	01:17:44	5.96 pH	12.21 °C	0.19 mS/cm	0.27 mg/L	25.44 NTU	204.4 mV	26.35 ft	80.00 ml/min
4/28/2021 1:37 PM	01:20:44	5.96 pH	12.17 °C	0.19 mS/cm	0.47 mg/L	5.31 NTU	202.9 mV	26.35 ft	80.00 ml/min
4/28/2021 1:40 PM	01:23:44	5.95 pH	12.11 °C	0.19 mS/cm	0.22 mg/L	16.48 NTU	202.2 mV	26.35 ft	80.00 ml/min
4/28/2021 1:43 PM	01:26:44	5.96 pH	12.08 °C	0.19 mS/cm	0.58 mg/L	14.26 NTU	199.7 mV	26.35 ft	80.00 ml/min
4/28/2021 1:46 PM	01:29:44	5.96 pH	12.00 °C	0.19 mS/cm	0.20 mg/L	14.11 NTU	198.0 mV	26.35 ft	80.00 ml/min
4/28/2021 1:49 PM	01:32:44	5.97 pH	11.98 °C	0.19 mS/cm	0.19 mg/L	19.33 NTU	197.1 mV	26.35 ft	80.00 ml/min
4/28/2021 1:52 PM	01:35:44	5.97 pH	12.13 °C	0.19 mS/cm	0.18 mg/L	27.66 NTU	195.6 mV	26.35 ft	80.00 ml/min
4/28/2021 1:55 PM	01:38:44	5.99 pH	12.21 °C	0.19 mS/cm	0.19 mg/L	40.21 NTU	193.3 mV	26.35 ft	80.00 ml/min
4/28/2021 1:58 PM	01:41:44	6.00 pH	12.14 °C	0.19 mS/cm	0.20 mg/L	58.41 NTU	192.8 mV	26.35 ft	80.00 ml/min
4/28/2021 2:01 PM	01:44:44	6.00 pH	11.73 °C	0.19 mS/cm	0.18 mg/L	65.42 NTU	191.8 mV	26.35 ft	80.00 ml/min
4/28/2021 2:04 PM	01:47:44	6.21 pH	12.61 °C	0.18 mS/cm	8.67 mg/L	7.92 NTU	187.3 mV	26.35 ft	80.00 ml/min
4/28/2021 2:07 PM	01:50:44	6.03 pH	11.80 °C	0.19 mS/cm	0.38 mg/L	0.03 NTU	184.6 mV	26.35 ft	80.00 ml/min
4/28/2021 2:10 PM	01:53:44	6.02 pH	11.58 °C	0.19 mS/cm	0.16 mg/L	0.02 NTU	184.7 mV	26.35 ft	80.00 ml/min
4/28/2021 2:13 PM	01:56:44	6.02 pH	11.60 °C	0.19 mS/cm	0.15 mg/L	2.51 NTU	185.3 mV	26.35 ft	80.00 ml/min
4/28/2021 2:16 PM	01:59:44	6.02 pH	11.53 °C	0.19 mS/cm	0.16 mg/L	0.00 NTU	186.1 mV	26.35 ft	80.00 ml/min

Samples

Sample ID:	Description:
LL3mw-239-210401-GW	Begin low flow purge at 12:17 PM PSI 30 CPM 2/27/3 Stagnant water volume: 1,404.82 mL Stagnant water volume removed at 12:30 PM Stable at 2:16 PM Water was orange, turbid, and odorless at the beginning of the purge and slowly became clear, colorless, and odorless throughout purge. Measured total volume purged: 10,130 mL Sample for explosives, alkalinity, TOC, and sulfide at 1417 on 04/28/2021.

Sampled By: ,4/28/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/28/2021 1:07:45 PM
Project: LL3mw-241
Sampler Name: Jasmine Stefansky

Location Name: LL3mw-241 **Well Diameter: 2 in** **Total Depth: 25.36 ft** **Initial Depth to Water: 10.27 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 36 ft** **Pump Intake From TOC: 17.94 ft** **Estimated Total Volume Pumped: 16,470.834 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 250 ml/min** **Final Draw Down: 0.45 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 3 17.5:2.5 PSI 20
250 mL/min

Weather Conditions:
Overcast 75°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/28/2021 1:07 PM	00:00	6.80 pH	14.42 °C	0.20 mS/cm	7.97 mg/L	0.41 NTU	213.5 mV	10.27 ft	250.00 ml/min
4/28/2021 1:16 PM	08:27	5.77 pH	10.36 °C	0.18 mS/cm	4.70 mg/L	1.33 NTU	258.1 mV	10.27 ft	250.00 ml/min
4/28/2021 1:16 PM	08:53	5.78 pH	10.35 °C	0.18 mS/cm	4.62 mg/L	1.82 NTU	258.2 mV	10.72 ft	250.00 ml/min
4/28/2021 1:19 PM	11:53	5.75 pH	10.16 °C	0.18 mS/cm	4.34 mg/L	2.21 NTU	259.5 mV	10.72 ft	250.00 ml/min
4/28/2021 1:22 PM	14:53	5.74 pH	10.11 °C	0.18 mS/cm	4.18 mg/L	4.04 NTU	259.9 mV	10.72 ft	250.00 ml/min
4/28/2021 1:25 PM	17:53	5.76 pH	10.22 °C	0.18 mS/cm	4.05 mg/L	5.85 NTU	259.0 mV	10.72 ft	250.00 ml/min
4/28/2021 1:28 PM	20:53	5.77 pH	10.07 °C	0.18 mS/cm	3.96 mg/L	12.23 NTU	258.7 mV	10.72 ft	250.00 ml/min
4/28/2021 1:31 PM	23:53	5.78 pH	10.07 °C	0.18 mS/cm	3.85 mg/L	12.78 NTU	258.2 mV	10.72 ft	250.00 ml/min
4/28/2021 1:34 PM	26:53	5.81 pH	10.03 °C	0.18 mS/cm	3.79 mg/L	17.99 NTU	256.8 mV	10.72 ft	250.00 ml/min
4/28/2021 1:37 PM	29:53	5.82 pH	9.97 °C	0.18 mS/cm	3.77 mg/L	24.92 NTU	256.4 mV	10.72 ft	250.00 ml/min
4/28/2021 1:40 PM	32:53	5.83 pH	10.06 °C	0.17 mS/cm	3.69 mg/L	28.01 NTU	255.8 mV	10.72 ft	250.00 ml/min
4/28/2021 1:43 PM	35:53	5.83 pH	10.04 °C	0.17 mS/cm	3.65 mg/L	33.50 NTU	255.2 mV	10.72 ft	250.00 ml/min

4/28/2021 1:46PM	38:53	5.83 pH	10.07 °C	0.17 mS/cm	3.61 mg/L	41.10 NTU	254.9 mV	10.72 ft	250.00 ml/min
4/28/2021 1:49 PM	41:53	5.85 pH	10.16 °C	0.17 mS/cm	3.57 mg/L	41.22 NTU	253.9 mV	10.72 ft	250.00 ml/min
4/28/2021 1:52 PM	44:53	5.85 pH	10.08 °C	0.17 mS/cm	3.56 mg/L	52.50 NTU	253.4 mV	10.72 ft	250.00 ml/min
4/28/2021 1:55 PM	47:53	5.86 pH	10.09 °C	0.17 mS/cm	3.51 mg/L	60.14 NTU	252.9 mV	10.72 ft	250.00 ml/min
4/28/2021 1:58 PM	50:53	5.88 pH	10.19 °C	0.17 mS/cm	3.49 mg/L	72.23 NTU	251.8 mV	10.72 ft	250.00 ml/min
4/28/2021 2:01 PM	53:53	5.88 pH	10.19 °C	0.17 mS/cm	3.46 mg/L	97.54 NTU	251.2 mV	10.72 ft	250.00 ml/min
4/28/2021 2:04 PM	56:53	5.94 pH	10.77 °C	0.17 mS/cm	4.15 mg/L	0.00 NTU	246.5 mV	10.72 ft	250.00 ml/min
4/28/2021 2:07 PM	59:53	5.94 pH	10.32 °C	0.17 mS/cm	3.59 mg/L	0.00 NTU	245.9 mV	10.72 ft	250.00 ml/min
4/28/2021 2:10 PM	01:02:53	5.94 pH	10.24 °C	0.17 mS/cm	3.51 mg/L	0.00 NTU	246.1 mV	10.72 ft	250.00 ml/min
4/28/2021 2:13 PM	01:05:53	5.95 pH	10.23 °C	0.17 mS/cm	3.47 mg/L	0.00 NTU	245.8 mV	10.72 ft	250.00 ml/min

Samples

Sample ID:	Description:
LL3mw-241-210401-GW	Begin low flow purge at 13:08 (PSI 20 CPM 3 r17.5 d 2.5) Stagnant water volume: 2,000 mL Stagnant water volume removed at 8:27 (13:16) Stable at 1:05:53 (14:13) Water clear, colorless, odorless throughout purge Measured total volume purged: 15,000 mL Sample for expanded explosives at 14:15 on 4/28/2021 *Note cleaned flow cell to try to reduce turbidity at 54:53

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Sampled By: ,4/28/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 5/5/2021 12:54:43 PM
Project: LL3mw-245
Operator Name: Danielle Anderson

Location Name: LL3mw-245
Well Diameter: 2 in
Total Depth: 49.25 ft
Initial Depth to Water: 12.54 ft

Pump Type: QED MP-10 Portable Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.25 in
Tubing Length: 74 ft
Pump Intake From TOC: 48 ft
Estimated Total Volume Pumped: 10,600 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 400 ml/min
Final Draw Down: 0.26 ft

Instruments Used:
Aqua TROLL 600 - 514551
Controller (MP50) - 042344
Water Level Meter - 41832

Test Notes:
CPM 4 10.5/4.5 PSI 40
400 mL/min

Weather Conditions:
48°F cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/5/2021 12:54 PM	00:00	7.44 pH	14.20 °C	0.00 mS/cm	9.49 mg/L	0.00 NTU	231.9 mV	12.54 ft	275.00 ml/min
5/5/2021 12:57 PM	03:00	7.11 pH	11.46 °C	0.79 mS/cm	4.77 mg/L	6.40 NTU	234.5 mV	12.54 ft	375.00 ml/min
5/5/2021 1:00 PM	06:00	6.97 pH	11.12 °C	0.80 mS/cm	1.92 mg/L	6.85 NTU	229.7 mV	12.54 ft	375.00 ml/min
5/5/2021 1:01 PM	06:40	6.96 pH	11.05 °C	0.80 mS/cm	1.71 mg/L	9.02 NTU	220.4 mV	12.80 ft	400.00 ml/min
5/5/2021 1:04 PM	09:40	6.93 pH	10.93 °C	0.81 mS/cm	0.91 mg/L	28.04 NTU	140.7 mV	12.80 ft	400.00 ml/min
5/5/2021 1:07 PM	12:40	6.92 pH	10.82 °C	0.81 mS/cm	0.63 mg/L	33.00 NTU	86.7 mV	12.80 ft	400.00 ml/min
5/5/2021 1:10 PM	15:40	6.93 pH	10.78 °C	0.81 mS/cm	0.78 mg/L	0.00 NTU	61.3 mV	12.80 ft	400.00 ml/min
5/5/2021 1:13 PM	18:40	6.93 pH	10.69 °C	0.81 mS/cm	0.60 mg/L	0.00 NTU	47.1 mV	12.80 ft	400.00 ml/min
5/5/2021 1:16 PM	21:40	6.94 pH	10.72 °C	0.81 mS/cm	0.46 mg/L	0.00 NTU	35.2 mV	12.80 ft	400.00 ml/min
5/5/2021 1:19 PM	24:40	6.96 pH	10.69 °C	0.81 mS/cm	0.51 mg/L	0.38 NTU	26.7 mV	12.80 ft	400.00 ml/min
5/5/2021 1:22 PM	27:40	6.97 pH	10.66 °C	0.81 mS/cm	0.45 mg/L	0.00 NTU	20.3 mV	12.80 ft	400.00 ml/min

Samples

Sample ID:	Description:
LL3mw-245-210401-GW	Begin low flow purge at 12:54PM (PSI 40/CPM 4/10.5/4.5) Stagnant water volume: 1,807.06 mL Stagnant water volume removed at 1:01PM Stable at 1:22PM Water is clear, colorless, and odorless throughout purge. Flow rate was able to be increased without draw down Measured total volume purged: 10,380 mL Sample for explosives at 1322 on 05/05/2021.

Sampled By: ,5/05/2021

QA Check By: ,5/17/2021

RVAAP-12 LOAD LINE 12

Low-Flow Test Report:

Test Date / Time: 5/3/2021 8:36:43 AM
Project: LL12mw-185
Sampler Name: Jasmine Stefansky

Location Name: LL12mw-185 **Well Diameter: 2 in** **Initial Depth to Water: 6.71 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 30 ft** **Pump Intake From TOC: 17.94 ft** **Estimated Total Volume Pumped: 3,250.417 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 25 ml/min** **Final Draw Down: 3.56 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 2 29:1 PSI 12
25 mL/min

Weather Conditions:
55°F rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/3/2021 8:36 AM	00:00	6.68 pH	14.02 °C	4.77 mS/cm	3.86 mg/L	0.00 NTU	242.6 mV	6.71 ft	25.00 ml/min
5/3/2021 9:09 AM	33:15	6.65 pH	11.51 °C	4.70 mS/cm	1.48 mg/L	26.26 NTU	234.0 mV	7.88 ft	25.00 ml/min
5/3/2021 9:12 AM	36:15	6.65 pH	11.45 °C	4.70 mS/cm	1.46 mg/L	31.13 NTU	232.9 mV	7.92 ft	25.00 ml/min
5/3/2021 9:15 AM	39:15	6.65 pH	11.50 °C	4.70 mS/cm	1.46 mg/L	46.36 NTU	231.6 mV	8.02 ft	25.00 ml/min
5/3/2021 9:18 AM	42:15	6.65 pH	11.57 °C	4.70 mS/cm	1.48 mg/L	52.01 NTU	230.5 mV	8.12 ft	25.00 ml/min
5/3/2021 9:22 AM	45:17	6.66 pH	11.57 °C	4.72 mS/cm	1.46 mg/L	63.23 NTU	229.1 mV	8.30 ft	100.00 ml/min
5/3/2021 9:37 AM	01:00:17	6.65 pH	10.20 °C	4.72 mS/cm	0.47 mg/L	42.13 NTU	222.2 mV	9.98 ft	100.00 ml/min
5/3/2021 9:37 AM	01:00:28	6.65 pH	10.25 °C	4.72 mS/cm	0.46 mg/L	42.04 NTU	222.3 mV	9.98 ft	25.00 ml/min
5/3/2021 9:40 AM	01:03:28	6.65 pH	10.65 °C	4.71 mS/cm	0.44 mg/L	50.60 NTU	221.1 mV	10.10 ft	25.00 ml/min
5/3/2021 9:43 AM	01:06:28	6.65 pH	11.18 °C	4.72 mS/cm	0.50 mg/L	66.52 NTU	220.2 mV	10.03 ft	25.00 ml/min
5/3/2021 9:46 AM	01:09:28	7.69 pH	12.48 °C	0.00 mS/cm	10.20 mg/L	0.00 NTU	200.9 mV	10.16 ft	25.00 ml/min
5/3/2021 9:49 AM	01:12:28	6.66 pH	12.11 °C	4.64 mS/cm	1.65 mg/L	0.30 NTU	213.8 mV	10.18 ft	25.00 ml/min

5/3/2021 9:52 AM	01:15:28	6.65 pH	12.16 °C	4.68 mS/cm	1.10 mg/L	0.00 NTU	213.3 mV	10.22 ft	25.00 ml/min
5/3/2021 9:55 AM	01:18:28	6.65 pH	12.32 °C	4.68 mS/cm	1.34 mg/L	0.00 NTU	212.9 mV	10.25 ft	25.00 ml/min
5/3/2021 9:58 AM	01:21:28	6.65 pH	12.40 °C	4.69 mS/cm	1.32 mg/L	0.00 NTU	212.4 mV	10.27 ft	25.00 ml/min
5/3/2021 10:01 AM	01:24:28	6.65 pH	12.42 °C	4.70 mS/cm	1.30 mg/L	0.00 NTU	211.8 mV	10.27 ft	25.00 ml/min

Samples

Sample ID:	Description:
LL12mw-185-210401-GW-MS/MSD, LL12mw-185-210402-GW, LL12mw-185-210403-GW	Begin low flow purge at 0829 PSI 12, CPM 2, r29,/d1 Stagnant water volume: 2,790 mL Stagnant water removed at: 1:00:28 (9:40) Note: pre purge would have been 79 mins, so purged at 25ml from 0-42:15 then switched to 100ml until 1:00:17, then reduced flow due to drawdown Stable at 1:24:28 (10:01). Cleaned flow cell at 1:06:18 so that is why 1:09:18 fell out of stability. Cleaned flow cell out to reduce turbidity. Water clear, colorless, odorless throughout purge Measured total volume purged: 3,250 mL Sample for ammonia and nitrate at 10:05 on 5/3/2021 Collected duplicate, ms/msd (ammonia only), and collected split sample

Sampled By: ,5/03/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 5/3/2021 8:41:43 AM
Project: LL12mw-187
Sampler Name: Lindsey Moyer

Location Name: LL12mw-187 **Well Diameter: 2 in** **Initial Depth to Water: 8.81 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 44 ft** **Pump Intake From TOC: 24.5 ft** **Estimated Total Volume Pumped: 9,269.167 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 175 ml/min** **Final Draw Down: 0.82 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:

CPM 1 47:13 PSI 20

175 mL/min

Weather Conditions:

Cloudy/rain 55°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/3/2021 8:41 AM	00:00	6.28 pH	12.33 °C	12.12 mS/cm	3.26 mg/L	0.56 NTU	253.5 mV	8.81 ft	175.00 ml/min
5/3/20 A									175.00 ml/min
5/3/2021 8:55 AM	13:58	6.26 pH	10.21 °C	12.43 mS/cm	0.04 mg/L	41.74 NTU	266.0 mV	9.55 ft	175.00 ml/min
5/3/2021 8:58 AM	16:58	6.27 pH	10.37 °C	12.50 mS/cm	0.06 mg/L	60.33 NTU	265.9 mV	9.55 ft	175.00 ml/min
5/3/2021 9:01 AM	19:58	6.26 pH	10.35 °C	12.47 mS/cm	0.05 mg/L	133.08 NTU	265.1 mV	9.57 ft	175.00 ml/min
5/3/2021 9:04 AM	22:58	6.26 pH	10.34 °C	12.69 mS/cm	0.63 mg/L	0.00 NTU	267.8 mV	9.57 ft	175.00 ml/min
5/3/2021 9:07 AM	25:58	6.25 pH	10.24 °C	12.72 mS/cm	0.08 mg/L	0.33 NTU	266.6 mV	9.60 ft	175.00 ml/min
5/3/2021 9:10 AM	28:58	6.25 pH	10.29 °C	12.73 mS/cm	0.07 mg/L	3.62 NTU	265.8 mV	9.60 ft	175.00 ml/min
5/3/2021 9:13 AM	31:58	6.25 pH	10.21 °C	12.73 mS/cm	0.08 mg/L	42.06 NTU	264.9 mV	9.62 ft	175.00 ml/min
5/3/2021 9:16 AM	34:58	6.25 pH	10.21 °C	12.69 mS/cm	0.13 mg/L	1.06 NTU	265.8 mV	9.62 ft	175.00 ml/min

5/3/2021 9:19 AM	37:58	6.24 pH	10.42 °C	12.37 mS/cm	0.12 mg/L	5.32 NTU	265.8 mV	9.62 ft	175.00 ml/min
5/3/2021 9:22 AM	40:58	6.24 pH	10.43 °C	12.79 mS/cm	0.09 mg/L	9.01 NTU	265.9 mV	9.63 ft	175.00 ml/min
5/3/2021 9:25 AM	43:58	6.24 pH	10.26 °C	12.83 mS/cm	0.07 mg/L	38.20 NTU	265.5 mV	9.63 ft	175.00 ml/min
5/3/2021 9:28 AM	46:58	6.24 pH	10.23 °C	12.92 mS/cm	0.16 mg/L	0.00 NTU	265.5 mV	9.63 ft	175.00 ml/min
5/3/2021 9:31 AM	49:58	6.24 pH	10.26 °C	12.93 mS/cm	0.05 mg/L	4.88 NTU	264.2 mV	9.63 ft	175.00 ml/min
5/3/2021 9:34 AM	52:58	6.24 pH	10.30 °C	12.99 mS/cm	0.04 mg/L	1.65 NTU	263.4 mV	9.63 ft	175.00 ml/min

Samples

Sample ID:	Description:
LL12mw-187-210401-GW	Begin low flow purge at 0841 (PSI 20/CPM1/47/13) Stagnant water volume: 2,450 mL Stagnant water volume removed at 0855 Stable at 0934 Water is clear, colorless, and odorless at beginning and the end of purge. The water got slightly cloudy after stagnant water purge. Cleaned out flow cell at 0903 and 0927. Measured total volume purged: 9,275 mL Sample for nitrate and ammonia at 0940 on 05/03/2021.

Sampled By: Lindsey Moyer ,5/03/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/3/2021 11:24:00 AM
Project: LL12mw-244
Operator Name: Danielle Anderson

Location Name: LL12mw-244
Well Diameter: 2 in
Total Depth: 32.05 ft
Initial Depth to Water: 9.11 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.25 in
Tubing Length: 42 ft
Pump Intake From TOC: 29 ft
Estimated Total Volume Pumped: 11075.417 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 75 ml/min
Final Draw Down: 2.95 ft

Instruments Used:
Aqua TROLL 600 - 514551
Controller (MP10) - 14975
Compressor - 21426
Water Level Meter - 41832

Test Notes:
CPM 1 58:2 PSI 25
75 mL/min

Weather Conditions:
55°F cloudy, rainy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/3/2021 11:24 AM	00:00	7.40 pH	12.04 °C	0.58 mS/cm	5.71 mg/L	58.43 NTU	100.9 mV	9.11 ft	175.00 ml/min
5/3/2021 11:25 AM	01:31	7.35 pH	12.24 °C	0.59 mS/cm	4.99 mg/L	6,585.0 NTU	157.1 mV	9.11 ft	175.00 ml/min
5/3/2021 11:32 AM	08:28	7.22 pH	11.00 °C	0.59 mS/cm	0.85 mg/L	5,572.6 NTU	157.1 mV	9.11 ft	175.00 ml/min
5/3/2021 11:33 AM	09:43	7.22 pH	10.94 °C	0.59 mS/cm	0.61 mg/L	6,857.4 NTU	139.8 mV	11.80 ft	100.00 ml/min
5/3/2021 11:36 AM	12:43	7.22 pH	11.06 °C	0.59 mS/cm	0.53 mg/L	6,897.3 NTU	111.3 mV	11.80 ft	100.00 ml/min
5/3/2021 11:39 AM	15:43	7.24 pH	11.36 °C	0.59 mS/cm	0.58 mg/L	7,359.9 NTU	97.5 mV	11.85 ft	75.00 ml/min
5/3/2021 11:42 AM	18:43	7.26 pH	11.71 °C	0.60 mS/cm	0.63 mg/L	7,353.4 NTU	89.2 mV	11.85 ft	75.00 ml/min
5/3/2021 11:45 AM	21:43	7.27 pH	11.77 °C	0.60 mS/cm	0.65 mg/L	7,388.6 NTU	84.4 mV	11.85 ft	75.00 ml/min
5/3/2021 11:48 AM	24:43	7.27 pH	11.89 °C	0.59 mS/cm	0.67 mg/L	7,721.9 NTU	81.3 mV	11.85 ft	75.00 ml/min
5/3/2021 11:51 AM	27:43	7.27 pH	11.84 °C	0.59 mS/cm	0.64 mg/L	7,780.6 NTU	78.6 mV	11.85 ft	75.00 ml/min
5/3/2021 11:54 AM	30:43	7.27 pH	11.87 °C	0.59 mS/cm	0.59 mg/L	7,599.9 NTU	75.2 mV	11.85 ft	75.00 ml/min
5/3/2021 11:57 AM	33:43	7.27 pH	11.91 °C	0.59 mS/cm	0.55 mg/L	7,767.1 NTU	71.1 mV	11.85 ft	75.00 ml/min

5/3/2021 12:00 PM	36:43	7.27 pH	11.92 °C	0.59 mS/cm	0.53 mg/L	7,231.9 NTU	66.7 mV	11.85 ft	75.00 ml/min
5/3/2021 12:03 PM	39:43	7.27 pH	11.93 °C	0.59 mS/cm	0.52 mg/L	6,865.7 NTU	62.7 mV	11.85 ft	75.00 ml/min
5/3/2021 12:06 PM	42:43	7.27 pH	11.88 °C	0.59 mS/cm	0.49 mg/L	7,458.2 NTU	58.6 mV	11.85 ft	75.00 ml/min
5/3/2021 12:09 PM	45:43	7.27 pH	11.84 °C	0.59 mS/cm	0.46 mg/L	7,471.4 NTU	54.3 mV	11.85 ft	75.00 ml/min
5/3/2021 12:12 PM	48:43	7.27 pH	11.82 °C	0.59 mS/cm	0.44 mg/L	7,571.4 NTU	50.4 mV	11.85 ft	75.00 ml/min
5/3/2021 12:15 PM	51:43	7.27 pH	11.83 °C	0.59 mS/cm	0.42 mg/L	7,621.7 NTU	46.3 mV	11.85 ft	75.00 ml/min
5/3/2021 12:18 PM	54:43	7.27 pH	11.86 °C	0.59 mS/cm	0.41 mg/L	7,698.6 NTU	42.6 mV	12.06 ft	75.00 ml/min
5/3/2021 12:21 PM	57:43	7.27 pH	11.95 °C	0.60 mS/cm	0.41 mg/L	7,098.2 NTU	39.2 mV	12.06 ft	75.00 ml/min
5/3/2021 12:24 PM	01:00:43	7.27 pH	12.17 °C	0.59 mS/cm	0.42 mg/L	7,815.7 NTU	36.6 mV	12.06 ft	75.00 ml/min
5/3/2021 12:27 PM	01:03:43	7.27 pH	12.10 °C	0.59 mS/cm	0.42 mg/L	6,978.1 NTU	34.2 mV	12.06 ft	75.00 ml/min
5/3/2021 12:30 PM	01:06:43	7.27 pH	12.09 °C	0.60 mS/cm	0.43 mg/L	6,531.4 NTU	32.1 mV	12.06 ft	75.00 ml/min
5/3/2021 12:33 PM	01:09:43	7.27 pH	12.11 °C	0.60 mS/cm	0.42 mg/L	7,249.1 NTU	29.8 mV	12.06 ft	75.00 ml/min
5/3/2021 12:36 PM	01:12:43	7.27 pH	12.04 °C	0.59 mS/cm	0.40 mg/L	7,343.4 NTU	27.4 mV	12.06 ft	75.00 ml/min
5/3/2021 12:39 PM	01:15:43	7.27 pH	12.01 °C	0.59 mS/cm	0.38 mg/L	7,448.9 NTU	25.0 mV	12.06 ft	75.00 ml/min
5/3/2021 12:42 PM	01:18:43	7.27 pH	12.00 °C	0.59 mS/cm	0.36 mg/L	7,545.2 NTU	22.5 mV	12.06 ft	75.00 ml/min
5/3/2021 12:45 PM	01:21:43	7.27 pH	12.07 °C	0.59 mS/cm	0.35 mg/L	7,453.8 NTU	19.8 mV	12.06 ft	75.00 ml/min
5/3/2021 12:48 PM	01:24:43	7.27 pH	12.09 °C	0.59 mS/cm	0.34 mg/L	7,925.2 NTU	17.8 mV	12.06 ft	75.00 ml/min
5/3/2021 12:51 PM	01:27:43	7.27 pH	12.15 °C	0.59 mS/cm	0.34 mg/L	7,543.3 NTU	16.1 mV	12.06 ft	75.00 ml/min
5/3/2021 12:54 PM	01:30:43	7.27 pH	12.15 °C	0.59 mS/cm	0.33 mg/L	6,064.5 NTU	14.6 mV	12.06 ft	75.00 ml/min
5/3/2021 12:57 PM	01:33:43	7.27 pH	12.18 °C	0.59 mS/cm	0.32 mg/L	7,251.9 NTU	13.0 mV	12.06 ft	75.00 ml/min
5/3/2021 1:00 PM	01:36:43	7.27 pH	12.18 °C	0.59 mS/cm	0.31 mg/L	7,340.3 NTU	11.3 mV	12.06 ft	75.00 ml/min
5/3/2021 1:03 PM	01:39:43	7.27 pH	12.19 °C	0.59 mS/cm	0.30 mg/L	7,435.3 NTU	9.9 mV	12.06 ft	75.00 ml/min
5/3/2021 1:06 PM	01:42:43	7.27 pH	12.25 °C	0.59 mS/cm	0.29 mg/L	7,503.9 NTU	8.4 mV	12.06 ft	75.00 ml/min
5/3/2021 1:09 PM	01:45:43	7.27 pH	12.21 °C	0.59 mS/cm	0.27 mg/L	7,596.0 NTU	6.9 mV	12.06 ft	75.00 ml/min
5/3/2021 1:12 PM	01:48:43	7.26 pH	12.23 °C	0.59 mS/cm	0.27 mg/L	7,611.2 NTU	5.8 mV	12.06 ft	75.00 ml/min
5/3/2021 1:15 PM	01:51:43	7.25 pH	12.30 °C	0.59 mS/cm	0.27 mg/L	7,711.9 NTU	5.3 mV	12.06 ft	75.00 ml/min
5/3/2021 1:18 PM	01:54:43	7.26 pH	12.40 °C	0.59 mS/cm	0.26 mg/L	7,037.0 NTU	4.0 mV	12.06 ft	75.00 ml/min
5/3/2021 1:21 PM	01:57:43	7.26 pH	12.47 °C	0.59 mS/cm	0.26 mg/L	5,846.2 NTU	3.0 mV	12.06 ft	75.00 ml/min
5/3/2021 1:24 PM	02:00:43	7.25 pH	12.35 °C	0.59 mS/cm	0.25 mg/L	7,207.7 NTU	108.2 mV	12.06 ft	75.00 ml/min

5/3/2021 1:27 PM	02:03:43	7.26 pH	12.34 °C	0.59 mS/cm	0.25 mg/L	7,380.5 NTU	37.6 mV	12.06 ft	75.00 ml/min
5/3/2021 1:30 PM	02:06:43	7.26 pH	12.31 °C	0.59 mS/cm	0.25 mg/L	7,416.5 NTU	22.2 mV	12.06 ft	75.00 ml/min
5/3/2021 1:33 PM	02:09:43	7.26 pH	12.22 °C	0.59 mS/cm	0.24 mg/L	7,531.1 NTU	14.6 mV	12.06 ft	75.00 ml/min
5/3/2021 1:36 PM	02:12:43	7.26 pH	12.21 °C	0.59 mS/cm	0.24 mg/L	7,537.2 NTU	9.8 mV	12.06 ft	75.00 ml/min

Samples

Sample ID:	Description:
LL12mw-244-210401-GW	Begin low flow purge at 11:24 AM (PSI 25/CPM 1/58/2) Stagnant water volume: 1,929.69 mL Stagnant water volume removed at 11:33 AM Stagnant water purge took longer than expected, therefore there are extra readings before all stagnant water was removed. Stable at 1:36 PM. Two hour purge due to turbid water. Water is turbid, gray, and odorless throughout purge. Flow rate adjusted to prevent drawdown Measured total volume purged: 10,280 mL Sample for nitrate and ammonia at 1336 on 05/03/2021.

Sampled By: ,5/03/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/5/2021 11:09:59 AM
Project: LL12mw-245
Sampler Name: Lindsey Moyer

Location Name: LL12mw-245 **Well Diameter: 2 in** **Total Depth: 30.5 ft** **Initial Depth to Water: 7.74 ft**	**Pump Type: QED Stainless Steel Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 42 ft** **Pump Intake From TOC: 25 ft** **Estimated Total Volume Pumped: 3,074.167 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 25 ml/min** **Final Draw Down: 5.09 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2, 23/7, PSI, 25, 25 mL/min

Weather Conditions: 48°F cloudy/damp/ light winds

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/5/2021 11:09 AM	00:00	6.96 pH	11.19 °C	1.18 mS/cm	3.46 mg/L	42.07 NTU	203.3 mV	7.74 ft	350.00 ml/min
5/5/2021 11:12 AM	02:33	6.78 pH	10.02 °C	1.20 mS/cm	1.58 mg/L	22.12 NTU	203.3 mV	11.36 ft	350.00 ml/min
5/5/2021 11:12 AM	02:47	6.76 pH	10.21 °C	1.20 mS/cm	1.55 mg/L	17.95 NTU	204.4 mV	11.36 ft	350.00 ml/min
5/5/2021 11:15 AM	05:47	6.65 pH	9.94 °C	1.20 mS/cm	1.42 mg/L	14.67 NTU	191.9 mV	12.07 ft	100.00 ml/min
5/5/2021 11:18 AM	08:47	6.67 pH	9.97 °C	1.21 mS/cm	1.45 mg/L	8.79 NTU	178.6 mV	12.53 ft	100.00 ml/min
5/5/2021 11:21 AM	11:47	6.68 pH	9.87 °C	1.21 mS/cm	1.43 mg/L	6.43 NTU	163.6 mV	12.85 ft	50.00 ml/min
5/5/2021 11:24 AM	14:47	6.70 pH	10.20 °C	1.21 mS/cm	1.50 mg/L	5.68 NTU	153.2 mV	12.90 ft	25.00 ml/min
5/5/2021 11:27 AM	17:47	6.71 pH	10.33 °C	1.21 mS/cm	1.67 mg/L	7.71 NTU	142.0 mV	12.90 ft	25.00 ml/min
5/5/2021 11:30 AM	20:47	6.71 pH	10.30 °C	1.21 mS/cm	1.81 mg/L	5.99 NTU	134.5 mV	12.83 ft	25.00 ml/min
5/5/2021 11:33 AM	23:47	6.72 pH	10.24 °C	1.21 mS/cm	1.80 mg/L	2.31 NTU	126.5 mV	12.83 ft	25.00 ml/min

5/5/2021 11:36 AM	26:47	6.73 pH	10.17 °C	1.21 mS/cm	1.82 mg/L	2.52 NTU	119.8 mV	12.83 ft	25.00 ml/min

Samples

Sample ID:	Description:
LL12mw-245-210401-GW	Begin low flow purge at 1109 (PSI 25/CPM 2/23/7) Stagnant water volume: 1,050 mL Stagnant water volume removed at 1112 Stable at 1136 Water is clear, colorless, and odorless at end of purge. Water at beginning of purge was clear, faint red tint, odorless. Water level was dropping after stagnant water purge at 1116 lowered to 100mL PSI 25/CPM 1/56/4. Water level still dropping lowered to 50 mL at 1119, PSI 22/ CPM 1/58/2. 1125 lowered to 25 mL, due to water level still dropping, PSI 20/CPM 1/59/1. Measured total volume purged: 3,000 mL Sample for nitrate and ammonia at 1140 on 05/05/2021.

Sampled By: Lindsey Moyer ,5/05/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/3/2021 8:42:00 AM
Project: LL12mw-246
Operator Name: Danielle Anderson

Location Name: LL12mw-246 **Well Diameter: 2 in** **Total Depth: 34.33 ft** **Initial Depth to Water: 15.75 ft**	**Pump Type: QED MP-10 Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 32 ft** **Pump Intake From TOC: 32 ft** **Estimated Total Volume Pumped: 19596.666 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 175 ml/min** **Final Draw Down: 1.43 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 2 27:3 PSI 30
175mL/min

Weather Conditions:
55°F rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/3/2021 8:42 AM	00:00	7.04 pH	16.13 °C	0.87 mS/cm	7.01 mg/L	96.47 NTU	239.5 mV	15.75 ft	200.00 ml/min
5/3/2021 8:45 AM	03:11	6.98 pH	12.08 °C	0.92 mS/cm	2.22 mg/L	244.75 NTU	59.1 mV	15.75 ft	200.00 ml/min
5/3/2021 8:48 AM	06:22	6.89 pH	11.48 °C	0.92 mS/cm	0.64 mg/L	112.98 NTU	28.9 mV	15.75 ft	200.00 ml/min
5/3/2021 8:50 AM	08:44	6.88 pH	11.39 °C	0.92 mS/cm	0.51 mg/L	73.39 NTU	18.3 mV	17.03 ft	175.00 ml/min
5/3/2021 8:53 AM	11:44	6.88 pH	11.35 °C	0.93 mS/cm	0.51 mg/L	58.13 NTU	7.0 mV	17.03 ft	175.00 ml/min
5/3/2021 8:56 AM	14:44	6.89 pH	11.34 °C	0.93 mS/cm	0.49 mg/L	75.24 NTU	-3.1 mV	17.03 ft	175.00 ml/min
5/3/2021 8:59 AM	17:44	6.90 pH	11.18 °C	0.93 mS/cm	0.47 mg/L	122.01 NTU	-9.1 mV	17.03 ft	175.00 ml/min
5/3/2021 9:02 AM	20:44	6.92 pH	11.17 °C	0.93 mS/cm	0.45 mg/L	56.94 NTU	-12.4 mV	17.31 ft	175.00 ml/min
5/3/2021 9:05 AM	23:44	6.93 pH	11.28 °C	0.93 mS/cm	0.44 mg/L	66.51 NTU	-16.2 mV	17.18 ft	175.00 ml/min
5/3/2021 9:08 AM	26:44	6.95 pH	11.32 °C	0.93 mS/cm	0.46 mg/L	91.25 NTU	-18.8 mV	17.18 ft	175.00 ml/min
5/3/2021 9:11 AM	29:44	6.97 pH	11.57 °C	0.93 mS/cm	0.96 mg/L	19.68 NTU	-24.8 mV	17.18 ft	175.00 ml/min
5/3/2021 9:14 AM	32:44	6.99 pH	11.21 °C	0.92 mS/cm	0.38 mg/L	16.35 NTU	-26.4 mV	17.18 ft	175.00 ml/min

5/3/2021 9:17 AM	35:44	7.00 pH	11.44 °C	0.93 mS/cm	0.40 mg/L	22.97 NTU	-26.4 mV	17.18 ft	175.00 ml/min
5/3/2021 9:20 AM	38:44	7.01 pH	11.57 °C	0.93 mS/cm	0.70 mg/L	17.93 NTU	-27.4 mV	17.18 ft	175.00 ml/min
5/3/2021 9:23 AM	41:44	7.02 pH	11.31 °C	0.92 mS/cm	0.34 mg/L	13.74 NTU	-29.5 mV	17.18 ft	175.00 ml/min
5/3/2021 9:26 AM	44:44	7.03 pH	11.27 °C	0.93 mS/cm	0.34 mg/L	19.61 NTU	-29.9 mV	17.18 ft	175.00 ml/min
5/3/2021 9:29 AM	47:44	7.03 pH	11.38 °C	0.93 mS/cm	0.34 mg/L	25.96 NTU	-30.3 mV	17.18 ft	175.00 ml/min
5/3/2021 9:32 AM	50:44	7.04 pH	11.72 °C	0.93 mS/cm	0.62 mg/L	11.03 NTU	-30.9 mV	17.18 ft	175.00 ml/min
5/3/2021 9:35 AM	53:44	7.05 pH	11.78 °C	0.92 mS/cm	0.41 mg/L	11.87 NTU	-32.2 mV	17.18 ft	175.00 ml/min
5/3/2021 9:38 AM	56:44	7.05 pH	11.78 °C	0.92 mS/cm	0.37 mg/L	13.56 NTU	-33.8 mV	17.18 ft	175.00 ml/min
5/3/2021 9:41 AM	59:44	7.06 pH	11.67 °C	0.92 mS/cm	0.34 mg/L	21.20 NTU	-34.9 mV	17.18 ft	175.00 ml/min
5/3/2021 9:44 AM	01:02:44	7.06 pH	11.26 °C	0.92 mS/cm	0.30 mg/L	32.85 NTU	-34.9 mV	17.18 ft	175.00 ml/min
5/3/2021 9:47 AM	01:05:44	7.06 pH	11.38 °C	0.92 mS/cm	0.54 mg/L	10.04 NTU	-33.6 mV	17.18 ft	175.00 ml/min
5/3/2021 9:50 AM	01:08:44	7.06 pH	11.51 °C	0.92 mS/cm	0.35 mg/L	9.93 NTU	-34.0 mV	17.18 ft	175.00 ml/min
5/3/2021 9:53 AM	01:11:44	7.06 pH	11.57 °C	0.92 mS/cm	0.30 mg/L	9.20 NTU	-35.4 mV	17.18 ft	175.00 ml/min
5/3/2021 9:56 AM	01:14:44	7.06 pH	11.56 °C	0.92 mS/cm	0.28 mg/L	10.52 NTU	-36.7 mV	17.18 ft	175.00 ml/min
5/3/2021 9:59 AM	01:17:44	7.06 pH	11.61 °C	0.92 mS/cm	0.28 mg/L	12.51 NTU	-37.4 mV	17.18 ft	175.00 ml/min
5/3/2021 10:02 AM	01:20:44	7.07 pH	11.52 °C	0.92 mS/cm	0.51 mg/L	6.29 NTU	-36.9 mV	17.18 ft	175.00 ml/min
5/3/2021 10:05 AM	01:23:44	7.06 pH	11.37 °C	0.92 mS/cm	0.27 mg/L	6.93 NTU	-37.1 mV	17.18 ft	175.00 ml/min
5/3/2021 10:08 AM	01:26:44	7.07 pH	11.35 °C	0.92 mS/cm	0.27 mg/L	8.15 NTU	-36.9 mV	17.18 ft	175.00 ml/min
5/3/2021 10:11 AM	01:29:44	7.07 pH	11.32 °C	0.92 mS/cm	0.27 mg/L	13.21 NTU	-36.7 mV	17.18 ft	175.00 ml/min
5/3/2021 10:14 AM	01:32:44	7.07 pH	11.46 °C	0.92 mS/cm	0.62 mg/L	8.77 NTU	-46.7 mV	17.18 ft	175.00 ml/min
5/3/2021 10:17 AM	01:35:44	7.07 pH	11.43 °C	0.92 mS/cm	0.53 mg/L	6.32 NTU	-43.5 mV	17.18 ft	175.00 ml/min
5/3/2021 10:20 AM	01:38:44	7.07 pH	11.40 °C	0.92 mS/cm	0.25 mg/L	6.51 NTU	-41.7 mV	17.18 ft	175.00 ml/min
5/3/2021 10:23 AM	01:41:44	7.07 pH	11.36 °C	0.92 mS/cm	0.24 mg/L	8.91 NTU	-40.4 mV	17.18 ft	175.00 ml/min
5/3/2021 10:26 AM	01:44:44	7.07 pH	11.33 °C	0.92 mS/cm	0.23 mg/L	13.48 NTU	-39.6 mV	17.18 ft	175.00 ml/min
5/3/2021 10:29 AM	01:47:44	7.07 pH	11.43 °C	0.92 mS/cm	0.41 mg/L	5.69 NTU	-38.2 mV	17.18 ft	175.00 ml/min
5/3/2021 10:32 AM	01:50:44	7.07 pH	11.42 °C	0.92 mS/cm	0.24 mg/L	5.74 NTU	-38.2 mV	17.18 ft	175.00 ml/min

Samples

Sample ID:	Description:
LL12mw-246-210401-GW	Begin low flow purge at 8:42 AM PSI 30 CPM(2/3/27) Stagnant water volume: 1,482.39 mL Stagnant water volume removed at 8:50AM Stagnant water purge took longer than expected and flow rate was reduced to prevent draw down Stable at 10:32 AM Water was brown, cloudy and odorless at the beginning of the purge but became clear, colorless, and odorless throughout purge. Measured total volume purged: 11,330 mL Sample for nitrate and ammonia at 1032 on 05/03/2021.

Sampled By: ,5/03/2021

QA Check By: ,5/17/2021

RVAAP-16 FUZE AND BOOSTER QUARRY LANDFILL/PONDS

Low-Flow Test Report:

Test Date / Time: 5/6/2021 9:30:00 AM
Project: FBQmw-170
Sampler Name: Lindsey Moyer

Location Name: FBQmw-170 **Well Diameter: 2 in** **Initial Depth to Water: 19.47 ft**	**Pump Type: QED MP-10 Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 27.6 ft** **Pump Intake From TOC: 27.6 ft** **Estimated Total Volume Pumped: 5,046.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 300 ml/min** **Final Draw Down: 0.48 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM, 4, 8:7, PSI 45
400mL/min

Weather Conditions:
Sunny, 43°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/6/2021 9:30 AM	00:00	5.65 pH	10.43 °C	0.12 mS/cm	7.29 mg/L	0.30 NTU	229.7 mV	19.47 ft	400.00 ml/min
5/6/2021 9:31 AM	01:53	5.49 pH	10.02 °C	0.12 mS/cm	7.14 mg/L	0.06 NTU	245.7 mV	19.92 ft	400.00 ml/min
5/6/2021 9:32 AM	02:07	5.47 pH	10.00 °C	0.12 mS/cm	7.12 mg/L	0.00 NTU	248.0 mV	19.92 ft	400.00 ml/min
5/6/2021 9:35 AM	05:07	5.26 pH	10.01 °C	0.12 mS/cm	7.14 mg/L	0.00 NTU	269.0 mV	19.95 ft	400.00 ml/min
5/6/2021 9:38 AM	08:07	5.16 pH	10.05 °C	0.11 mS/cm	7.16 mg/L	0.00 NTU	283.8 mV	19.95 ft	300.00 ml/min
5/6/2021 9:41 AM	11:07	5.18 pH	10.01 °C	0.11 mS/cm	7.19 mg/L	0.00 NTU	289.0 mV	19.95 ft	300.00 ml/min
5/6/2021 9:44 AM	14:07	5.19 pH	10.00 °C	0.11 mS/cm	7.20 mg/L	0.00 NTU	294.8 mV	19.95 ft	300.00 ml/min

Samples

Sample ID:	Description:
FBQmw-170-210401-GW	Begin low flow purge at 0930(PSI 45/CPM 4/8/7) Stagnant water volume: 1,200 mL Stagnant water volume removed at 0932 Stable at 0944. At 0938 dropped flow rate to 300mL, due to water level dropping slightly. PSI 30/CPM 3/11/9. Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 5,000 mL Sample for expanded explosives at 0945 on 05/06/2021.

Sampled By: Lindsey Moyer ,5/06/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/5/2021 9:10:19 AM
Project: FBQmw-171
Sampler Name: Jasmine Stefansky

Location Name: FBQmw-171 **Well Diameter: 2 in** **Initial Depth to Water: 18.83 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 29 ft** **Pump Intake From TOC: 29 ft** **Estimated Total Volume Pumped: 2,375 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 125 ml/min** **Final Draw Down: 0.18 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 4 12:3 PSI 18
125 mL/min

Weather Conditions:
Rain 50°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/5/2021 9:10 AM	00:00	6.18 pH	13.09 °C	0.00 mS/cm	9.56 mg/L	0.00 NTU	214.0 mV	18.83 ft	125.00 ml/min
5/5/2021 9:19 AM	09:17	5.45 pH	10.30 °C	0.14 mS/cm	6.05 mg/L	0.00 NTU	234.2 mV	18.97 ft	125.00 ml/min
5/5/2021 9:20 AM	10:00	5.45 pH	10.29 °C	0.14 mS/cm	6.05 mg/L	0.00 NTU	234.1 mV	18.97 ft	125.00 ml/min
5/5/2021 9:23 AM	13:00	5.45 pH	10.19 °C	0.14 mS/cm	5.94 mg/L	0.00 NTU	234.3 mV	18.98 ft	125.00 ml/min
5/5/2021 9:26 AM	16:00	5.46 pH	10.20 °C	0.14 mS/cm	5.84 mg/L	0.00 NTU	234.0 mV	19.00 ft	125.00 ml/min
5/5/2021 9:29 AM	19:00	5.47 pH	10.14 °C	0.14 mS/cm	5.80 mg/L	0.00 NTU	233.8 mV	19.01 ft	125.00 ml/min

Samples

Sample ID:	Description:
FBQmw-171-210401-GW	Begin low flow purge: 09:09 PSI 18 CPM4 r12 d3 Stagnant WL volume: 1,125 mL Stagnant water volume removed at 9:17 (09:19) Stable at 19:00 (09:29) Water clear, colorless, odorless throughout purge Measured total volume purged: 2,500 mL Sample for expanded explosives at 09:32 on 5/5/21

Created using VuSitu from In-Situ, Inc.

Sampled By: ,5/05/2021

QA Check By: Lindsey Moyer ,5/26/2021

Low-Flow Test Report:

Test Date / Time: 5/5/2021 8:52:06 AM
Project: FBQmw-172
Sampler Name: Lindsey Moyer

Location Name: FBQmw-172 **Well Diameter: 2 in** **Total Depth: 37.4 ft** **Initial Depth to Water: 26.99 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 34 ft** **Pump Intake From TOC: 34 ft** **Estimated Total Volume Pumped: 2,143.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: 0.15 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 1 49:11 PSI 25
100 mL/min

Weather Conditions:
48°F raining/cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/5/2021 8:52 AM	00:00	6.59 pH	10.48 °C	0.72 mS/cm	8.60 mg/L	10.39 NTU	238.5 mV	26.99 ft	100.00 ml/min
5/5/2021 9:04 AM	12:08	6.49 pH	10.05 °C	0.71 mS/cm	5.26 mg/L	0.76 NTU	260.6 mV	27.14 ft	100.00 ml/min
5/5/2021 9:04 AM	12:26	6.50 pH	9.91 °C	0.71 mS/cm	5.28 mg/L	0.89 NTU	261.0 mV	27.14 ft	100.00 ml/min
5/5/2021 9:07 AM	15:26	6.50 pH	9.98 °C	0.71 mS/cm	5.24 mg/L	0.55 NTU	264.6 mV	27.14 ft	100.00 ml/min
5/5/2021 9:10 AM	18:26	6.50 pH	9.98 °C	0.71 mS/cm	5.22 mg/L	0.61 NTU	271.4 mV	27.14 ft	100.00 ml/min
5/5/2021 9:13 AM	21:26	6.51 pH	9.95 °C	0.71 mS/cm	5.22 mg/L	0.55 NTU	277.8 mV	27.14 ft	100.00 ml/min

Samples

Sample ID:	Description:
FBQmw-172-210401-GW	Begin low flow purge at 0852 (PSI 25/CPM 1/49/11) Stagnant water volume: 1,300 mL Stagnant water volume removed at 0904 Stable at 0913 Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 2,200 mL Sample for expanded explosives at 0915 on 05/05/2021.

Created using VuSitu from In-Situ, Inc.

Sampled By: Lindsey Moyer ,5/05/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/4/2021 1:18:47 PM
Project: FBQmw-173
Sampler Name: Lindsey Moyer

Location Name: FBQmw-173 **Well Diameter: 2 in** **Total Depth: 53.51 ft** **Initial Depth to Water: 45.14 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 51 ft** **Pump Intake From TOC: 51 ft** **Estimated Total Volume Pumped: 12,240 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 300 ml/min** **Final Draw Down: 0.37 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 3 12:8 PSI 40
300mL/min

Weather Conditions:
69°F cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/4/2021 1:18 PM	00:00	5.39 pH	12.02 °C	0.09 mS/cm	7.03 mg/L	77.17 NTU	134.7 mV	45.14 ft	300.00 ml/min
5/4/2021 1:23 PM	04:34	4.78 pH	11.42 °C	0.09 mS/cm	5.86 mg/L	18.25 NTU	218.3 mV	45.49 ft	300.00 ml/min
5/4/2021 1:23 PM	04:48	4.77 pH	11.32 °C	0.09 mS/cm	5.80 mg/L	16.16 NTU	220.1 mV	45.49 ft	300.00 ml/min
5/4/2021 1:26 PM	07:48	4.82 pH	11.42 °C	0.09 mS/cm	5.06 mg/L	14.43 NTU	231.6 mV	45.49 ft	300.00 ml/min
5/4/2021 1:29 PM	10:48	4.84 pH	11.28 °C	0.09 mS/cm	4.34 mg/L	6.38 NTU	237.8 mV	45.49 ft	300.00 ml/min
5/4/2021 1:32 PM	13:48	4.85 pH	11.20 °C	0.09 mS/cm	3.84 mg/L	5.80 NTU	243.7 mV	45.50 ft	300.00 ml/min
5/4/2021 1:35 PM	16:48	4.87 pH	11.31 °C	0.09 mS/cm	3.35 mg/L	4.33 NTU	243.9 mV	45.50 ft	300.00 ml/min
5/4/2021 1:38 PM	19:48	4.87 pH	11.22 °C	0.09 mS/cm	3.02 mg/L	2.66 NTU	242.9 mV	45.50 ft	300.00 ml/min
5/4/2021 1:41 PM	22:48	4.88 pH	11.38 °C	0.09 mS/cm	2.67 mg/L	3.22 NTU	239.6 mV	45.51 ft	300.00 ml/min
5/4/2021 1:44 PM	25:48	4.89 pH	11.19 °C	0.09 mS/cm	2.35 mg/L	1.46 NTU	234.7 mV	45.51 ft	300.00 ml/min

5/4/2021 1:47 PM	28:48	4.90 pH	11.13 °C	0.09 mS/cm	2.20 mg/L	1.86 NTU	230.5 mV	45.51 ft	300.00 ml/min
5/4/2021 1:50 PM	31:48	4.90 pH	11.26 °C	0.09 mS/cm	1.99 mg/L	0.65 NTU	226.6 mV	45.51 ft	300.00 ml/min
5/4/2021 1:53 PM	34:48	4.91 pH	11.15 °C	0.09 mS/cm	1.76 mg/L	0.67 NTU	224.1 mV	45.51 ft	300.00 ml/min
5/4/2021 1:56 PM	37:48	4.92 pH	11.17 °C	0.09 mS/cm	1.62 mg/L	0.24 NTU	221.5 mV	45.51 ft	300.00 ml/min
5/4/2021 1:59 PM	40:48	4.93 pH	11.18 °C	0.09 mS/cm	1.58 mg/L	0.24 NTU	219.7 mV	45.51 ft	300.00 ml/min

Samples

Sample ID:	Description:
FBQmw-173-210401-GW	Begin low flow purge at 1318 (PSI 40/CPM 3/12/8) Stagnant water volume: 1,500 mL Stagnant water volume removed at 1323 Stable at 1359 Water is clear, colorless, and odorless at end of purge. Water started out with slight red tiny, slightly cloudy, odorless. Measured total volume purged: 12,300 mL Sample for expanded explosives, sulfide, nitrate/nitrite/sulfate, alkalinity, and TOC at 1405 on 05/04/2021.

Sampled By: Lindsey Moyer ,5/04/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/4/2021 1:01:53 PM
Project: FBQmw-174
Sampler Name: Jasmine Stefansky

Location Name: FBQmw-174 **Well Diameter: 2 in** **Initial Depth to Water: N/A top of pump**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 19.69 ft** **Pump Intake From TOC: 19.69 ft** **Estimated Total Volume Pumped: 2,539.583 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 125 ml/min**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 2 25:5 PSI20
125 mL/min

Weather Conditions:
Cloudy 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/4/2021 1:01 PM	00:00	5.49 pH	16.08 °C	0.12 mS/cm	8.35 mg/L	13.17 NTU	204.3 mV	N/A	125.00 ml/min
5/4/2021 1:15 PM	14:05	4.76 pH	11.10 °C	0.20 mS/cm	8.94 mg/L	4.49 NTU	294.0 mV	N/A	125.00 ml/min
5/4/2021 1:16 PM	14:19	4.77 pH	11.23 °C	0.20 mS/cm	8.92 mg/L	6.25 NTU	294.0 mV	N/A	125.00 ml/min
5/4/2021 1:19 PM	17:19	4.73 pH	11.12 °C	0.19 mS/cm	8.93 mg/L	4.04 NTU	299.4 mV	N/A	125.00 ml/min
5/4/2021 1:22 PM	20:19	4.72 pH	11.19 °C	0.19 mS/cm	8.93 mg/L	2.69 NTU	302.6 mV	N/A	125.00 ml/min

Samples

Sample ID:	Description:
FBQmw-174-210401-GW	Begin low flow purge at 13:00 PSI20 CPM2 r25 d5 Stagnant water volume: 1,750mL Stagnant water removed at: 14:05 (1315) Stable at 20:19 (13:22) Water clear, colorless, odorless throughout purge. Measured total volume purged: 2,500mL Sample for expanded explosives, nitrate, nitrite, TOC, alkalinity, sulfide, sulfate at 13:25 on 5/4/2021 Note: Depth to water not obtained because hit top of pump.

Created using VuSitu from In-Situ, Inc.

Sampled By: ,5/04/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 5/4/2021 8:42:33 AM
Project: FBQmw-175
Sampler Name: Jasmine Stefansky

Location Name: FBQmw-175 **Well Diameter: 2 in** **Initial Depth to Water: 18.79 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 23 ft** **Pump Intake From TOC: 23 ft** **Estimated Total Volume Pumped: 9,276.25 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 75 ml/min** **Final Draw Down: 0.7 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 2 26:4 PSI 15
75 mL/min

Weather Conditions:
Cloudy 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/4/2021 8:42 AM	00:00	6.19 pH	12.03 °C	0.12 mS/cm	9.50 mg/L	10.71 NTU	214.5 mV	18.79 ft	75.00 ml/min
5/4/2021 8:57 AM	14:43	5.43 pH	11.75 °C	0.08 mS/cm	9.67 mg/L	14.00 NTU	229.3 mV	19.10 ft	75.00 ml/min
5/4/2021 8:57 AM	15:11	5.43 pH	11.71 °C	0.08 mS/cm	9.66 mg/L	11.61 NTU	229.4 mV	19.12 ft	75.00 ml/min
5/4/2021 9:00 AM	18:11	5.44 pH	11.67 °C	0.08 mS/cm	9.68 mg/L	12.38 NTU	229.8 mV	19.15 ft	75.00 ml/min
5/4/2021 9:03 AM	21:11	5.45 pH	11.66 °C	0.08 mS/cm	9.67 mg/L	17.32 NTU	229.8 mV	19.17 ft	75.00 ml/min
5/4/2021 9:06 AM	24:11	5.41 pH	11.76 °C	0.08 mS/cm	9.64 mg/L	19.47 NTU	232.4 mV	19.20 ft	75.00 ml/min
5/4/2021 9:09 AM	27:11	5.52 pH	11.76 °C	0.08 mS/cm	9.69 mg/L	14.11 NTU	228.5 mV	19.21 ft	75.00 ml/min
5/4/2021 9:12 AM	30:11	5.52 pH	11.73 °C	0.08 mS/cm	9.69 mg/L	16.14 NTU	229.1 mV	19.22 ft	75.00 ml/min
5/4/2021 9:15 AM	33:11	5.51 pH	11.70 °C	0.08 mS/cm	9.71 mg/L	14.82 NTU	230.4 mV	19.22 ft	75.00 ml/min
5/4/2021 9:18 AM	36:11	5.45 pH	11.71 °C	0.08 mS/cm	9.71 mg/L	17.56 NTU	234.4 mV	19.22 ft	75.00 ml/min
5/4/2021 9:21 AM	39:11	5.56 pH	11.80 °C	0.08 mS/cm	9.71 mg/L	15.85 NTU	229.5 mV	19.23 ft	75.00 ml/min
5/4/2021 9:24 AM	42:11	5.54 pH	11.76 °C	0.08 mS/cm	9.71 mg/L	13.21 NTU	231.5 mV	19.24 ft	75.00 ml/min

5/4/2021 9:27 AM	45:11	5.53 pH	11.78 °C	0.08 mS/cm	9.71 mg/L	14.33 NTU	233.2 mV	19.25 ft	75.00 ml/min
5/4/2021 9:30 AM	48:11	5.48 pH	11.75 °C	0.08 mS/cm	9.71 mg/L	15.56 NTU	236.8 mV	19.25 ft	75.00 ml/min
5/4/2021 9:33 AM	51:11	5.56 pH	11.83 °C	0.08 mS/cm	9.70 mg/L	15.62 NTU	233.5 mV	19.26 ft	75.00 ml/min
5/4/2021 9:36 AM	54:11	5.56 pH	11.80 °C	0.08 mS/cm	9.71 mg/L	12.09 NTU	235.0 mV	19.25 ft	75.00 ml/min
5/4/2021 9:39 AM	57:11	5.54 pH	11.78 °C	0.08 mS/cm	9.70 mg/L	12.04 NTU	236.8 mV	19.27 ft	75.00 ml/min
5/4/2021 9:42 AM	01:00:11	5.50 pH	11.59 °C	0.08 mS/cm	9.73 mg/L	13.72 NTU	240.5 mV	19.25 ft	75.00 ml/min
5/4/2021 9:45 AM	01:03:11	5.44 pH	11.81 °C	0.08 mS/cm	9.70 mg/L	14.72 NTU	243.8 mV	19.28 ft	75.00 ml/min
5/4/2021 9:48 AM	01:06:11	5.56 pH	11.85 °C	0.08 mS/cm	9.72 mg/L	13.03 NTU	238.9 mV	19.25 ft	75.00 ml/min
5/4/2021 9:51 AM	01:09:11	5.55 pH	11.74 °C	0.08 mS/cm	9.75 mg/L	15.48 NTU	240.3 mV	19.30 ft	75.00 ml/min
5/4/2021 9:54 AM	01:12:11	5.51 pH	11.79 °C	0.08 mS/cm	9.72 mg/L	17.15 NTU	243.4 mV	19.32 ft	75.00 ml/min
5/4/2021 9:57 AM	01:15:11	5.45 pH	11.82 °C	0.08 mS/cm	9.69 mg/L	20.84 NTU	247.3 mV	19.32 ft	75.00 ml/min
5/4/2021 10:00 AM	01:18:11	5.57 pH	11.86 °C	0.08 mS/cm	9.70 mg/L	19.42 NTU	242.0 mV	19.33 ft	75.00 ml/min
5/4/2021 10:03 AM	01:21:11	5.55 pH	11.82 °C	0.08 mS/cm	9.72 mg/L	21.06 NTU	243.6 mV	19.34 ft	75.00 ml/min
5/4/2021 10:06 AM	01:24:11	5.53 pH	11.91 °C	0.08 mS/cm	9.72 mg/L	23.72 NTU	245.7 mV	19.35 ft	75.00 ml/min
5/4/2021 10:09 AM	01:27:11	5.44 pH	11.89 °C	0.08 mS/cm	9.64 mg/L	25.74 NTU	251.4 mV	19.36 ft	75.00 ml/min
5/4/2021 10:12 AM	01:30:11	5.57 pH	11.81 °C	0.08 mS/cm	9.70 mg/L	25.56 NTU	245.2 mV	19.37 ft	75.00 ml/min
5/4/2021 10:15 AM	01:33:11	5.55 pH	11.73 °C	0.08 mS/cm	9.74 mg/L	26.40 NTU	247.1 mV	19.38 ft	75.00 ml/min
5/4/2021 10:18 AM	01:36:11	5.53 pH	11.77 °C	0.08 mS/cm	9.73 mg/L	32.23 NTU	249.0 mV	19.39 ft	75.00 ml/min
5/4/2021 10:21 AM	01:39:11	5.46 pH	11.73 °C	0.08 mS/cm	9.69 mg/L	35.73 NTU	254.1 mV	19.41 ft	75.00 ml/min
5/4/2021 10:24 AM	01:42:11	5.56 pH	11.76 °C	0.08 mS/cm	9.72 mg/L	36.19 NTU	248.8 mV	19.42 ft	75.00 ml/min
5/4/2021 10:27 AM	01:45:11	5.55 pH	11.77 °C	0.08 mS/cm	9.72 mg/L	38.77 NTU	250.3 mV	19.43 ft	75.00 ml/min
5/4/2021 10:30 AM	01:48:11	5.52 pH	11.74 °C	0.08 mS/cm	9.72 mg/L	39.51 NTU	252.3 mV	19.44 ft	75.00 ml/min
5/4/2021 10:33 AM	01:51:11	5.74 pH	14.25 °C	0.00 mS/cm	9.76 mg/L	0.00 NTU	244.3 mV	19.46 ft	75.00 ml/min
5/4/2021 10:36 AM	01:54:11	5.60 pH	12.20 °C	0.08 mS/cm	9.83 mg/L	6.99 NTU	239.5 mV	19.47 ft	75.00 ml/min
5/4/2021 10:39 AM	01:57:15	5.54 pH	12.02 °C	0.08 mS/cm	9.86 mg/L	3.58 NTU	245.6 mV	19.48 ft	75.00 ml/min
5/4/2021 10:43 AM	02:00:41	5.52 pH	11.91 °C	0.08 mS/cm	9.87 mg/L	3.36 NTU	249.8 mV	19.48 ft	75.00 ml/min
5/4/2021 10:46 AM	02:03:41	5.46 pH	11.85 °C	0.08 mS/cm	9.87 mg/L	4.13 NTU	254.9 mV	19.49 ft	75.00 ml/min

Samples

Sample ID:	Description:
FBQmw-175-210401-GW, FBQmw-175-210401-GWMS/MSD, FBQmw-175-210402-GW, FBQmw-175-210403-GW	Begin low flow purge at 08:41 PSI:15, cpm2/r26/d4 Stagnant water volume:1050mL Stagnant water removed at 14:43 (08:57) Stable at 2:03:41 (10:46) Water clear, colorless, with slight hydrocarbon odor throughout purge Measured total volume purged: 8,100mL Sample for expanded explosives at 10:50 on 5/4/21. Collected duplicate, split sample, and ms/msd.

Created using VuSitu from In-Situ, Inc.

Sampled By: ,5/04/2021

QA Check By: Lindsey Moyer , 5/26/2021

RVAAP-43 LOAD LINE 10

Low-Flow Test Report:

Test Date / Time: 4/29/2021 1:17:07 PM
Project: LL10mw-003
Sampler Name: Jasmine Stefansky

Location Name: LL10mw-003 **Well Diameter: 2 in** **Initial Depth to Water: 20.8 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 27 ft** **Pump Intake From TOC: 26.9 ft** **Estimated Total Volume Pumped: 2,530 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 150 ml/min** **Final Draw Down: 0.19 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 3 18:2 PSI 20
150 mL/min

Weather Conditions:
Rain 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 1:17 PM	00:00	6.77 pH	12.84 °C	0.41 mS/cm	5.88 mg/L	2.82 NTU	130.2 mV	20.80 ft	150.00 ml/min
4/29/2021 1:24 PM	07:38	6.31 pH	10.99 °C	0.40 mS/cm	1.99 mg/L	3.81 NTU	159.9 mV	20.90 ft	150.00 ml/min
4/29/2021 1:24 PM	07:52	6.31 pH	11.15 °C	0.40 mS/cm	1.98 mg/L	4.26 NTU	160.3 mV	20.93 ft	150.00 ml/min
4/29/2021 1:27 PM	10:52	6.31 pH	10.99 °C	0.41 mS/cm	2.23 mg/L	2.24 NTU	163.8 mV	20.96 ft	150.00 ml/min
4/29/2021 1:30 PM	13:52	6.31 pH	10.81 °C	0.41 mS/cm	2.37 mg/L	0.73 NTU	166.5 mV	20.99 ft	150.00 ml/min
4/29/2021 1:33 PM	16:52	6.32 pH	10.92 °C	0.41 mS/cm	2.28 mg/L	0.66 NTU	168.3 mV	20.99 ft	150.00 ml/min

Samples

Sample ID:	Description:
LL10mw-003-210401-GW	Begin low flow purge at 13:15 PSI 20 CPM 3/r18/d2 Stagnant water volume: 1,100 mL Stagnant water removed at: 7:38 (13:24) Stable at 16:52 (13:33) Water clear, colorless, odorless throughout purge Measured total volume purged: 2,400 mL Sample for carbon tetra chloride at 13:37 on 4/29/2021 Associated trip blank is FWGTB-210402-TB

Sampled By: ,4/29/2021

QA Check By: Lindsey Moyer , 5/26/2021

RVAAP-66 FACILITY-WIDE GROUNDWATER

Low-Flow Test Report:

Test Date / Time: 4/29/2021 10:16:08 AM
Project: FWGmw-004
Sampler Name: Jasmine Stefansky

Location Name: FWGmw-004 **Well Diameter: 2 in** **Initial Depth to Water: 13.52 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 20.5 ft** **Pump Intake From TOC: 20.5 ft** **Estimated Total Volume Pumped: 4,667.5 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 125 ml/min** **Final Draw Down: 0.32 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM 3 18.5:1/5 PSI 20
125 mL/min

Weather Conditions:
Cloudy 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 10:16 AM	00:00	7.58 pH	13.01 °C	0.64 mS/cm	9.24 mg/L	17.10 NTU	88.9 mV	13.52 ft	150.00 ml/min
4/29/2021 10:33 AM	17:47	7.06 pH	11.73 °C	0.74 mS/cm	0.90 mg/L	10.03 NTU	106.5 mV	13.52 ft	150.00 ml/min
4/29/2021 10:34 AM	18:07	7.06 pH	11.74 °C	0.74 mS/cm	0.89 mg/L	10.10 NTU	106.3 mV	13.84 ft	150.00 ml/min
4/29/2021 10:37 AM	21:07	7.07 pH	12.57 °C	0.74 mS/cm	0.86 mg/L	9.56 NTU	105.1 mV	13.84 ft	125.00 ml/min
4/29/2021 10:40 AM	24:07	7.07 pH	11.81 °C	0.75 mS/cm	0.66 mg/L	10.61 NTU	106.9 mV	13.84 ft	125.00 ml/min
4/29/2021 10:43 AM	27:07	7.07 pH	11.78 °C	0.75 mS/cm	0.56 mg/L	3.52 NTU	107.7 mV	13.84 ft	125.00 ml/min
4/29/2021 10:46 AM	30:07	7.06 pH	11.79 °C	0.75 mS/cm	0.44 mg/L	3.76 NTU	108.4 mV	13.84 ft	125.00 ml/min
4/29/2021 10:49 AM	33:07	7.05 pH	11.77 °C	0.75 mS/cm	0.41 mg/L	2.35 NTU	110.0 mV	13.84 ft	125.00 ml/min

Samples

FWGmw-004-210401-GW FWGmw004-210402-GW FWGmw-004-210401-GWmsd	Begin low flow purge at 10:15, PSI 20 CPM 3/18.5/1.5 Stagnant water volume: 3,150 mL Stagnant water removed at: 17:47 (10:33) Stable at: 33:07 (10:49) Reduced flow rate at 21:07 (10:37) due to draw down Water clear, colorless, odorless throughout purge Measured total volume purged: 4,500 mL Sample for explosives at 10:54 on 4/29/21 also collected duplicate and ms/msd

Created using VuSitu from In-Situ, Inc.

Sampled By: ,4/29/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 5/3/2021 11:58:09 AM
Project: FWGmw-007
Sampler Name: Jasmine Stefansky

Location Name: FWGmw-007 **Well Diameter: 2 in** **Initial Depth to Water: 24.51 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 29 ft** **Pump Intake From TOC: 29.9 ft** **Estimated Total Volume Pumped: 4,188.333 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 100 ml/min** **Final Draw Down: -3.65 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes:
CPM2 PSI 22/R27/D3
100 mL/min

Weather Conditions:
55°F rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
5/3/2021 11:58 AM	00:00	7.18 pH	14.03 °C	1.03 mS/cm	8.71 mg/L	21.78 NTU	177.0 mV	24.51 ft	100.00 ml/min
5/3/2021 12:09 PM	11:39	7.07 pH	11.83 °C	1.07 mS/cm	1.10 mg/L	34.67 NTU	176.0 mV	24.51 ft	100.00 ml/min
5/3/2021 12:10 PM	11:53	7.07 pH	11.89 °C	1.07 mS/cm	1.09 mg/L	37.94 NTU	175.8 mV	24.83 ft	100.00 ml/min
5/3/2021 12:13 PM	14:53	7.07 pH	11.82 °C	1.06 mS/cm	1.08 mg/L	38.74 NTU	169.3 mV	24.84 ft	100.00 ml/min
5/3/2021 12:16 PM	17:53	7.08 pH	11.76 °C	1.07 mS/cm	1.11 mg/L	39.55 NTU	162.8 mV	24.85 ft	100.00 ml/min
5/3/2021 12:19 PM	20:53	7.08 pH	11.69 °C	1.07 mS/cm	1.11 mg/L	52.45 NTU	156.2 mV	20.86 ft	100.00 ml/min
5/3/2021 12:22 PM	23:53	7.06 pH	12.36 °C	1.05 mS/cm	2.93 mg/L	26.23 NTU	173.6 mV	20.86 ft	100.00 ml/min
5/3/2021 12:25 PM	26:53	7.09 pH	11.91 °C	1.07 mS/cm	1.15 mg/L	16.89 NTU	159.9 mV	20.86 ft	100.00 ml/min
5/3/2021 12:28 PM	29:53	7.09 pH	11.81 °C	1.07 mS/cm	1.06 mg/L	16.54 NTU	150.5 mV	20.86 ft	100.00 ml/min
5/3/2021 12:31 PM	32:53	7.09 pH	11.70 °C	1.06 mS/cm	1.00 mg/L	13.63 NTU	142.6 mV	20.86 ft	100.00 ml/min
5/3/2021 12:34 PM	35:53	7.09 pH	11.79 °C	1.06 mS/cm	0.96 mg/L	17.68 NTU	136.1 mV	20.86 ft	100.00 ml/min
5/3/2021 12:37 PM	38:53	7.10 pH	11.78 °C	1.06 mS/cm	0.91 mg/L	10.13 NTU	129.3 mV	20.86 ft	100.00 ml/min

5/3/2021 12:40 PM	41:53	7.10 pH	11.69 °C	1.06 mS/cm	0.87 mg/L	9.22 NTU	123.6 mV	20.86 ft	100.00 ml/min

Samples

Sample ID:	Description:
FWGmw-007-210401-GW, FWGmw-007-210403-GW	Begin low flow purge at 11:57 CPM2/PSI 22/R27/D3 Stagnant water volume: 1,100mL Stagnant water removed at: 11:39 (12:09) Stable at 41:53 (12:40) Water clear, colorless, odorless throughout purge Measured volume purged: 4,000mL Sample for explosives at 12:42 on 5/3/2021, collected normal and split sample *note flow cell cleaned at 20:53 to try to reduce turbidity

Sampled By: ,5/03/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 5/3/2021 1:44:18 PM
Project: FWGmw-010
Sampler Name: Lindsey Moyer

Location Name: FWGmw-010 **Well Diameter: 2 in** **Total Depth: 18.9 ft** **Initial Depth to Water: 11.03 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 16 ft** **Pump Intake From TOC: 16 ft** **Estimated Total Volume Pumped: 4,181.25 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 75 ml/min** **Final Draw Down: 0.56 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:

CPM 2 25:5 PSI 20

75 mL/min

Weather Conditions:

Cloudy/rain 58°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/3/2021 1:44 PM	00:00	6.89 pH	12.44 °C	0.12 mS/cm	9.00 mg/L	54.40 NTU	169.4 mV	11.03 ft	75.00 ml/min
5/3/2021 2:00 PM	16:26	4.97 pH	10.31 °C	0.06 mS/cm	8.66 mg/L	48.73 NTU	318.7 mV	11.59 ft	75.00 ml/min
5/3/2021 2:01 PM	16:45	4.97 pH	10.26 °C	0.06 mS/cm	8.69 mg/L	47.10 NTU	319.9 mV	11.59 ft	75.00 ml/min
5/3/2021 2:04 PM	19:45	4.98 pH	10.21 °C	0.06 mS/cm	8.62 mg/L	39.67 NTU	325.5 mV	11.59 ft	75.00 ml/min
5/3/2021 2:07 PM	22:45	4.99 pH	10.28 °C	0.06 mS/cm	8.56 mg/L	42.80 NTU	328.3 mV	11.59 ft	75.00 ml/min
5/3/2021 2:10 PM	25:45	5.02 pH	10.18 °C	0.06 mS/cm	8.53 mg/L	25.86 NTU	329.8 mV	11.59 ft	75.00 ml/min
5/3/2021 2:13 PM	28:45	5.04 pH	10.19 °C	0.06 mS/cm	8.50 mg/L	24.96 NTU	332.3 mV	11.59 ft	75.00 ml/min
5/3/2021 2:16 PM	31:45	5.05 pH	10.18 °C	0.06 mS/cm	8.42 mg/L	28.93 NTU	333.9 mV	11.59 ft	75.00 ml/min
5/3/2021 2:19 PM	34:45	5.07 pH	10.18 °C	0.06 mS/cm	8.38 mg/L	18.82 NTU	333.6 mV	11.59 ft	75.00 ml/min
5/3/2021 2:22 PM	37:45	5.11 pH	10.12 °C	0.06 mS/cm	8.34 mg/L	16.44 NTU	332.5 mV	11.59 ft	75.00 ml/min

5/3/2021 2:25 PM	40:45	5.12 pH	10.11 °C	0.07 mS/cm	8.29 mg/L	12.09 NTU	333.0 mV	11.59 ft	75.00 ml/min
5/3/2021 2:28 PM	43:45	5.12 pH	10.04 °C	0.07 mS/cm	8.25 mg/L	12.29 NTU	333.4 mV	11.59 ft	75.00 ml/min
5/3/2021 2:31 PM	46:45	5.15 pH	10.12 °C	0.07 mS/cm	8.23 mg/L	11.71 NTU	334.4 mV	11.59 ft	75.00 ml/min
5/3/2021 2:34 PM	49:45	5.19 pH	10.15 °C	0.07 mS/cm	8.21 mg/L	8.77 NTU	332.7 mV	11.59 ft	75.00 ml/min
5/3/2021 2:37 PM	52:45	5.21 pH	10.10 °C	0.07 mS/cm	8.19 mg/L	6.28 NTU	331.8 mV	11.59 ft	75.00 ml/min
5/3/2021 2:40 PM	55:45	5.22 pH	10.10 °C	0.07 mS/cm	8.12 mg/L	6.11 NTU	331.7 mV	11.59 ft	75.00 ml/min

Samples

Sample ID:	Description:
FWGMW-010-210401-GW	Begin low flow purge at 1342 (PSI 20/CPM 2/25/5) Stagnant water volume: 1,425 mL Stagnant water volume removed at 1401 Stable at 1440 Water is clear, colorless, and odorless at end of purge. Water started out as cloudy, colorless, odorless. Measured total volume purged: 4,350 mL Sample for expanded explosives at 1445 on 05/03/2021.

Sampled By: Lindsey Moyer ,5/03/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/27/2021 8:57:50 AM
Project: FWGmw-011
Sampler Name: Lindsey Moyer

Location Name: FWGmw-011 **Well Diameter: 2 in** **Initial Depth to Water: 2.03 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 28 ft** **Pump Intake From TOC: 14 ft** **Estimated Total Volume Pumped: 38,100 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 300 ml/min** **Final Draw Down: 0.16 ft**	**Instruments Used: Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2 22:8, PSI 19
300 mL/min

Sunny, clear 54°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/27/2021 8:57 AM	00:00	7.16 pH	10.11 °C	0.29 mS/cm	3.44 mg/L	1,068.7 NTU	-33.0 mV	2.03 ft	300.00 ml/min
4/27/2021 9:04 AM	06:28	7.03 pH	9.75 °C	0.30 mS/cm	2.20 mg/L	448.98 NTU	-78.1 mV	2.19 ft	300.00 ml/min
4/27/2021 9:04 AM	07:00	7.03 pH	9.62 °C	0.30 mS/cm	2.09 mg/L	458.62 NTU	-80.8 mV	2.19 ft	300.00 ml/min
4/27/2021 9:07 AM	10:00	7.05 pH	9.66 °C	0.30 mS/cm	2.35 mg/L	278.85 NTU	-66.8 mV	2.19 ft	300.00 ml/min
4/27/2021 9:10 AM	13:00	7.08 pH	9.65 °C	0.30 mS/cm	2.04 mg/L	288.52 NTU	-70.0 mV	2.19 ft	300.00 ml/min
4/27/2021 9:13 AM	16:00	7.10 pH	9.87 °C	0.30 mS/cm	2.27 mg/L	256.51 NTU	-76.3 mV	2.19 ft	300.00 ml/min
4/27/2021 9:16 AM	19:00	7.11 pH	9.89 °C	0.30 mS/cm	2.41 mg/L	135.64 NTU	-64.6 mV	2.19 ft	300.00 ml/min
4/27/2021 9:19 AM	22:00	7.11 pH	10.02 °C	0.30 mS/cm	2.33 mg/L	125.60 NTU	-60.9 mV	2.19 ft	300.00 ml/min
4/27/2021 9:22 AM	25:00	7.14 pH	10.05 °C	0.30 mS/cm	2.25 mg/L	126.59 NTU	-69.8 mV	2.19 ft	300.00 ml/min
4/27/2021 9:25 AM	28:00	7.14 pH	10.13 °C	0.30 mS/cm	1.86 mg/L	111.56 NTU	-63.9 mV	2.19 ft	300.00 ml/min
4/27/2021 9:28 AM	31:00	7.15 pH	10.00 °C	0.30 mS/cm	3.66 mg/L	151.45 NTU	-72.8 mV	2.19 ft	300.00 ml/min

4/27/2021 9:31 AM	34:00	7.15 pH	10.23 °C	0.30 mS/cm	2.28 mg/L	96.94 NTU	-62.6 mV	2.19 ft	300.00 ml/min
4/27/2021 9:34 AM	37:00	7.17 pH	10.35 °C	0.30 mS/cm	2.45 mg/L	77.10 NTU	-62.6 mV	2.19 ft	300.00 ml/min
4/27/2021 9:37 AM	40:00	7.17 pH	10.28 °C	0.31 mS/cm	2.30 mg/L	58.92 NTU	-64.6 mV	2.19 ft	300.00 ml/min
4/27/2021 9:40 AM	43:00	7.15 pH	10.26 °C	0.30 mS/cm	1.95 mg/L	60.83 NTU	-66.3 mV	2.19 ft	300.00 ml/min
4/27/2021 9:43 AM	46:00	7.15 pH	10.39 °C	0.30 mS/cm	2.17 mg/L	131.82 NTU	-65.3 mV	2.19 ft	300.00 ml/min
4/27/2021 9:46 AM	49:00	7.18 pH	10.52 °C	0.31 mS/cm	2.42 mg/L	47.06 NTU	-67.4 mV	2.19 ft	300.00 ml/min
4/27/2021 9:49 AM	52:00	7.18 pH	10.36 °C	0.30 mS/cm	2.87 mg/L	51.90 NTU	-75.7 mV	2.19 ft	300.00 ml/min
4/27/2021 9:52 AM	55:00	7.16 pH	10.36 °C	0.30 mS/cm	2.33 mg/L	53.25 NTU	-66.9 mV	2.19 ft	300.00 ml/min
4/27/2021 9:55 AM	58:00	7.17 pH	10.79 °C	0.31 mS/cm	2.49 mg/L	61.17 NTU	-67.2 mV	2.19 ft	300.00 ml/min
4/27/2021 9:58 AM	01:01:00	7.17 pH	10.77 °C	0.30 mS/cm	2.38 mg/L	34.85 NTU	-69.9 mV	2.19 ft	300.00 ml/min
4/27/2021 10:01 AM	01:04:00	7.18 pH	10.84 °C	0.30 mS/cm	2.51 mg/L	39.68 NTU	-70.0 mV	2.19 ft	300.00 ml/min
4/27/2021 10:04 AM	01:07:00	7.16 pH	10.73 °C	0.30 mS/cm	2.56 mg/L	42.21 NTU	-70.6 mV	2.19 ft	300.00 ml/min
4/27/2021 10:07 AM	01:10:00	7.17 pH	11.22 °C	0.30 mS/cm	2.63 mg/L	53.39 NTU	-70.8 mV	2.19 ft	300.00 ml/min
4/27/2021 10:10 AM	01:13:00	7.18 pH	11.50 °C	0.30 mS/cm	2.81 mg/L	40.55 NTU	-72.7 mV	2.19 ft	300.00 ml/min
4/27/2021 10:13 AM	01:16:00	7.17 pH	11.47 °C	0.30 mS/cm	2.99 mg/L	26.22 NTU	-72.7 mV	2.19 ft	300.00 ml/min
4/27/2021 10:16 AM	01:19:00	7.16 pH	11.26 °C	0.30 mS/cm	2.35 mg/L	32.62 NTU	-75.6 mV	2.19 ft	300.00 ml/min
4/27/2021 10:19 AM	01:22:00	7.14 pH	11.69 °C	0.30 mS/cm	2.56 mg/L	38.32 NTU	-73.3 mV	2.19 ft	300.00 ml/min
4/27/2021 10:22 AM	01:25:00	7.16 pH	11.27 °C	0.30 mS/cm	2.22 mg/L	39.17 NTU	-75.5 mV	2.19 ft	300.00 ml/min
4/27/2021 10:25 AM	01:28:00	7.15 pH	11.31 °C	0.30 mS/cm	2.21 mg/L	21.84 NTU	-77.3 mV	2.19 ft	300.00 ml/min
4/27/2021 10:28 AM	01:31:00	7.15 pH	11.42 °C	0.30 mS/cm	2.60 mg/L	35.28 NTU	-76.0 mV	2.19 ft	300.00 ml/min
4/27/2021 10:31 AM	01:34:00	7.16 pH	11.51 °C	0.30 mS/cm	2.39 mg/L	40.83 NTU	-78.5 mV	2.19 ft	300.00 ml/min
4/27/2021 10:34 AM	01:37:00	7.18 pH	9.44 °C	0.31 mS/cm	0.54 mg/L	41.08 NTU	-90.4 mV	2.19 ft	300.00 ml/min
4/27/2021 10:37 AM	01:40:00	7.15 pH	9.33 °C	0.30 mS/cm	0.76 mg/L	47.45 NTU	-90.7 mV	2.19 ft	300.00 ml/min
4/27/2021 10:40 AM	01:43:00	7.12 pH	9.28 °C	0.30 mS/cm	0.49 mg/L	26.88 NTU	-86.3 mV	2.19 ft	300.00 ml/min
4/27/2021 10:43 AM	01:46:00	7.13 pH	9.53 °C	0.31 mS/cm	0.36 mg/L	24.13 NTU	-88.2 mV	2.19 ft	300.00 ml/min
4/27/2021 10:46 AM	01:49:00	7.15 pH	9.39 °C	0.31 mS/cm	0.40 mg/L	22.19 NTU	-90.5 mV	2.19 ft	300.00 ml/min
4/27/2021 10:49 AM	01:52:00	7.17 pH	9.31 °C	0.31 mS/cm	0.41 mg/L	21.54 NTU	-92.3 mV	2.19 ft	300.00 ml/min
4/27/2021 10:52 AM	01:55:00	7.16 pH	9.29 °C	0.31 mS/cm	0.46 mg/L	19.39 NTU	-91.9 mV	2.19 ft	300.00 ml/min
4/27/2021 10:55 AM	01:58:00	7.16 pH	9.48 °C	0.31 mS/cm	0.44 mg/L	13.86 NTU	-93.5 mV	2.19 ft	300.00 ml/min

4/27/2021 10:58 AM	02:01:00	7.18 pH	9.47 °C	0.31 mS/cm	0.44 mg/L	15.04 NTU	-94.0 mV	2.19 ft	300.00 ml/min
4/27/2021 11:01 AM	02:04:00	7.19 pH	9.46 °C	0.31 mS/cm	0.31 mg/L	13.53 NTU	-95.9 mV	2.19 ft	300.00 ml/min
4/27/2021 11:04 AM	02:07:00	7.18 pH	9.32 °C	0.31 mS/cm	0.46 mg/L	9.02 NTU	-95.1 mV	2.19 ft	300.00 ml/min

Samples

Sample ID:	Description:
FWGmw-011-210401-GW	Begin low flow purge at 0858 (PSI 19/CPM 2/22/8) Stagnant water volume: 2,100 mL Stagnant water volume removed at 0904 Stable at 1104. Turbidity had just dropped below 10 NTU at last reading at the 2 hour mark. No metals sample being collected. Cleaned flow cell out at 0948 and 1035. Water is clear, colorless, and odorless at end of the purge. Water started out cloudy with a dark orange tint. Orange tint had became lighter and lighter throughout purge. Measured total volume purged: 38,100 mL Sample for explosives at 1110 on 04/27/2021.

Sampled By: Lindsey Moyer ,4/27/2021

QA Check By: ,5/13/2021

Low-Flow Test Report:

Test Date / Time: 4/27/2021 11:44:14 AM
Project: FWGmw-012
Sampler Name: Lindsey Moyer

Location Name: FWGmw-012 **Well Diameter: 2 in** **Initial Depth to Water: 0.77 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 74 ft** **Pump Intake From TOC: 37 ft** **Estimated Total Volume Pumped: 9,046.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 400 ml/min** **Final Draw Down: 0.53 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2 22:8 PSI 25
400 mL/min

Weather Conditions:
Sunny, clear, 72°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/27/2021 11:44 AM	00:00	6.03 pH	11.78 °C	0.20 mS/cm	0.43 mg/L	531.65 NTU	83.9 mV	0.77 ft	400.00 ml/min
4/27/2021 11:51 AM	07:21	6.06 pH	11.64 °C	0.23 mS/cm	0.41 mg/L	28.16 NTU	56.4 mV	1.26 ft	400.00 ml/min
4/27/2021 11:51 AM	07:37	6.07 pH	11.64 °C	0.23 mS/cm	0.41 mg/L	20.78 NTU	55.6 mV	1.26 ft	400.00 ml/min
4/27/2021 11:54 AM	10:37	6.02 pH	11.38 °C	0.22 mS/cm	0.38 mg/L	26.07 NTU	59.4 mV	1.28 ft	400.00 ml/min
4/27/2021 11:57 AM	13:37	6.01 pH	11.42 °C	0.23 mS/cm	0.37 mg/L	24.38 NTU	59.3 mV	1.29 ft	400.00 ml/min
4/27/2021 12:00 PM	16:37	6.09 pH	11.43 °C	0.23 mS/cm	0.38 mg/L	9.71 NTU	52.4 mV	1.30 ft	400.00 ml/min
4/27/2021 12:03 PM	19:37	6.10 pH	11.33 °C	0.23 mS/cm	0.40 mg/L	7.34 NTU	49.6 mV	1.30 ft	400.00 ml/min
4/27/2021 12:06 PM	22:37	6.09 pH	11.19 °C	0.23 mS/cm	0.41 mg/L	5.06 NTU	49.5 mV	1.30 ft	400.00 ml/min

Samples

Sample ID:	Description:
FWGmw-012-210401-GW	Begin low flow purge at 1144 (PSI 25/CPM 2/22/8) Stagnant water volume: 3,200 mL Stagnant water volume removed at 1151 Stable at 1206 Water is clear, colorless, and odorless at end of purge. Water had orange tint and was cloudy at beginning of stagnant water purge then cleared. Measured total volume purged: 9,200 mL Sample for explosives at 1210 on 04/27/2021.

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Sampled By: Lindsey Moyer ,4/27/2021

QA Check By: ,5/13/2021

Low-Flow Test Report:

Test Date / Time: 4/29/2021 7:55:40 AM
Project: FWGmw-015
Sampler Name: Jasmine Stefansky

Location Name: FWGmw-015 **Well Diameter: 2 in** **Initial Depth to Water: 5.66 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 37 ft** **Pump Intake From TOC: 18.5 ft** **Estimated Total Volume Pumped: 2,680 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 50 ml/min** **Final Draw Down: 2.46 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP10) - 3564** **Compressor - 18421** **Water Level Meter - 39350**

Test Notes: CPM

Weather Conditions:
Rain 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 7:55 AM	00:00	6.95 pH	13.26 °C	2.45 mS/cm	5.61 mg/L	0.53 NTU	237.1 mV	5.66 ft	75.00 ml/min
4/29/2021 8:24 AM	28:30	6.94 pH	12.00 °C	2.69 mS/cm	1.27 mg/L	0.69 NTU	220.7 mV	5.66 ft	75.00 ml/min
4/29/2021 8:24 AM	28:44	6.94 pH	12.06 °C	2.69 mS/cm	1.26 mg/L	0.00 NTU	220.7 mV	8.02 ft	75.00 ml/min
4/29/2021 8:27 AM	31:44	6.94 pH	12.23 °C	2.69 mS/cm	1.24 mg/L	0.00 NTU	219.0 mV	8.08 ft	50.00 ml/min
4/29/2021 8:30 AM	34:44	6.95 pH	12.42 °C	2.69 mS/cm	1.25 mg/L	0.00 NTU	217.4 mV	8.12 ft	50.00 ml/min
4/29/2021 8:33 AM	37:44	6.95 pH	12.41 °C	2.69 mS/cm	1.29 mg/L	0.00 NTU	215.8 mV	8.12 ft	50.00 ml/min

Samples

Sample ID:	Description:
FWGmw-015-210401-GW	Begin low flow purge at 07:50 Stagnant water volume: 2,100 mL Stagnant water removed at: 28:30 (08:24) Stable at: 37:44 (08:33) Water clear, colorless, odorless throughout purge Measured total volume purged: 2,600 mL Reduced flow rate at 31:44 (08:27) due to drawdown Sample for expanded explosives at 08:35 on 4/29/2021

Sampled By: ,4/29/2021

QA Check By: ,7/12/2021

Low-Flow Test Report:

Test Date / Time: 4/29/2021 9:01:26 AM
Project: FWGmw-016
Sampler Name: Jasmine Stefansky

Location Name: FWGmw-016
Well Diameter: 2 in
Initial Depth to Water: 16.45 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.375 in
Tubing Length: 90 ft
Pump Intake From TOC: 59.5 ft
Estimated Total Volume Pumped: 4,075 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 125 ml/min
Final Draw Down: 0.08 ft

Instruments Used:
Aqua TROLL 600 - 532229
Controller (MP10) - 3564
Compressor - 18421
Water Level Meter - 39350

Test Notes:
CPM 3 18.5:1.5 PSI 50
125 mL/min

Weather Conditions:
Rain 55°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 9:01 AM	00:00	7.62 pH	13.44 °C	0.77 mS/cm	9.90 mg/L	0.00 NTU	209.7 mV	16.45 ft	125.00 ml/min
4/29/2021 9:27 AM	26:18	7.19 pH	12.57 °C	0.74 mS/cm	0.53 mg/L	0.00 NTU	-37.3 mV	16.45 ft	125.00 ml/min
4/29/2021 9:28 AM	26:36	7.19 pH	12.53 °C	0.74 mS/cm	0.52 mg/L	0.00 NTU	-37.8 mV	16.53 ft	125.00 ml/min
4/29/2021 9:31 AM	29:36	7.18 pH	12.60 °C	0.74 mS/cm	0.46 mg/L	0.00 NTU	-38.8 mV	16.53 ft	125.00 ml/min
4/29/2021 9:34 AM	32:36	7.19 pH	12.59 °C	0.74 mS/cm	0.45 mg/L	0.00 NTU	-40.2 mV	16.53 ft	125.00 ml/min

Samples

Sample ID:	Description:
FWGmw-016-210401-GW	Begin low flow purge at 09:00 (PSI 50 CPM3/18.5r/1.5d) Stagnant water volume: 3,250 mL Stagnant water removed at 26:18 (09:27) Stable at 32:36 (09:34) Water clear, colorless, odorless throughout purge Measured total volume purged: 4,375 mL Sample for expanded explosives at 09:38 on 4/29/21

Sampled By: ,4/29/2021

QA Check By: Lindsey Moyer ,5/26/2021

Low-Flow Test Report:

Test Date / Time: 4/29/2021 9:04:27 AM
Project: FWGmw-018
Sampler Name: Lindsey Moyer

Location Name: FWGmw-018 **Well Diameter: 2 in** **Initial Depth to Water: 20.45 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 240 ft** **Pump Intake From TOC: 141 ft** **Estimated Total Volume Pumped: 10,112.5 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 375 ml/min** **Final Draw Down: 0.95 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:

CPM 1 50:10 PSI 70

375 mL/min

Weather Conditions:

61°F rain, cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 9:04 AM	00:00	7.16 pH	13.50 °C	0.61 mS/cm	2.62 mg/L	0.00 NTU	52.0 mV	20.45 ft	375.00 ml/min
4/29/2021 9:21 AM	17:27	6.90 pH	11.36 °C	0.61 mS/cm	0.23 mg/L	0.00 NTU	-76.1 mV	21.40 ft	375.00 ml/min
4/29/2021 9:22 AM	17:58	6.90 pH	11.19 °C	0.61 mS/cm	0.26 mg/L	0.00 NTU	-75.8 mV	21.40 ft	375.00 ml/min
4/29/2021 9:25 AM	20:58	6.93 pH	11.38 °C	0.61 mS/cm	0.21 mg/L	0.00 NTU	-73.2 mV	21.40 ft	375.00 ml/min
4/29/2021 9:28 AM	23:58	6.95 pH	11.38 °C	0.61 mS/cm	0.20 mg/L	0.00 NTU	-72.0 mV	21.40 ft	375.00 ml/min
4/29/2021 9:31 AM	26:58	6.98 pH	11.35 °C	0.61 mS/cm	0.21 mg/L	0.00 NTU	-71.2 mV	21.40 ft	375.00 ml/min

Samples

Sample ID:	Description:
FWGmw-018-210401-GW	Begin low flow purge at 0904 (PSI 70/CPM 1/50/10). Stagnant water volume: 6,750 mL Stagnant water volume removed at 0921 Stable at 0931 Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 12,000 mL Sample for VOCs and nitrates at 0935 on 04/29/2021. FWGTB-210401-TB at 0900.

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Sampled By: Lindsey Moyer ,4/29/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/29/2021 9:11:57 AM
Project: FWGmw-020
Operator Name: Danielle Anderson

Location Name: FWGmw-020
Well Diameter: 2 in
Initial Depth to Water: 21.1 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.375 in
Tubing Length: 40 ft
Pump Intake From TOC: 40 ft
Estimated Total Volume Pumped: 3623.333 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 200 ml/min
Final Draw Down: 0.71 ft

Instruments Used:
Aqua TROLL 600 - 514551
Controller (MP10) - 14975
Compressor - 21426
Water Level Meter - 41832

Test Notes:
CPM 2 27:3 PSI 30
200 mL/min

Weather Conditions:
68°F rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 9:11 AM	00:00	7.39 pH	17.21 °C	0.59 mS/cm	8.70 mg/L	0.36 NTU	219.4 mV	21.10 ft	200.00 ml/min
4/29/2021 9:24 AM	12:07	6.90 pH	12.30 °C	0.72 mS/cm	0.65 mg/L	17.49 NTU	-66.2 mV	21.81 ft	200.00 ml/min
4/29/2021 9:27 AM	15:07	6.90 pH	12.23 °C	0.72 mS/cm	0.55 mg/L	10.21 NTU	-69.4 mV	21.81 ft	200.00 ml/min
4/29/2021 9:30 AM	18:07	6.92 pH	12.15 °C	0.72 mS/cm	0.51 mg/L	5.21 NTU	-71.3 mV	21.81 ft	200.00 ml/min

Samples

Sample ID:	Description:
FWGmw-020-210401-GW	Begin low flow purge at 9:11AM PSI 30/CPM 2/27/3 Stagnant water volume: 2,066.34 mL Stagnant water volume removed at 9:24 AM Stable at 9:30 AM Water is cloudy with a brown tint and odorless at the beginning of the purge and becomes clear, colorless, and odorless throughout purge. Measured total volume purged: 4,150 mL Sample for VOC and Nitrate at 0930 on 04/29/2021.

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Sampled By: ,4/29/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/29/2021 10:16:53 AM
Project: FWGmw-021
Sampler Name: Lindsey Moyer

Location Name: FWGmw-021 **Well Diameter: 2 in** **Initial Depth to Water: 19.81 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 40 ft** **Pump Intake From TOC: 40 ft** **Estimated Total Volume Pumped: 40,805 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 300 ml/min** **Final Draw Down: 0.78 ft**	**Instruments Used:** **Aqua TROLL 600 - 518902** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2 22:8 PSI 30
300 mL/min

Weather Conditions:
61°F cloudy, light rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 10:16 AM	00:00	6.45 pH	12.76 °C	0.17 mS/cm	7.03 mg/L	5,080.5 NTU	60.6 mV	19.81 ft	300.00 ml/min
4/29/2021 10:24 AM	07:20	5.95 pH	11.00 °C	0.18 mS/cm	2.00 mg/L	594.46 NTU	163.6 mV	20.46 ft	300.00 ml/min
4/29/2021 10:24 AM	07:46	5.94 pH	10.95 °C	0.18 mS/cm	1.99 mg/L	442.46 NTU	166.0 mV	20.46 ft	300.00 ml/min
4/29/2021 10:27 AM	10:46	5.94 pH	11.05 °C	0.18 mS/cm	1.95 mg/L	195.69 NTU	177.8 mV	20.51 ft	300.00 ml/min
4/29/2021 10:30 AM	13:46	6.04 pH	11.20 °C	0.18 mS/cm	2.46 mg/L	145.88 NTU	176.4 mV	20.54 ft	300.00 ml/min
4/29/2021 10:33 AM	16:46	6.01 pH	11.23 °C	0.18 mS/cm	1.80 mg/L	141.04 NTU	185.4 mV	20.54 ft	300.00 ml/min
4/29/2021 10:36 AM	19:46	6.00 pH	11.05 °C	0.18 mS/cm	1.71 mg/L	130.19 NTU	189.9 mV	20.54 ft	300.00 ml/min
4/29/2021 10:39 AM	22:46	5.99 pH	11.26 °C	0.18 mS/cm	1.61 mg/L	70.54 NTU	191.5 mV	20.54 ft	300.00 ml/min
4/29/2021 10:42 AM	25:46	6.01 pH	11.16 °C	0.18 mS/cm	1.54 mg/L	71.67 NTU	186.4 mV	20.54 ft	300.00 ml/min
4/29/2021 10:45 AM	28:46	6.01 pH	11.09 °C	0.18 mS/cm	1.48 mg/L	54.90 NTU	179.7 mV	20.54 ft	300.00 ml/min

4/29/2021 10:48 AM	31:46	6.01 pH	11.02 °C	0.18 mS/cm	1.43 mg/L	64.86 NTU	172.0 mV	20.54 ft	300.00 ml/min
4/29/2021 10:51 AM	34:46	5.99 pH	11.20 °C	0.18 mS/cm	1.36 mg/L	48.04 NTU	164.6 mV	20.55 ft	300.00 ml/min
4/29/2021 10:54 AM	37:46	6.02 pH	11.13 °C	0.18 mS/cm	1.32 mg/L	42.87 NTU	154.7 mV	20.55 ft	300.00 ml/min
4/29/2021 10:57 AM	40:46	6.02 pH	11.10 °C	0.18 mS/cm	1.28 mg/L	51.06 NTU	146.5 mV	20.55 ft	300.00 ml/min
4/29/2021 11:00 AM	43:46	6.02 pH	11.02 °C	0.18 mS/cm	1.25 mg/L	33.24 NTU	140.1 mV	20.57 ft	300.00 ml/min
4/29/2021 11:03 AM	46:46	5.99 pH	11.13 °C	0.18 mS/cm	1.22 mg/L	21.39 NTU	136.2 mV	20.57 ft	300.00 ml/min
4/29/2021 11:06 AM	49:46	6.02 pH	11.13 °C	0.18 mS/cm	1.18 mg/L	22.67 NTU	128.9 mV	20.57 ft	300.00 ml/min
4/29/2021 11:09 AM	52:46	6.02 pH	11.05 °C	0.18 mS/cm	1.14 mg/L	18.18 NTU	124.2 mV	20.57 ft	300.00 ml/min
4/29/2021 11:12 AM	55:46	6.02 pH	11.05 °C	0.18 mS/cm	1.12 mg/L	19.75 NTU	120.6 mV	20.58 ft	300.00 ml/min
4/29/2021 11:15 AM	58:46	5.98 pH	11.20 °C	0.18 mS/cm	1.10 mg/L	18.24 NTU	119.1 mV	20.58 ft	300.00 ml/min
4/29/2021 11:18 AM	01:01:46	6.03 pH	11.07 °C	0.17 mS/cm	1.06 mg/L	24.94 NTU	113.7 mV	20.58 ft	300.00 ml/min
4/29/2021 11:21 AM	01:04:46	6.02 pH	11.07 °C	0.17 mS/cm	1.06 mg/L	35.07 NTU	111.6 mV	20.58 ft	300.00 ml/min
4/29/2021 11:24 AM	01:07:46	6.02 pH	11.08 °C	0.17 mS/cm	1.04 mg/L	51.07 NTU	109.3 mV	20.59 ft	300.00 ml/min
4/29/2021 11:27 AM	01:10:46	5.99 pH	11.28 °C	0.17 mS/cm	1.60 mg/L	26.33 NTU	104.9 mV	20.59 ft	300.00 ml/min
4/29/2021 11:30 AM	01:13:46	6.03 pH	11.12 °C	0.17 mS/cm	1.01 mg/L	35.51 NTU	103.2 mV	20.59 ft	300.00 ml/min
4/29/2021 11:33 AM	01:16:46	6.02 pH	11.08 °C	0.17 mS/cm	1.00 mg/L	24.54 NTU	102.9 mV	20.59 ft	300.00 ml/min
4/29/2021 11:36 AM	01:19:46	6.01 pH	11.02 °C	0.17 mS/cm	0.95 mg/L	24.48 NTU	102.2 mV	20.59 ft	300.00 ml/min
4/29/2021 11:39 AM	01:22:46	5.97 pH	11.12 °C	0.17 mS/cm	0.95 mg/L	17.92 NTU	103.9 mV	20.59 ft	300.00 ml/min
4/29/2021 11:42 AM	01:25:46	6.02 pH	11.06 °C	0.17 mS/cm	0.91 mg/L	18.20 NTU	99.9 mV	20.59 ft	300.00 ml/min
4/29/2021 11:45 AM	01:28:46	6.02 pH	11.08 °C	0.17 mS/cm	0.92 mg/L	11.13 NTU	99.3 mV	20.59 ft	300.00 ml/min
4/29/2021 11:48 AM	01:31:46	6.01 pH	11.03 °C	0.17 mS/cm	0.90 mg/L	14.37 NTU	99.0 mV	20.59 ft	300.00 ml/min
4/29/2021 11:51 AM	01:34:46	5.98 pH	11.19 °C	0.17 mS/cm	0.89 mg/L	17.08 NTU	100.0 mV	20.59 ft	300.00 ml/min
4/29/2021 11:54 AM	01:37:46	6.02 pH	11.04 °C	0.17 mS/cm	0.87 mg/L	14.64 NTU	96.4 mV	20.59 ft	300.00 ml/min
4/29/2021 11:57 AM	01:40:46	6.02 pH	11.02 °C	0.17 mS/cm	0.86 mg/L	11.26 NTU	95.8 mV	20.59 ft	300.00 ml/min
4/29/2021 12:00 PM	01:43:46	6.01 pH	11.01 °C	0.17 mS/cm	0.86 mg/L	11.08 NTU	95.6 mV	20.59 ft	300.00 ml/min
4/29/2021 12:03 PM	01:46:46	5.97 pH	11.15 °C	0.17 mS/cm	0.85 mg/L	13.45 NTU	97.1 mV	20.59 ft	300.00 ml/min
4/29/2021 12:06 PM	01:49:46	6.03 pH	11.08 °C	0.17 mS/cm	0.82 mg/L	14.02 NTU	93.7 mV	20.59 ft	300.00 ml/min
4/29/2021 12:09 PM	01:52:46	6.02 pH	11.05 °C	0.17 mS/cm	0.82 mg/L	19.71 NTU	93.2 mV	20.59 ft	300.00 ml/min
4/29/2021 12:12 PM	01:55:46	6.01 pH	10.98 °C	0.17 mS/cm	0.81 mg/L	13.72 NTU	93.1 mV	20.59 ft	300.00 ml/min

4/29/2021 12:16 PM	01:59:57	6.02 pH	11.05 °C	0.17 mS/cm	0.81 mg/L	13.17 NTU	92.1 mV	20.59 ft	300.00 ml/min
4/29/2021 12:19 PM	02:02:57	5.97 pH	11.22 °C	0.17 mS/cm	0.80 mg/L	8.81 NTU	94.1 mV	20.59 ft	300.00 ml/min
4/29/2021 12:25 PM	02:08:18	6.01 pH	10.99 °C	0.17 mS/cm		11.10 NTU	90.4 mV	20.61 ft	300.00 ml/min
4/29/2021 12:30 PM	02:13:56	6.50 pH	17.17 °C	0.16 mS/cm	3.00 mg/L	10.31 NTU	-2.2 mV	20.59 ft	300.00 ml/min
4/29/2021 12:32 PM	02:15:20	6.01 pH	14.09 °C	0.17 mS/cm	1.09 mg/L	10.24 NTU	24.2 mV	20.63 ft	300.00 ml/min
4/29/2021 12:32 PM	02:16:01	5.85 pH	13.40 °C	0.17 mS/cm	0.99 mg/L	16.30 NTU	36.2 mV	20.59 ft	300.00 ml/min

Samples

Sample ID:	Description:
FWGmw-021-210401-GW	Begin low flow purge at 1017 (PSI 30/CPM 2/22/8) Stagnant water volume: 2,400 mL Stagnant water volume removed at 1024 Stable at 1244 (on other purge log) Water is clear, colorless, and odorless at end of purge. Water started off orange and cloudy, throughout purge it began to clear up. Turbidity never went below 10NTU. Had connection issues with Aqua Troll and RDO sensor disconnected and would not reconnect. D. Anderson had to connect to Aqua Troll 514551 for the last few readings to show that parameters except for turbidity was stable. Measured total volume purged: 44,100 mL Sample for explosives at 1245 on 04/29/2021.

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Sampled By: Lindsey Moyer ,4/29/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/29/2021 12:37:01 PM
Project: FWGmw-021
Sampler Name: Danielle Anderson and Lindsey Moyer

Location Name: FWGmw-021 **Well Diameter: 2 in** **Initial Depth to Water: 20.9 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 40 ft** **Pump Intake From TOC: 40 ft** **Estimated Total Volume Pumped: 2,195 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 300 ml/min** **Final Draw Down: -0.25 ft**	**Instruments Used: Aqua TROLL 600 - 514551** **Controller (MP50) - 042344** **Water Level Meter - 39082**

Test Notes:
CPM 2 22:8 PSI 30
300 mL/min

Weather: 61°F, cloudy, light rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 12:37 PM	00:00	5.60 pH	12.31 °C	0.17 mS/cm	0.88 mg/L	17.57 NTU	84.1 mV	20.65 ft	300.00 ml/min
4/29/2021 12:37 PM	00:27	5.59 pH	12.22 °C	0.17 mS/cm	0.87 mg/L	19.70 NTU	83.6 mV	20.65 ft	300.00 ml/min
4/29/2021 12:40 PM	03:27	5.53 pH	11.86 °C	0.17 mS/cm	0.84 mg/L	44.40 NTU	86.2 mV	20.65 ft	300.00 ml/min
4/29/2021 12:41 PM	04:19	5.51 pH	11.91 °C	0.17 mS/cm	0.84 mg/L	17.97 NTU	87.6 mV	20.65 ft	300.00 ml/min
4/29/2021 12:44 PM	07:19	5.52 pH	11.77 °C	0.17 mS/cm	0.82 mg/L	15.79 NTU	89.4 mV	20.65 ft	300.00 ml/min

Samples

Sample ID:	Description:
FWGmw-021-210401-GW	Description in Lindsey Moyer's log. Sampled for explosives at 1245 on 4/29/2021

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Sampled By: Lindsey Moyer ,4/29/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 5/5/2021 1:52:26 PM
Project: FWGmw-023
Sampler Name: Jasmine Stefansky

Location Name: FWGmw-023 **Well Diameter: 2 in** **Casing Type: Pvc** **Total Depth: 215 ft** **Initial Depth to Water: 116.92 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: 3/8 PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 22 ft** **Pump Intake From TOC: 210 ft** **Estimated Total Volume Pumped: 9,269.167 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 350 ml/min** **Final Draw Down: 0.33 ft**	**Instruments Used:** **Aqua TROLL 600 - 532229** **Controller (MP50) - 042344** **Water Level Meter - 39350**

Test Notes:
CPM 1 20:40 PSI 110
350 mL/min

Weather Conditions:
50°F cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
5/5/2021 1:52 PM	00:00	7.26 pH	13.58 °C	0.60 mS/cm	9.97 mg/L	0.00 NTU	168.1 mV	116.92 ft	350.00 ml/min
5/5/2021 2:05 PM	13:03	6.82 pH	10.76 °C	0.63 mS/cm	2.07 mg/L	204.89 NTU	-27.8 mV	117.25 ft	350.00 ml/min
5/5/2021 2:09 PM	17:29	6.84 pH	10.72 °C	0.64 mS/cm	1.15 mg/L	0.00 NTU	-9.2 mV	117.25 ft	350.00 ml/min
5/5/2021 2:12 PM	20:29	6.86 pH	10.69 °C	0.64 mS/cm	0.71 mg/L	0.00 NTU	-13.8 mV	117.25 ft	350.00 ml/min
5/5/2021 2:15 PM	23:29	6.87 pH	10.73 °C	0.64 mS/cm	0.60 mg/L	0.00 NTU	-16.3 mV	117.25 ft	350.00 ml/min
5/5/2021 2:18 PM	26:29	6.89 pH	10.71 °C	0.63 mS/cm	0.56 mg/L	0.00 NTU	-18.2 mV	117.25 ft	350.00 ml/min

Samples

Sample ID:	Description:
FWGmw-023-210401-GW	Begin low flow purge at 13:45 CPM 1, r20 d40, psi 110 Stagnant water volume:5,950mL Stagnant water removed at 17:29 (14:09) Stable at: 26:29 (141:8) Water clear, colorless, odorless throughout purge Measured total volume purged: 9,100 mL Sample for expanded explosives at 14:20 on 5/5/21 *Note had to use MP50 to get water to flow

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Sampled By: ,5/05/2021

QA Check By: Lindsey Moyer , 5/26/2021

Low-Flow Test Report:

Test Date / Time: 4/29/2021 1:08:15 PM
Project: FWGmw-024
Operator Name: Danielle Anderson

Location Name: FWGmw-024 **Well Diameter: 2 in** **Initial Depth to Water: 13.25 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 31 ft** **Pump Intake From TOC: 31 ft** **Estimated Total Volume Pumped: 7540 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 600 ml/min** **Final Draw Down: 0.05 ft**	**Instruments Used:** **Aqua TROLL 600 - 514551** **Controller (MP10) - 14975** **Compressor - 21426** **Water Level Meter - 41832**

Test Notes:
CPM 4 12:3 PSI 30
600 mL/min

Weather Conditions:
64°F rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/29/2021 1:08 PM	00:00	6.97 pH	13.78 °C	0.44 mS/cm	6.21 mg/L	4.42 NTU	53.3 mV	13.25 ft	600.00 ml/min
4/29/2021 1:11 PM	03:34	6.71 pH	11.91 °C	0.44 mS/cm	0.86 mg/L	518.58 NTU	25.7 mV	13.30 ft	600.00 ml/min
4/29/2021 1:14 PM	06:34	6.66 pH	11.75 °C	0.45 mS/cm	0.46 mg/L	32.55 NTU	11.7 mV	13.30 ft	600.00 ml/min
4/29/2021 1:17 PM	09:34	6.65 pH	11.61 °C	0.45 mS/cm	0.43 mg/L	16.17 NTU	4.2 mV	13.30 ft	600.00 ml/min
4/29/2021 1:20 PM	12:34	6.66 pH	11.58 °C	0.46 mS/cm	0.36 mg/L	8.33 NTU	-0.9 mV	13.30 ft	600.00 ml/min

Samples

Sample ID:	Description:
FWGmw-024-210401-GW	Begin low flow purge at 1:08 PM (PSI 30 CPM 4/3/12) Stagnant water volume: 2,009.95 mL Stagnant water volume removed at 1:11 PM Stable at 1:20 PM Water was initially clear, colorless, and odorless at beginning of purge, but became orange and turbid during the stagnant water purge. Once the stagnant water was purged the water became clear, colorless and odorless for the remainder of the purge. Measured total volume purged: 7,380 mL Sample for explosives at 1321 on 04/29/2021.

Sampled By: ,4/29/2021

QA Check By: ,5/17/2021

Low-Flow Test Report:

Test Date / Time: 4/27/2021 1:28:57 PM
Project: SCFmw-004
Sampler Name: Lindsey Moyer

Location Name: SCFmw-004
Well Diameter: 2 in
Screen Length: 10 ft
Top of Screen: 100 ft
Total Depth: 110 ft
Initial Depth to Water: 0 ft

Pump Type: QED Well Wizard Bladder Pump
Tubing Type: PTFE
Tubing Inner Diameter: 0.375 in
Tubing Length: 210 ft
Pump Intake From TOC: 105 ft
Estimated Total Volume Pumped: 6,116.667 ml
Flow Cell Volume: 130 ml
Final Flow Rate: 500 ml/min
Final Draw Down: 0 ft

Instruments Used:
Aqua TROLL 600 - 518902
Controller (MP50) - 042344
Water Level Meter - 39082

Test Notes:
CPM 3 12.5/7.5 PSI 52
500 mL/min

Weather Conditions:
Sunny, clear, 75°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
4/27/2021 1:28 PM	00:00	6.84 pH	12.06 °C	1.04 mS/cm	0.75 mg/L	0.45 NTU	-67.2 mV	0.00 ft	500.00 ml/min
4/27/2021 1:29 PM	00:14	6.75 pH	12.37 °C	1.04 mS/cm	0.63 mg/L	1.06 NTU	-63.2 mV	0.00 ft	500.00 ml/min
4/27/2021 1:32 PM	03:14	6.66 pH	11.79 °C	1.05 mS/cm	0.28 mg/L	0.97 NTU	-61.3 mV	0.00 ft	500.00 ml/min
4/27/2021 1:35 PM	06:14	6.68 pH	11.59 °C	1.06 mS/cm	0.24 mg/L	0.53 NTU	-61.3 mV	0.00 ft	500.00 ml/min
4/27/2021 1:38 PM	09:14	6.70 pH	11.72 °C	1.05 mS/cm	0.21 mg/L	0.78 NTU	-62.5 mV	0.00 ft	500.00 ml/min
4/27/2021 1:41 PM	12:14	6.71 pH	11.59 °C	1.06 mS/cm	0.19 mg/L	3.64 NTU	-62.9 mV	0.00 ft	500.00 ml/min

Samples

Sample ID:	Description:
SCFmw-004-210401-GW	Begin low flow purge at 1328(PSI 52/CPM 3/12.5/7.5) Stagnant water volume: 0 mL. Well is artesian and was actively flowing. Water level is 0.0'. Water is flowing out of well. Stable at 1341 Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 6,500 mL Sampled for explosives at 1345 on 04/27/2021.

Sampled By: Lindsey Moyer ,4/27/2021

QA Check By: ,5/13/2021

B.3 Chains of Custody

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leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-092-TA
Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-089-210401-GW			4/26/21	1145	W	2		2	
	LL1mw-089-210402-GW			4/26/21	1145	W	2		2	

JS 4/26/21

Relinquished by	Date	Received by	Date
Signature	4/26/21	Signature: BH	4-26-21
Jasmine Stefansky Printed Name	Time 1530	Printed Name	Time 1530
Leidos Company		Company	
Relinquished by	Date 4-26-21	Received by	Date 4/27/21
Signature	Time 1700	Signature	Time 0925
BH Printed Name		Josh Lystrom Printed Name	
Company		ETA DEN 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

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP-095-TA
Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Lindsey Mazer

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-083-210401-GW			04/26/21	1235	W	2		2	

RL
4/26/2021

Relinquished by Signature Ryan Lauer Printed Name Leidos Company	Date 4/26/2021 Time 1530	Received by Signature Printed Name Company	Date 4-26-21 Time 1530		
Relinquished by Signature Printed Name Company	Date 4-26-21 Time 1200	Received by Signature Joshleystrom Printed Name ETADEN Company	Date 4/27/21 Time 0935		

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

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-094TA
Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-087-210401-GW			4/26/2	0928	W	2		2	
	LL1mw-087-210401-GWMSD			4/26/21	0928	W	4		4	extra volume for MS/MSD
	LL1mw-087-210402-GW			4/26/21	0928	W	2		2	

JS 4/26/21

Relinquished by	Date	Received by	Date
Jasmine Stefansky	4/26/21		4-26-21
Signature	Time	Signature	Time
Printed Name	1530	Printed Name	1530
Leidos Company		Company	
Relinquished by	Date	Received by	Date
Signature	4-26-21	Signature	4/27/21
Printed Name	Time 1700	Josh Nystrom Printed Name ETADEN	Time 0925
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

Leidos

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-095-TA
Date: 04/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Danielle Anderson

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-081-210401-GW	N/A	N/A	04/26/21	1157	W	2		2	

DA 04/26/21

280-147883 Chain of Custody

Relinquished by	Date	Received by	Date
Signature Printed Name: Ryan [illegible] Company: Leidos	4/26/21 Time 1530	Signature Printed Name Company	4-26-21 Time 1530
Signature Printed Name Company	4-26-21 Time 1700	Signature Printed Name: Josh Oystrom ETADEN Company	4/27/21 Time 0925

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

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 1.9, 0.3, 0.6 IR9 CF+0.4

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

leidos

Chain of Custody Record

Page 1 of 1

096

COC No.: RVAAP-~~09[illegible]~~-TA 4/26/21

Date: 04/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) 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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-080-210401-GW			04/26/21	1340	W	2		2	

Mw 4/26/2021

Relinquished by
Signature
Printed Name Ryan [illegible]
Leidos
Company
Date 4/26/2021
Time 1530
Received by
Signature
Printed Name
Company
Date 4-26-21
Time 1530

Relinquished by
Signature
Printed Name
Company
Date 4-26-21
Time 1700
Received by
Signature
Printed Name Josh Nystrom
Company ETADEN
Date 4/27/21
Time 0925

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

097

COC No.: **RVAAP-~~096~~-TA**

Page of 1

Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Lindsey Myers

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	Expanded Explosives (6)(A)	Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-084-210401-GW			4/26/21	0940	W	2	1	1		1		5	
	LL1mw-084-210401-GWMSD				0940	W		2	2				4	**extra volume for MS/MSD**
	LL1mw-084-210402-GW			↓	0940	W	2	1	1				4	

4/26/2021

Relinquished by Signature Printed Name Ryan Lawson Leidos Company	Date 4/26/2021 Time 1530	Received by Signature Printed Name Company	Date 4-26-21 Time 1530	
Relinquished by Signature Printed Name Company	Date 4-26-21 Time 1700	Received by Signature Printed Name Josh Rystrom Company ETADEN	Date 4/27/21 Time 0925	

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
E. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

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

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-099TA
Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-064-210401-GW			4/26/21	1325	W	2		2	

4/26/21

Relinquished by	Date	Received by	Date
Signature Jasmine Stefansky Printed Name Leidos Company	4/26/21 Time 1530	Signature Printed Name Company	4-26-21 Time 1530
Signature Printed Name Company	4-26-21 Time 1740	Signature Joshleystrom Printed Name ETADEN Company	4/27/21 Time 0925

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

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-019-TA
Date: 4/27/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) Dan A
(Printed Name) Danielle Anderson

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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-063-210401-GW	N/A	N/A	4/27/21	1018	W	2		2	

DA 04/27/21

Relinquished by
Signature
Ryan Lauman
Printed Name
Leidos
Company
Date 4/27/2021
Time 1530
Received by
Signature
Printed Name
Company
Date 4-27-21
Time 1530

Relinquished by
Signature
Printed Name
Company
Date 4-27-21
Time 1800
Received by
Signature
Sosh Rystrom
Printed Name
ETADEN
Company
Date 4/28/21
Time 0930

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

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-100-TA
Date: 4/27/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Danielle Anderson

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-009-210401-GW	N/A	N/A	4/27/21	1228	W	2		2	

DA 04/27/21

Relinquished by	Date	Received by	Date
Signature Printed Name: Ryan Laurich Company: Leidos	4/27/2021 Time: 1530	Signature Printed Name Company	4-27-21 Time: 1530
Signature Printed Name Company	4-27-21 Time: 1800	Signature Printed Name: Josh Lystrom Company: ETADEN	04/28/21 Time: 0930

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 101 -TA
Date: 4/27/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-008-210401-GW			4/27/21	0942	W	2		2	

4/27/2021

Relinquished by	Date 4/27/2021	Received by	Date 4-27-21	**Notes:** Total Number of Containers:	2
Signature		Signature		A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	
Ryan Lauria Printed Name	Time 1530	Printed Name	Time 1530		
Leidos Company		Company			
Relinquished by	Date 4-27-21	Received by	Date 4/28/21		
Signature		Signature Josh Rystrom			
Printed Name	Time 1800	Printed Name ETADEN	Time 0930		
Company		Company			

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-102-TA
Date: 4/27/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefonsky

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					Expanded Explosives (6)(A)												Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-014-210401-GW			4/27/21	1210	W					2													2	

RL
4/27/2021

Relinquished by	Date	Received by	Date
Signature	4/27/2021	Signature	4-27-21
Ryan Laurich Printed Name	Time 1530	Printed Name	Time 1530
Leidos Company		Company	

Relinquished by	Date	Received by	Date
Signature	4-27-21	Signature	4/28/21
Printed Name	Time 1800	Josh Nystrom Printed Name	Time 0930
Company		ETADEN 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

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

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

leidos

Chain of Custody Record

COC No.: RVAAP-105-TA

Page of 1

Date: 4/27/21

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 2021
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	Depth	Date	Time	Matrix	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-011-210401-GW			4/27/21	1110	W	2		2	

Rc 4/27/2021

Relinquished by	Date	Received by	Date
Signature	4/27/2021	Signature	4-27-21
Printed Name: Ryan Lauria	Time: 1530	Printed Name	Time: 1530
Company: Leidos		Company	
Relinquished by	Date: 4-27-21	Received by	Date: 4/28/21
Signature		Signature	
Printed Name	Time: 1800	Printed Name: Josh Rystrom	Time: 0930
Company		Company: ETADEN	

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

COC No.: RVAAP-104-TA

Page of 1

Date: 4/27/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature)
(Printed Name) Lindsey Mazer

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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-012-210401-GW			4/27/21	1210	W	2		2	

LM 4/27/2021

Relinquished by
Signature
Ryan Laurich
Printed Name
Leidos
Company
Date 4/27/2021
Time 1530
Received by
Signature
Printed Name
Company
Date 4-27-21
Time 1330

Relinquished by
Signature
Printed Name
Company
Date 4-27-21
Time 1800
Received by
Signature Josh Lystrom
Printed Name ETA DEN
Company
Date 4/28/21
Time 0930

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

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP-105-TA
Date: 4/27/21

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 2021
Job/P.O. No.: P010216426
Sampler ~~(Signature)~~ (Printed name) ~~(Printed Name)~~ (Signature) gr 4/27/21
Lindsey Maier

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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	SCFmw-004-210401-GW			4/27/21	1345	W	2		2	

4/27/2021

Relinquished by	Date	Received by	Date
Signature	4/27/2021	Signature	4-27-21
Printed Name: Ryan Lauren	Time: 1530	Printed Name	Time: 1530
Company: Leidos		Company	
Relinquished by	Date: 4-27-21	Received by	Date: 4/28/21
Signature	Time: 1800	Signature	Time: 0930
Printed Name		Printed Name: Josh Rystrom	
Company		Company: ETA DEN	

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

280-147948 Chain of Custody

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-106-TA
Date: 4/27/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Danielle Anderson

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-020-210401-GW	N/A	N/A	4/27/21	1343	W	2		2	

DA 04/27/21

Relinquished by	Date	Received by	Date
Signature Printed Name Ryan Laurich Company Leidos	4/27/2021 Time 1530	Signature Printed Name Company	4-27-21 Time 1530
Signature Printed Name Company	4-27-21 Time 1800	Signature Printed Name Josh Rystrom Company ETADEN	4/28/21 Time 0930

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

0.1,0.9 IR11 CF+0.4

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

COC No.: RVAAP-107-TA
Page 1 of 1 Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Danielle Anderson

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-007-210401-GW	N/A	N/A	4/28/21	1106	W	2		2	

DA 04/28/21

280-148007 Chain of Custody

Relinquished by	Date	Received by	Date
Signature Printed Name [illegible] Company Leidos	4/28/2021 Time 1530	Signature Printed Name Company	4-28-21 Time 1530
Signature Printed Name Company	4-28-21 Time 1200	Signature Printed Name Soshelystrom Company ETADEN	4/29/21 Time 1045

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

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 White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

0.6, 1.1, 1.7, 1.2 IRU CFto.4

leidos

Chain of Custody Record

COC No.: RVAAP-108-TA
Page 1 of 1
Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Danielle Anderson

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					Expanded Explosives (6)(A)			Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)						TOC (13)(E)	Temperature Blank	Total Number of Containers
	WBGmw-018-210401-GW	N/A	N/A	4/28/21	0958	W					2			1	1							1		5

DA 04/28/21

OBSERVATIONS, COMMENTS
SPECIAL INSTRUCTIONS

Relinquished by	Date	Received by	Date
Signature	4/28/2021	Signature	4-28-21
Printed Name: Ron Lanyi	Time: 1530	Printed Name	Time: 1530
Company: Leidos		Company	
Relinquished by	Date	Received by	Date
Signature	4-28-21	Signature	4/29/21
Printed Name	Time: 1700	Printed Name: Josh Rystrom	Time: 1045
Company		Company: ETADEN	

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. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

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

leidos

Chain of Custody Record

Page1 of 1

COC No.: **RVAAP-109-TA**
Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name)
Danielle Anderson

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-019-210401-GW	N/A	N/A	4/28/21	0912	W	2		2	

DA 04/28/21

Relinquished by	Date 4/28/2021	Received by	Date 4-28-21	
Signature		Signature		
Ryan Lauria	Time 1550		Time 1530	
Printed Name		Printed Name		
Leidos				
Company		Company		
Relinquished by	Date 4/28/21	Received by	Date 4/30/21	
Signature		Signature		
	Time 1200	Josh Lystrom	Time 1045	
Printed Name		Printed Name		
		ETADEN		
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

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-110-TA
Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-021-210401-GW	NA	NA	4/28/21	1020	W	2		2	

RL
4/28/2021

Relinquished by	Date	Received by	Date
Signature: RL Printed Name: Ryan Lauren Company: Leidos	4/28/21 Time: 1530	Signature Printed Name Company	4-28-21 Time: 1530
Signature Printed Name Company	4-28-21 Time: 1200	Signature Printed Name: Josh Rystrom Company: ETA DEN	4/29/21 Time: 1045

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-111-TA
Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmin Stefansky

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	Expanded Explosives (6)(A)	Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	WBGmw-006-210401-GW	NA	NA	4/28/21	0900	W	2	1	1		1		5	

TR 4/28/2021

Relinquished by	Date	Received by	Date
Signature	4/28/21	Signature	4-28-21
Printed Name: Ryan Lauich	Time: 1530	Printed Name	Time: 1530
Company: Leidos		Company	

Relinquished by	Date	Received by	Date
Signature	4-28-21	Signature	4/29/21
Printed Name	Time: 1700	Printed Name: Josh Rystrom	Time: 1045
Company		Company: ETA DEN	

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. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

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

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-112-TA
Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefanski

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-241-210401-GW	NA	NA	4/28/21	1415	W	2		2	

Ru 4/28/2021

Relinquished by	Date 4/28/2021	Received by	Date 4-28-21	Notes: Total Number of Containers: 2	Shipment Method: Courier
Signature		Signature			
Printed Name RYAN LAURICH	Time 1530	Printed Name	Time 1530		
Company Leidos		Company			
Relinquished by	Date 4-28-21	Received by	Date 4/29/21		
Signature		Signature Josh Rystrom			
Printed Name	Time 1200	Printed Name ETADEN	Time 1045		
Company		Company			

Notes:
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

Leidos

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 113 -TA

Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefanski

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					Expanded Explosives (6)(A)			Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)						TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-238-210401-GW	NA	NA	4/28/21	1202	W					2			1	1							1		5	

4/28/2021

Relinquished by	Date	Received by	Date
Signature	4/28/21	Signature	4-28-21
Printed Name: Ryan Laurich	Time: 1530	Printed Name	Time: 1530
Company: Leidos		Company	

Relinquished by	Date	Received by	Date
Signature	4-28-21	Signature	4/28/21
Printed Name	Time: 1700	Printed Name: Josh Rystrom	Time: 1645
Company		Company: ETADEN	

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. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

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

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-114 -TA
Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Lindsey Moser

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	Depth	Date	Time	Matrix	Requested Parameters: Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-237-210401-GW	NA	NA	4/28/21	1405	W	2		2	

RE
4/28/2021

Relinquished by
Signature
Ryan Laurich
Printed Name
Leidos
Company
Date 4/28/2021
Time 1530
Received by
Signature
Printed Name
Company
Date 4-28-21
Time 1530

Relinquished by
Signature
Printed Name
Company
Date 4-28-21
Time 1200
Received by
Signature Josh Lystrom
Printed Name
ETA DEN
Company
Date 4/29/21
Time 1045

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-115-TA
Date: 4/28/21

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 2021
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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL2mw-059-210401-GW	NA	NA	4/28/21	1250	W	2		2	

4/28/2021

Relinquished by
Signature
Ryan Caurucy
Printed Name
Leidos
Company
Date 4/28/2021
Time 1530

Received by
Signature
Printed Name
Company
Date 4-28-21
Time 1530

Relinquished by
Signature
Printed Name
Company
Date 4-28-21
Time 1700

Received by
Signature
Josh Rystrom
Printed Name
ETA DEN
Company
Date 4/29/21
Time 1045

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-116-TA

Date: 4/28/21

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 2021
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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-086-210401-GW	NA	NA	4/28/21	1125	W	2		2	
										extra volume for MS/MSD

4/28/2021

Relinquished by	Date	Received by	Date
Signature Printed Name: Ryan Laurich Company: Leidos	4/28/21 Time: 1530	Signature Printed Name Company	4-28-21 Time: 1530
Signature Printed Name Company	4-28-21 Time: 1200	Signature Printed Name: Josh Rystrom Company: ETA DEN	4/29/21 Time: 1045

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

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-117-TA
Date: 4/28/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Daniell Anderson

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					Expanded Explosives (6)(A)			Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)						TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-239-210401-GW	N/A	N/A	4/28/21	1417	W					2			1	1							1		5	

DA 04/28/21

Relinquished by Signature Printed Name Ryan Lauffer Company Leidos	Date 4/28/2021 Time 1530	Received by Signature Printed Name Company	Date 4-28-21 Time 1530	Notes: Total Number of Containers: 5
Relinquished by Signature Printed Name Company	Date 4-28-21 Time 1700	Received by Signature Printed Name Josh Rystrom Company ETA DEN	Date 4/29/21 Time 1045	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

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*

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-118-TA
Date: 4/29/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-004-210401-GW	NA	NA	4/29/21	1054	W	2		2	
	FWGmw-004-210401-GWMSD	↓	↓	4/29/21	1054	W	4		4	extra volume for MS/MSD
	FWGmw-004-210402-GW	↓	↓	4/29/21	1054	W	2		2	

RL 4/29/2021

Relinquished by	Date	Received by	Date
Signature	4/29/2021	Signature	4-29-21
Printed Name: Ryan Lavrich	Time: 1530	Printed Name	Time: 1531
Company: Leidos		Company	

Relinquished by	Date	Received by	Date
Signature	4-29-21	Signature	4/30/21
Printed Name	Time: 1700	Printed Name: JERRY LEE	Time: 205P
Company		Company: EURO /TA	

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

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

White Laboratory Pink Project Manager Yellow Project QAO Goldenrod Field Project Manager

TEMP 2.6C 1.8C IR #11 CF +0.4

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-119-TA
Date: 4/29/21

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 2021
Job/P.O. No.: P01021[illegible]
Sampler (Signature) (Printed Name) Jasmine Stefansky

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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-015-210401-GW	NA	NA	4/29/21	0835	W	2		2	

RL 4/29/2021

Relinquished by	Date	Received by	Date
Signature Printed Name Ryan Lawall Company Leidos	4/29/2021 Time 1530	Signature Printed Name Company	4-29-21 Time 1530
Signature Printed Name Company	4-29-21 Time 1700	Signature Printed Name Jerry Lee Company Euro/TA	4/30/21 Time 205 P

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

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

TEMP +2.6 ~~RF~~ IR #11 CF +0.4
4/30/21
JL

280-148071 Chain of Custody

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-120TA
Date: 4/29/21

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 2021
Job/P.O. No.: P01021 6426
Sampler (Signature) (Printed Name) Jasmine Stefanski

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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-016-210401-GW	NA	NA	4/29/21	0938	W	2		2	

4/29/2021

Relinquished by Signature Ilya Lavrich Printed Name Leidos Company	Date 4/29/2021 Time 1530	Received by Signature Printed Name Company	Date 4-29-21 Time 1530	
Relinquished by Signature Printed Name Company	Date 4-29-21 Time 1700	Received by Signature JERRY LEE Printed Name EURO/TA Company	Date 4/30/21 Time 205P	

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

White Laboratory *Pink Project Manager* *Yellow Project QAO* *Goldenrod Field Project Manager*

TEMP +2.6 C IR #11 CF +0.4

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-12-TA
Date: 4/29/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	VOCs (1)(B) CCl4 only	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL10mw-003-210401-GW	NA	NA	4/29/21	1337	W	3		3	Carbon tetrachloride only
	FWGTB-210402-TB			4/29/21	0805	W	2		2	trip blank

NA 4/29/2021

Relinquished by Signature	Date 4/29/2021	Received by Signature	Date 4-29-21	Notes: Total Number of Containers: 5		Shipment Method: Courier
Ryan Lanich Printed Name	Time 1550	Printed Name	Time 1530			
Leidos Company		Company				
Relinquished by Signature	Date 4-29-21	Received by Signature	Date 4/30/21			
Printed Name	Time 1700	JERRY LEE Printed Name	Time 205P			
Company		EURO / TA Company				

Notes:
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

Leidos

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

TEMP +1.8 C IR 11 CF +0.4

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-22-TA
Date: 4/29/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) 2.M (Printed Name) Lindsey Mayer

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	VOCs (1)(B)								Nitrate (10)(A)								Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-018-210401-GW	NA	NA	4/29/21	0935	W	3								1									4	
	FWGTB-210401-TB				0900	W	2																	2	trip blank

Relinquished by
Signature
Ryan Laurich
Printed Name
Leidos
Company
Date 4/29/2021
Time 1530

Received by
Signature
Printed Name
Company
Date 4-29-21
Time 1530

Relinquished by
Signature
Printed Name
Company
Date 4/29/21
Time 1700

Received by
Signature
JERRY LEE
Printed Name
EURO / TA
Company
Date 4/30/21
Time 205P

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

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

TEMP 1.8 C IR #11 CF +0.4

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-~~12~~ 23-TA
Date: 4/29/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) Dani Ande (Printed Name) Danielle Anderson

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	VOCs (1)(B)	Nitrate (10)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-020-210401-GW	N/A	N/A	4/29/21	0930	W	3	1		4	
	~~FWGTB-21040__-TB~~			RL 4/29/2021		~~W~~	~~2~~			~~2~~	Trip Blank FWGTB -210401-TB

RL
4/29/2021

Relinquished by: RL
Signature: Ryan Lawrich
Printed Name:
Company: Leidos
Date: 4/29/2021
Time: 1530
Received by: BA
Signature:
Printed Name:
Company:
Date: 4.29.21
Time: 1530

Relinquished by: BA
Signature:
Printed Name:
Company:
Date: 4-29-21
Time: 1700
Received by:
Signature: JERRY LEE
Printed Name: EURO / TA
Company:
Date: 4/30/21
Time: 205P

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

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

White: Laboratory   Pink: Project Manager   Yellow: Project QAO   Goldenrod: Field Project Manager

TEMP 1.8C IR #11 CF +0.4

leidos

Chain of Custody Record

Page of 1

COC No: RVAAP-24-TA
Date: 4/29/21

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 2021
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:

Requested Parameters

Laboratory No	Sample ID	Site Type	Depth	Date	Time	Matrix	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-021-210401-GW	NA	NA	4/29/21	1245	W	2		2	

Re 4/29/2021

Relinquished by
Signature
Printed Name
Leidos
Company
Date 4/29/2021
Time 1530
Received by
Signature
Printed Name
Company
Date 4-29-21
Time 1530

Relinquished by
Signature
Printed Name
Company
Date 4-29-21
Time 1700
Received by
Signature
JERRY LEE
Printed Name
EURO/TA
Company
Date 4/30/21
Time 205P

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

TEMP 0.1 C IR#11 CF +0.4

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-25-TA
Date: 4/29/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) Dan Ande (Printed Name) Danielle Anderson

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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-024-210401-GW	N/A	N/A	4/29/21	1321	W	2		2	

DA 04/29/21

Relinquished by Signature Ryan Lanach Printed Name Leidos Company	Date 4/29/2021 1530 Time	Received by Signature Printed Name Company	Date 4-29-21 Time 1530	
Relinquished by Signature Printed Name Company	Date 4-29-21 Time 1700	Received by Signature JERRY LEE Printed Name EURO/TA Company	Date 4/30/21 Time 205P	

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

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

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

TEMP 0.1 C IR #11 CF +0.4

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-26-TA
Date: 5/3/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Nitrate (10)(A)	AMMONIA 15(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-185-210401-GW	NA	NA	5/3/21	1005	W	1	1		2	
	LL12mw-185-210401-GWMSD			5/3/21	1005	W		2		2	
	LL12mw-185-210402-GW			5/3/21	1005	W	1	1		2	

RC
5/3/2021

280-148151 Chain of Custody

Relinquished by	Date	Received by	Date
Signature	5/3/2021	Signature	5-3-21
Printed Name Ryan Lynch	~~1600~~ 5/3/2021	Printed Name	
Leidos	Time 1600		Time 1600
Company		Company	
Relinquished by	Date 5-3-21	Received by	Date 05/04/2021
Signature		Signature Adam Dybicki	
Printed Name	Time 1700	Printed Name ETA Can	Time 0950
Company		Company	

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. H2SO4

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
15. E350.1

0.1
IR11
CF+6.4

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

Chain of Custody Record

leidos

COC No.: RVAAP-127-TA
Page of 1
Date: 05/03/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Lindsey Moore

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	Nitrate (10)(A)	AMMONIA 15 (E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-187-210401-GW	NA	NA	5/03/21	0940	W	1	1		2	

5/3/2021

Relinquished by	Date	Received by	Date	Notes:
Signature: Ryan Lance	5/3/2021 ~~1600~~ m 5/3/2021	Signature	5-3-21	Total Number of Containers: 2
Printed Name	Time 1600	Printed Name	Time 1600	
Company Leidos		Company		

Relinquished by	Date	Received by	Date
Signature	5-3-21	Signature	05/04/2021
Printed Name	Time 1200	Printed Name Adam Dobecki	Time 0950
Company		Company Eth Den	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. H2SO4

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
15. E350.1

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

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-128-TA
Date: 5/3/21

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Spring 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-007-210401-GW	NA	NA	5/3/21	1242	W	2		2	

5/3/2021

Relinquished by Signature	Date 5/3/2021 ~~1800~~ 5/3/21	Received by Signature	Date 5-3-21	
Run Lanu Printed Name	Time 1600	Printed Name	Time 1600	
Leidos Company		Company		
Relinquished by Signature	Date 5-3-21	Received by Signature	Date 05/04/2021	
Printed Name	Time 1200	Adam Wold Printed Name	Time 0950	
Company		ETA Den 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

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

leidos

Chain of Custody Record

COC No.: RVAAP- 129 -TA
Page 1 of 1
Date: 5/3/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature)
(Printed Name) Danielle Anderson

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	Nitrate (10)(A)	AMMONIA 15 (E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-244-210401-GW	N/A	N/A	5/3/21	1336	W	1	1		2	

DA 05/03/21

Relinquished by
Signature
Printed Name Ryan Lancy
Company Leidos
Date 5/3/2021
Time 1600

Received by
Signature
Printed Name
Company
Date 5-3-21
Time 1600

Relinquished by
Signature
Printed Name
Company
Date 5-3-21
Time 1700

Received by
Signature
Printed Name Adam Dubick
Company ETA Den
Date 05/04/2021
Time 0950

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. H2SO4

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
15. E350.1

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

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-30-TA
Date: 05/03/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature)
(Printed Name) Danielle Anderson

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	Nitrate (10)(A)	AMMONIA 15 (E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-246-210401-GW	N/A	N/A	5/3/21	~~1026~~ DA 05/03/21 1032	W	1	1		2	

DA 05/03/21

Relinquished by	Date	Received by	Date
Signature Printed Name: Ryan Laurich Company: Leidos	5/3/2021 Time: 1600	Signature Printed Name Company	5-3-21 Time: 1600
Signature Printed Name Company	5-3-21 Time: 1700	Signature Printed Name: Adam J Dubicki Company: ETA Den	05/04/2021 Time: 0950

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. H2SO4

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
15. E350.1

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*

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-131-TA
Date: 5/3/21

Name Leidos
Address: 8866 Commons Blvd. Suite 201, Twinsburg, OH 44087
Phone Number: (330) 405-5802
Project Manager: Jed Thomas
Project: RVAAP FWGW Sampling Spring 2021
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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-010-210401-GW	NA	NA	5/3/21	1445	W	2		2	

Ns
5/3/2021

Relinquished by Signature Printed Name: Ryan [illegible] Company: Leidos	Date: 5/3/2021 Time: 1600	Received by Signature Printed Name Company	Date: 5-3-21 Time: 1600
Relinquished by Signature Printed Name Company	Date: 5-3-21 Time: 1200	Received by Signature Printed Name: Adam Pubke Company: EtA Den	Date: 05/04/2021 Time: 0950

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP- 132 -TA
Date: 5/4/21

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 2021
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	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-003-210401-GW	NA	NA	5/4/21	0855	W	3	2	2	2		2	1	1		13	
	DET-003-210401-GWMSD	↓	↓	↓	0855	W	4	4	4	4	4		2	2		24	Extra Volume for MS/MSD see note
	DET-003-210402-GW	↓	↓	↓	0855	W	3	2	2	2			1	1		11	
	FWGTB-210403-TB	↓	↓	↓	0830	W	2									2	

NOTE: If Vol an issue min 8 1-L for SVOC/pest/PCB

280-148219 Chain of Custody

Relinquished by	Date	Received by	Date
Signature	5/4/2021 ~~1505~~	Signature	5-4-21
Printed Name Ryan Launch	Time 1505	Printed Name	Time 1505
Company Leidos		Company	
Relinquished by	Date 5-4-21	Received by	Date
Signature		Signature Adam Dubick	
Printed Name	Time 1720	Printed Name	Time
Company		Company ETA Den	

Notes: Total Number of Containers: 50

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
FedexPO
Temps
0.2/0.1/0.6
1.3/0.8/1.9/0.6
IR11
CF0.4

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*

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-133-TA
Date: ~~4~~ 5/4/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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					Expanded Explosives (6)(A)			Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)						TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-174-210401-GW	NA	NA	5/4/21	1325	W					2			1		1						1		5	

RC
5/4/2021

Relinquished by	Date 5/4/2021	Received by	Date 5-4-21	
Signature		Signature		
Ryan Laurich Printed Name	Time 1505	Printed Name	Time 1505	
Leidos Company		Company		
Relinquished by	Date 5-4-21	Received by	Date	
Signature		Signature		
Printed Name	Time 12a	Adam Dubicki Printed Name	Time	
Company		EtA Den 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. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

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

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-134-TA
Date: 5/4/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-175-210401-GW	NA	NA	5/4/21	1050	W	2		2	5/4/2021
	FBQmw-175-210401-GWMSD	↓	↓	5/4/21	1050	W	4		4 ~~2~~	extra volume for MS/MSD
	FBQmw-175-210402-GW	↓	↓	5/4/21	1050	W	2		2	

5/4/2021

Relinquished by	Date 5/4/2021	Received by	Date 5-4-21	Notes: Total Number of Containers: 8 ~~6~~ 5/4/2021		Shipment Method: Courier
Signature		Signature				
Ryan Laurich Printed Name	Time 1505	Printed Name	Time 1505			
Leidos Company		Company				
Relinquished by	Date in storage 5-4-21	Received by	Date			
Signature		~~Signature~~				
Printed Name	Time 1700	Adam Dubicki Printed Name	Time			
Company		ETA Den 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:

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*

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-35-TA
Date: 5/4/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Danielle Anderson

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	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-004-210401-GW	N/A	N/A	05/04/21	0931	W	3	2	2	2		2	1								1			13	
	~~FWGTB 21040__TB~~					~~W~~	~~2~~																	2	~~trip~~ blank FWGTB-210403-TB
					RL 5/4/2021																				

RL 5/4/2021

Relinquished by	Date	Received by	Date
Signature RL	5/4/2021	Signature	5-4-21
Printed Name Ryan Lawrey	Time 1505	Printed Name	Time 1505
Company Leidos		Company	
Relinquished by	Date 5-4-21	Received by	Date
Signature		Signature	
Printed Name	Time 1711	Printed Name Adam Dubilli	Time
Company		Company ETA Den	

Notes: Total Number of Containers: ~~15~~ RL 5/4/2021 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

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-136-TA

Date: 5/4/21

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 2021
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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-173-210401-GW	NA	NA	5/4/21	1405	W	2	1	1		1		5	

RL
5/4/2021

Relinquished by	Date	Received by	Date
Signature	5/4/2021	Signature	5-4-21
Printed Name: Ryan Warner	Time: 1505	Printed Name	Time: 1505
Company: Leidos		Company	

Relinquished by	Date	Received by	Date
Signature	5-4-21	Signature	
Printed Name	Time: 1700	Printed Name: Adam Dubord	Time
Company		Company: ETA Den	

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. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP- 37-TA
Date: 5/5/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefonisky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-171-210401-GW	NA	NA	5/5/21	0932	W	2		2	

R 5/5/2021

280-148291 Chain of Custody

Relinquished by Signature Ryan Lauria Printed Name Leidos Company	Date 5/5/2021 Time 1515	Received by Signature Printed Name Company	Date 5.5.21 Time 1515
Relinquished by Signature Printed Name Company	Date 5.5.21 Time 1700	Received by Signature Josh Rystrom Printed Name ETADEN Company	Date 5/6/21 ~~5/5/21~~ 5/6/21 Time 0945

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

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

1.7, 2.8 IR4 CF+0.2 1

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-38-TA
Date: 5/5/21

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 2021
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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-172-210401-GW	NA	NA	5/5/21	0915	W	2		2	

RL 5/5/2021

Relinquished by
Signature
Ryan Laurich
Printed Name
Leidos
Company
Date 5/5/2021
Time 1515

Received by
Signature
Printed Name
Company
Date 5-5-21
Time 1515

Relinquished by
Signature
Printed Name
Company
Date 5-5-21
Time 1700

Received by
Signature
Josh Rystrom
Printed Name
ETA DEN
Company
Date ~~5/6/21~~ ~~5/5/21~~ 5/6/21
Time 0945

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-139-TA
Date: 5/5/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) Danielle Anderson
(Printed Name) Danielle Anderson

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					Expanded Explosives (6)(A)			Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)						TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-079-210401-GW	N/A	N/A	05/05/21	0947	W					2			1	1							1		5	

DA 05/05/21

Relinquished by Signature Ryan Lauver Printed Name Leidos Company	Date 5/5/2021 Time 1515	Received by Signature Printed Name Company	Date 5-5-21 Time 1515
Relinquished by Signature Printed Name Company	Date 5-5-21 Time 1700	Received by Signature Josh Rystrom Printed Name ETADEN Company	Date 5/6/21 Time 0945

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. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

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

leidos

Chain of Custody Record

Page 1 of 1

COC No RVAAP-140-TA
Date: 5/5/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Danielle Anderson

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL3mw-245-210401-GW	N/A	N/A	05/05/21	1322	W	2		2	

DA 05/05/21

Relinquished by	Date	Received by	Date
Signature Printed Name: Ryan Lawhun Company: Leidos	5/5/2021 Time 1515	Signature Printed Name Company	5-5-21 Time 1515
Signature Printed Name Company	5-5-21 Time 1700	Signature Printed Name: Josh Rystrom Company: ETADEN	5/6/21 Time 0945

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

White Laboratory Pink Project Manager Yellow Project QAO Goldenrod Field Project Manager

leidos

Chain of Custody Record

COC No.: RVAAP- 14 -TA
Page 1 of 1
Date: 5/5/21

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 2021
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	Nitrate (10)(A)	AMMONIA 15 (E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-245-210401-GW	NA	NA	5/5/21	1140	W	1	1		2	

5/5/2021

Relinquished by
Signature
Printed Name Ryan Harnes
Company Leidos
Date 5/5/2021
Time 1515

Received by
Signature
Printed Name
Company
Date 5-5-21
Time 1515

Relinquished by
Signature
Printed Name
Company
Date 5-5-21
Time 1700

Received by
Signature
Printed Name Josh Rystrom
Company ETA DEN
Date 5/6/21
Time 0945

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. H2SO4

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
15. E350.1

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

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-192-TA
Date: 5/5/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-023-210401-GW	NA	NA	5/5/21	1420	W	2		2	

R 5/5/2021

Relinquished by Signature	Date 5/5/2021	Received by Signature	Date 5-5-21	
Ryan Lynch Printed Name	Time 1515	Printed Name	Time 1515	
Leidos Company		Company		
Relinquished by Signature	Date 5-5-21	Received by Signature	Date 5/6/21	
Printed Name	Time 1700	Josh Lystrom Printed Name	Time 0945	
Company		ETADEN 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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod Field Project Manager

Chain of Custody Record

leidos

Page1 of 1

COC No.: RVAAP-193-TA
Date: 5/6/21

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 2021
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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-170-210401-GW	NA	NA	5/6/21	0945	W	2		2	

NA
5/6/21

280-148385 Chain of Custody

Relinquished by Signature	Date 5/6/2021	Received by Signature	Date 5-6-21	Notes: Total Number of Containers: 2	Shipment Method: Courier
Ryan Hunch Printed Name	Time 1235	Printed Name	Time 1235		
Leidos Company		Company			
Relinquished by Signature	Date 5-6-21	Received by Signature	Date 5/7/21		
Printed Name	Time 1600	ETADEN Printed Name	Time 9:50		
Company		Company			

Notes:
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
3.4 IR11 +0.4
Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

4.9/5.6

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-144-TA
Date: 5/10/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) 2. M
(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	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-08~~5~~7-210401-GW DM 5/10/21	NA	NA	5/10/21	1225	W	2		2	
										~~extra volume for MS/MSD~~ M 5/10/21

M
5/10/2021

280-148505 Chain of Custody

Relinquished by
Signature
Ryan Launich
Printed Name
Leidos
Company
Date 5/10/2021
Time 1405
Received by
Signature
JOE GRIFT
Printed Name
TA
Company
Date 10 May 21
Time 1405

Relinquished by
Signature
JOE GRIFT
Printed Name
TA
Company
Date 10 May 21
Time 1500
Received by
Signature
Printed Name
Company
Date 5-10-21
1500
Time 5-11-21
0600

Leidos
5-11-21

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

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

JOY 05/12/2021 0945 13.3 IR 11 +0.4

4.9 | 5.0

Leidos Proprietary

280-148573 Chain of Custody

leidos

Chain of Custody Record

COC No.: **RVAAP-083**

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
Job/P.O. No.: P010216426

Sampler (Signature) tota PCI (Printed Name) 2

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/PCBs (3/4)(A), TCLP Herbicides (5)(A)	TCLP Metals (7)(A)	Ignitability (11)(A)	pH (13)(A) / (6)(A)	Nitrate and Nitrite (10)(A)	Total Cyanide (8)(D)	Total Sulfide (9)('E')	total PCB					Temperature Blank	NO. OF CONTAINERS	OBSERVATIONS, COMMENTS
	FWGIDW-210401-WW	5/10/2021	1130	W	3	2 4	1	1		1	1	1	2						12	
																				revisions made 5/17/21

N 5/10/2021

1 2

Relinquished by

Signature

Printed Name Ryan Laurich

Leidos

Company

Date 5/10/2021

Time 1405

Relinquished by

Signature

Printed Name Joe G

1500hs

Company ETA

Date 5-10-21

1500

Time

Leidos

~~ETA 5-11-21~~

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

Total Number of Containers: 12

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)
14. SW 8260B

S=Soil / W=Water

Notes:

Shipment Method: Courier

Temperature Blank
Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

White: Laboratory *Pink: Project Manager* *Yellow: Project QAO* *Goldenrod: Field Project Manager*

5-12-21 01200

5-13-21 0935 1.3° CF+0.4 IR11

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-014CT
Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-087-210403-GW			4/26/21	0928	W	2		2	558637

4/26/21

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2	Shipment Method: Courier
Signature	4/26/21	Signature	4/27/21	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	
Printed Name: Jasmine Stefansky	Time: 1600	Printed Name	Time: 945	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B	
Company: Leidos		Company			
Relinquished by	Date	Received by ERC	Date: 4/27/21	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A	Temperature Blank 2.4/2.9 IR 27
		Signature			
		Printed Name	Time: 958	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
		Company			

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

rder # 161336
ompany: LEIDOS
Project: RVAAP
ogged By: erc PM: ETK

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-~~0~~15-CT
Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefonsky

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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-089-210403-GW			4/26/21	1145	W	2		2	558639

JS 4/26/21

Relinquished by	Date	Received by	Date
Signature	4/26/2021	Signature	4/27/21
Printed Name 4/26/21	Time 1600	Printed Name	Time 945
Company Leidos		Company	
Relinquished by	Date	Received by	Date 4/27/21
Signature		Signature	
Printed Name	Time	Printed Name	Time 958
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 2.4/2.5 IR 77

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

161336

leidos

Chain of Custody Record

Page of 1

COC No.: RVAAP-016-CT
Date: 4/26/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Lindsey Meyer

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	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-084-210403-GW			04/26/21	0940	W	2	1	1			4	558640

Relinquished by	Date	Received by	Date
Signature Ryan Lehman Printed Name Leidos Company	4/26/2021 1600 Time	EJL Signature Printed Name Company	4/27/21 Time 945
Relinquished by Signature Printed Name Company	Date Time	Received by EJL Signature Printed Name Company	Date 4/27/21 Time 958

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. H2SO4, pH<2, Cool, 4C
F. NaOH/Zn, 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 350.1
12. EPA 353.2
13. SW 9060A
14. SM2320B

Notes:

Shipment Method: Courier

Temperature Blank 2.4/2.4 EL 77

Lab:

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

161336

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Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-017-CT
Date: 5/3/21

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 2021
Job/P.O. No.: P010218426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Depth	Date	Time	Matrix	Nitrate (10XA)	AMMONIA 15(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-185-210403-GW	NA	NA	5/3/21	1005	W	1	1		2	100356

RL 5/5/2021

Relinquished by Signature Ryan Laurich Printed Name Leidos Company	Date 5/5/2021 Time 1600	Received by ERC Signature 0.81; 0127 Printed Name Company	Date 5/7/21 Time 949	Notes: Total Number of Containers: 2
Relinquished by Signature	Date	Received by ERC Signature Printed Name Company	Date 5/7/21 Time 1047	

Notes:
A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. H2SO4

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
15. E350.1

Shipment Method: UPS
Courier: 1Z76449F01 9687 9913

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

Folder #: 161512
Company: LEIDOS
Project: RVAAP FWGW SAMPLING EVENT SPR
Logged By: erc PM: ETK

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-018-CT
Date: 5/3/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefansky

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	Depth	Date	Time	Matrix	Explosives (8)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-007-210403-GW			5/3/21	1242	W	2		2	100359

RL
5/3/2021

Relinquished by	Date	Received by	Date	Notes:	Shipment Method: Courier
Signature	5/3/2021	ERC Signature 0.8/1.3 [illegible]	5MAY	**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	UPS 1Z764 49F01 9687 9913
Ryan Lasnick Printed Name	Time 1600	Printed Name	Time 949	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B	Notes:
Leidos Company		Company			
Relinquished by	Date	Received by ERC	Date 5MAY	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B	
Signature	Time	Signature		9. SW 9034 10. SW 9056/9056A	Temperature Blank
		Printed Name	Time 1004	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
		Company			

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

Folder #: 161514
Company: LEIDOS
Project: RVAAP FWGW SAMPLING EVENT
Logged By: erc PM: ETK

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Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-019-CT
Date: 5/4/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature)
(Printed Name) Lindsey [illegible]

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	Depth	Date	Time	Matrix	VOCs (1)(B)	Phthalates/Nitroaromatics/ Phenols (2)(A)	PAH-SIM (3)(A)	PCBs (4)(A)	Pesticides (5)(A)		Cyanide (8)(D)								TAL Metals (7)(C)		Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	DET-003-210403-GW	NA	NA	5/4/21	0855	W	3	2		2			1								1			9	1001459
	FWGTB-210404-TB	↓	↓	↓	0830	W	2																	2	Trip Blank 1001470

5/4/2021

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 11
Signature	5/4/2021	ERC Signature	5/5/21	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Ryan Lane Printed Name	Time 1600	Printed Name	Time 944	
Leidos Company		Company		
Relinquished by	Date	Received by	Date	
Signature		ERC Signature	5/5/21	
		Printed Name	Time 959	
		Company		

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: UPS
Courier
12 764 49F 01 9650 4700

Temperature Blank
Lab: 1.4/1.4
IR 27

Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Folder #: 161536
Company: LEIDOS
Project: RVAAP FWGW SAMPLING EVENT
Logged By: erc PM ETK

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

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Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-020CT
Date: 5/4/21

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 2021
Job/P.O. No.: P010216426
Sampler (Signature) (Printed Name) Jasmine Stefonsky

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	Sdg Type	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FBQmw-175-210403-GW	NA	NA	5/4/21	1050	W	2		2	1001571

RL 5/4/2021

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2	Shipment Method: Courier
Signature	5/4/2021	Eric Signature	5/5/21	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	UPS
Ryan Leuma Printed Name	Time 1600	Printed Name	Time 944	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B	1Z764 49F01 9650 4700
Leidos Company		Company		Notes:	
Relinquished by	Date	Received by Eric	Date 5/5/21	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A	Temperature Blank
Signature	Time	Signature	Time 959	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Lab: 1.9/1.9 IR 27
Printed Name		Printed Name			Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
Company		Company			

White: Laboratory Pink: Project Manager Yellow: Project QAO Goldenrod: Field Project Manager

Leidos

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B.4 Calibration Reports

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	514551
Created	4/26/2021

Sensor	**RDO**
Serial Number	652141
Last Calibrated	4/26/2021

Calibration Details	
Slope	1.11668
Offset	0.00 mg/L

Calibration point 100%	
Concentration	8.83 mg/L
Pre Measurement	97.07 %Sat
Post Measurement	100.00 %Sat
Temperature	17.33 °C
Barometric Pressure	1,040.1 mbar

Sensor	**Conductivity**
Serial Number	594437
Last Calibrated	4/26/2021

Calibration Details	
TDS Conversion Factor (ppm)	0.65
Cell Constant	0.996
Reference Temperature	25.00 °C

Pre Measurement	
Actual Conductivity	6,601.3 µS/cm
Specific Conductivity	7,500.1 µS/cm

Post Measurement	
Actual Conductivity	7,041.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723223
Last Calibrated	4/26/2021

Calibration Details

Calibration Point 1	
pH of Buffer	7.02 pH
pH mV	-8.4 mV
Temperature	18.73 °C

Pre Measurement	
pH	7.07 pH
pH mV	-8.5 mV

Post Measurement	
pH	7.02 pH
pH mV	-8.2 mV

Slope and Offset 1	
Slope	-57.92 mV/pH
Offset	-7.2 mV

ORP	
ORP Solution	Quick-Cal
Offset	11.9 mV
Temperature	18.73 °C
Pre Measurement	221.4 mV
Post Measurement	233.0 mV

Sensor	**Turbidity**
Serial Number	607777
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	514551
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	4/26/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	4/26/2021

Calibration Details

Slope	1.046117
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.46 mg/L
Pre Measurement	96.08 %Sat
Post Measurement	100.00 %Sat
Temperature	16.13 °C
Barometric Pressure	1,018.4 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	4/26/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.051
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,562.0 µS/cm
Specific Conductivity	7,529.9 µS/cm

Post Measurement

Actual Conductivity	6,971.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	4/26/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-5.7 mV
Temperature	18.27 °C

Pre Measurement

pH	7.15 pH
pH mV	-5.9 mV

Post Measurement

pH	7.02 pH
pH mV	-5.6 mV

Slope and Offset 1

Slope	-57.82 mV/pH
Offset	-4.5 mV

ORP

ORP Solution	Quick-Cal
Offset	8.4 mV
Temperature	18.27 °C
Pre Measurement	225.0 mV
Post Measurement	233.7 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	532229
Created	4/26/2021

Sensor	**RDO**
Serial Number	666320
Last Calibrated	4/26/2021

Calibration Details

Slope	1.007638
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.21 mg/L
Pre Measurement	100.23 %Sat
Post Measurement	100.00 %Sat
Temperature	17.63 °C
Barometric Pressure	986.37 mbar

Sensor	**Conductivity**
Serial Number	688655
Last Calibrated	4/26/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.044
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,394.7 µS/cm
Specific Conductivity	7,304.2 µS/cm

Post Measurement

Actual Conductivity	7,003.8 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723161
Last Calibrated	4/26/2021

Calibration Details

Calibration Point 1	
pH of Buffer	7.02 pH
pH mV	-11.2 mV
Temperature	18.48 °C

Pre Measurement	
pH	7.13 pH
pH mV	-11.5 mV

Post Measurement	
pH	7.02 pH
pH mV	-10.9 mV

Slope and Offset 1	
Slope	-57.87 mV/pH
Offset	-10.0 mV

ORP	
ORP Solution	Quick-Cal
Offset	11.7 mV
Temperature	18.48 °C
Pre Measurement	225.3 mV
Post Measurement	233.4 mV

Sensor	**Turbidity**
Serial Number	772927
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	532229
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	514551
Created	4/27/2021

Sensor	**RDO**
Serial Number	652141
Last Calibrated	4/27/2021

Calibration Details	
Slope	1.166442
Offset	0.00 mg/L

Calibration point 100%	
Concentration	9.37 mg/L
Pre Measurement	95.72 %Sat
Post Measurement	100.00 %Sat
Temperature	14.03 °C
Barometric Pressure	1,074.8 mbar

Sensor	**Conductivity**
Serial Number	594437
Last Calibrated	4/27/2021

Calibration Details	
TDS Conversion Factor (ppm)	0.65
Cell Constant	0.994
Reference Temperature	25.00 °C

Pre Measurement	
Actual Conductivity	6,327.1 µS/cm
Specific Conductivity	7,987.5 µS/cm

Post Measurement	
Actual Conductivity	6,337.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723223
Last Calibrated	4/27/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.03 pH
pH mV	-6.2 mV
Temperature	14.12 °C

Pre Measurement

pH	7.04 pH
pH mV	-6.0 mV

Post Measurement

pH	7.03 pH
pH mV	-6.0 mV

Slope and Offset 1

Slope	-57 mV/pH
Offset	-4.5 mV

ORP

ORP Solution	Quick-Cal
Offset	6.6 mV
Temperature	14.12 °C
Pre Measurement	239.3 mV
Post Measurement	239.9 mV

Sensor	**Turbidity**
Serial Number	607777
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	514551
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	4/27/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	4/27/2021

Calibration Details

Slope	1.010621
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.86 mg/L
Pre Measurement	103.53 %Sat
Post Measurement	100.00 %Sat
Temperature	14.50 °C
Barometric Pressure	990.83 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	4/27/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.027
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,503.2 µS/cm
Specific Conductivity	8,197.4 µS/cm

Post Measurement

Actual Conductivity	6,346.6 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	4/27/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.03 pH
pH mV	-6.0 mV
Temperature	14.18 °C

Pre Measurement

pH	7.03 pH
pH mV	-6.0 mV

Post Measurement

pH	7.03 pH
pH mV	-5.8 mV

Slope and Offset 1

Slope	-57.01 mV/pH
Offset	-4.3 mV

ORP

ORP Solution	Quick-Cal
Offset	7.1 mV
Temperature	14.18 °C
Pre Measurement	240.9 mV
Post Measurement	239.8 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	532229
Created	4/27/2021

Sensor	**RDO**
Serial Number	666320
Last Calibrated	4/27/2021

Calibration Details

Slope	0.9990345
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.83 mg/L
Pre Measurement	100.93 %Sat
Post Measurement	100.00 %Sat
Temperature	14.58 °C
Barometric Pressure	978.18 mbar

Sensor	**Conductivity**
Serial Number	688655
Last Calibrated	4/27/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.043
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,386.8 µS/cm
Specific Conductivity	8,033.6 µS/cm

Post Measurement

Actual Conductivity	6,360.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723161
Last Calibrated	4/27/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.03 pH
pH mV	-9.0 mV
Temperature	14.27 °C

Pre Measurement

pH	6.99 pH
pH mV	-9.2 mV

Post Measurement

pH	7.03 pH
pH mV	-8.7 mV

Slope and Offset 1

Slope	-57.03 mV/pH
Offset	-7.3 mV

ORP

ORP Solution	Quick-Cal
Offset	9.1 mV
Temperature	14.27 °C
Pre Measurement	242.0 mV
Post Measurement	239.7 mV

Sensor	**Turbidity**
Serial Number	772927
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	532229
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	4/28/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	4/28/2021

Calibration Details

Slope	0.9975334
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.15 mg/L
Pre Measurement	101.33 %Sat
Post Measurement	100.00 %Sat
Temperature	18.11 °C
Barometric Pressure	979.87 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	4/28/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.095
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,512.2 µS/cm
Specific Conductivity	7,505.2 µS/cm

Post Measurement

Actual Conductivity	6,941.5 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	4/28/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-6.2 mV
Temperature	18.07 °C

Pre Measurement

pH	7.03 pH
pH mV	-6.2 mV

Post Measurement

pH	7.02 pH
pH mV	-6.1 mV

Slope and Offset 1

Slope	-57.79 mV/pH
Offset	-5.0 mV

ORP

ORP Solution	Quick-Cal
Offset	8.9 mV
Temperature	18.07 °C
Pre Measurement	231.9 mV
Post Measurement	234.0 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	514551
Created	4/28/2021

Sensor	**RDO**
Serial Number	652141
Last Calibrated	4/28/2021

Calibration Details

Slope	1.056034
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.59 mg/L
Pre Measurement	110.47 %Sat
Post Measurement	100.00 %Sat
Temperature	18.26 °C
Barometric Pressure	977.20 mbar

Sensor	**Conductivity**
Serial Number	594437
Last Calibrated	4/28/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.987
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,092.4 µS/cm
Specific Conductivity	8,057.6 µS/cm

Post Measurement

Actual Conductivity	7,041.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723223
Last Calibrated	4/28/2021

Calibration Details

Calibration Point 1	
pH of Buffer	7.02 pH
pH mV	-7.1 mV
Temperature	18.73 °C

Pre Measurement	
pH	7.04 pH
pH mV	-7.1 mV

Post Measurement	
pH	7.02 pH
pH mV	-7.0 mV

Slope and Offset 1	
Slope	-57.92 mV/pH
Offset	-6.0 mV

ORP	
ORP Solution	Quick-Cal
Offset	9.6 mV
Temperature	18.73 °C
Pre Measurement	229.7 mV
Post Measurement	233.0 mV

Sensor	**Turbidity**
Serial Number	607777
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	514551
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	532229
Created	4/28/2021

Sensor	**RDO**
Serial Number	666320
Last Calibrated	4/28/2021

Calibration Details

Slope	0.9999567
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.87 mg/L
Pre Measurement	99.91 %Sat
Post Measurement	100.00 %Sat
Temperature	19.34 °C
Barometric Pressure	976.66 mbar

Sensor	**Conductivity**
Serial Number	688655
Last Calibrated	4/28/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.015
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,171.5 µS/cm
Specific Conductivity	8,226.8 µS/cm

Post Measurement

Actual Conductivity	6,973.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723161
Last Calibrated	4/28/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-8.2 mV
Temperature	18.28 °C

Pre Measurement

pH	7.02 pH
pH mV	-8.3 mV

Post Measurement

pH	7.02 pH
pH mV	-8.0 mV

Slope and Offset 1

Slope	-57.83 mV/pH
Offset	-7.0 mV

ORP

ORP Solution	Quick-Cal
Offset	9.0 mV
Temperature	18.28 °C
Pre Measurement	233.4 mV
Post Measurement	233.7 mV

Sensor	**Turbidity**
Serial Number	772927
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	532229
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	514551
Created	4/29/2021

Sensor	**RDO**
Serial Number	652141
Last Calibrated	4/29/2021

Calibration Details

Slope	1.056139
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.42 mg/L
Pre Measurement	99.99 %Sat
Post Measurement	100.00 %Sat
Temperature	19.01 °C
Barometric Pressure	972.26 mbar

Sensor	**Conductivity**
Serial Number	594437
Last Calibrated	4/29/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.989
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,108.3 µS/cm
Specific Conductivity	7,981.1 µS/cm

Post Measurement

Actual Conductivity	7,125.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723223
Last Calibrated	4/29/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-7.2 mV
Temperature	19.27 °C

Pre Measurement

pH	7.02 pH
pH mV	-7.2 mV

Post Measurement

pH	7.02 pH
pH mV	-7.1 mV

Slope and Offset 1

Slope	-58.02 mV/pH
Offset	-6.0 mV

ORP

ORP Solution	Quick-Cal
Offset	8.7 mV
Temperature	19.27 °C
Pre Measurement	232.9 mV
Post Measurement	232.2 mV

Sensor	**Turbidity**
Serial Number	607777
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	514551
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	532229
Created	4/29/2021

Sensor	**RDO**
Serial Number	666320
Last Calibrated	4/29/2021

Calibration Details

Slope	1.000521
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.91 mg/L
Pre Measurement	99.95 %Sat
Post Measurement	100.00 %Sat
Temperature	18.86 °C
Barometric Pressure	971.65 mbar

Sensor	**Conductivity**
Serial Number	688655
Last Calibrated	4/29/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.047
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,651.8 µS/cm
Specific Conductivity	7,724.2 µS/cm

Post Measurement

Actual Conductivity	6,889.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723161
Last Calibrated	4/29/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-7.4 mV
Temperature	17.73 °C

Pre Measurement	
pH	7.01 pH
pH mV	-7.5 mV

Post Measurement	
pH	7.02 pH
pH mV	-7.2 mV

Slope and Offset 1	
Slope	-57.72 mV/pH
Offset	-6.2 mV

ORP	
ORP Solution	Quick-Cal
Offset	8.6 mV
Temperature	17.73 °C
Pre Measurement	235.0 mV
Post Measurement	234.5 mV

Sensor	**Turbidity**
Serial Number	772927
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	532229
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	4/29/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	4/29/2021

Calibration Details

Slope	1.0198
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.96 mg/L
Pre Measurement	97.81 %Sat
Post Measurement	100.00 %Sat
Temperature	18.91 °C
Barometric Pressure	996.35 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	4/29/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.085
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,034.8 µS/cm
Specific Conductivity	8,078.2 µS/cm

Post Measurement

Actual Conductivity	6,966.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	4/29/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-6.1 mV
Temperature	18.24 °C

Pre Measurement

pH	7.02 pH
pH mV	-6.1 mV

Post Measurement

pH	7.02 pH
pH mV	-6.0 mV

Slope and Offset 1

Slope	-57.82 mV/pH
Offset	-5.0 mV

ORP

ORP Solution	Quick-Cal
Offset	7.9 mV
Temperature	18.24 °C
Pre Measurement	234.7 mV
Post Measurement	233.7 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	514551
Created	5/3/2021

Sensor	**RDO**
Serial Number	652141
Last Calibrated	5/3/2021

Calibration Details

Slope	1.056128
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.66 mg/L
Pre Measurement	100.05 %Sat
Post Measurement	100.00 %Sat
Temperature	17.69 °C
Barometric Pressure	973.48 mbar

Sensor	**Conductivity**
Serial Number	594437
Last Calibrated	5/3/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.018
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,653.9 µS/cm
Specific Conductivity	7,770.6 µS/cm

Post Measurement

Actual Conductivity	6,850.4 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723223
Last Calibrated	5/3/2021

Calibration Details

Calibration Point 1	
pH of Buffer	7.02 pH
pH mV	-8.3 mV
Temperature	17.48 °C

Pre Measurement	
pH	7.04 pH
pH mV	-8.3 mV

Post Measurement	
pH	7.02 pH
pH mV	-8.1 mV

Slope and Offset 1	
Slope	-57.67 mV/pH
Offset	-7.1 mV

ORP	
ORP Solution	Quick-Cal
Offset	6.7 mV
Temperature	17.48 °C
Pre Measurement	236.9 mV
Post Measurement	234.9 mV

Sensor	**Turbidity**
Serial Number	607777
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	514551
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	5/3/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	5/3/2021

Calibration Details

Slope	1.049874
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.82 mg/L
Pre Measurement	97.11 %Sat
Post Measurement	100.00 %Sat
Temperature	18.98 °C
Barometric Pressure	1,010.7 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	5/3/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.098
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,012.1 µS/cm
Specific Conductivity	7,900.2 µS/cm

Post Measurement

Actual Conductivity	7,100.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	5/3/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-6.0 mV
Temperature	19.11 °C

Pre Measurement

pH	7.02 pH
pH mV	-6.0 mV

Post Measurement

pH	7.02 pH
pH mV	-5.9 mV

Slope and Offset 1

Slope	-57.99 mV/pH
Offset	-4.8 mV

ORP

ORP Solution	Quick-Cal
Offset	8.8 mV
Temperature	19.11 °C
Pre Measurement	231.4 mV
Post Measurement	232.4 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	532229
Created	5/3/2021

Sensor	**RDO**
Serial Number	666320
Last Calibrated	5/3/2021

Calibration Details

Slope	1.002213
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.10 mg/L
Pre Measurement	99.82 %Sat
Post Measurement	100.00 %Sat
Temperature	17.79 °C
Barometric Pressure	972.84 mbar

Sensor	**Conductivity**
Serial Number	688655
Last Calibrated	5/3/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.044
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,825.8 µS/cm
Specific Conductivity	8,055.6 µS/cm

Post Measurement

Actual Conductivity	6,778.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723161
Last Calibrated	5/3/2021

Calibration Details

Calibration Point 1	
pH of Buffer	7.02 pH
pH mV	-7.9 mV
Temperature	17.01 °C

Pre Measurement	
pH	7.03 pH
pH mV	-7.7 mV

Post Measurement	
pH	7.02 pH
pH mV	-7.7 mV

Slope and Offset 1	
Slope	-57.57 mV/pH
Offset	-6.7 mV

ORP	
ORP Solution	Quick-Cal
Offset	8.5 mV
Temperature	17.01 °C
Pre Measurement	236.3 mV
Post Measurement	235.6 mV

Sensor	**Turbidity**
Serial Number	772927
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	532229
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	514551
Created	5/4/2021

Sensor	**RDO**
Serial Number	652141
Last Calibrated	5/4/2021

Calibration Details

Slope	1.167592
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.75 mg/L
Pre Measurement	90.49 %Sat
Post Measurement	100.00 %Sat
Temperature	17.09 °C
Barometric Pressure	1,072.4 mbar

Sensor	**Conductivity**
Serial Number	594437
Last Calibrated	5/4/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.003
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,875.5 µS/cm
Specific Conductivity	8,117.9 µS/cm

Post Measurement

Actual Conductivity	6,775.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723223
Last Calibrated	5/4/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-8.4 mV
Temperature	16.99 °C

Pre Measurement

pH	7.02 pH
pH mV	-8.2 mV

Post Measurement

pH	7.02 pH
pH mV	-8.2 mV

Slope and Offset 1

Slope	-57.57 mV/pH
Offset	-7.2 mV

ORP

ORP Solution	Quick-Cal
Offset	8.7 mV
Temperature	16.99 °C
Pre Measurement	233.7 mV
Post Measurement	235.6 mV

Sensor	**Turbidity**
Serial Number	607777
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	514551
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	5/4/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	5/4/2021

Calibration Details	
Slope	1.045044
Offset	0.00 mg/L

Calibration point 100%	
Concentration	9.26 mg/L
Pre Measurement	100.53 %Sat
Post Measurement	100.00 %Sat
Temperature	16.82 °C
Barometric Pressure	1,010.7 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	5/4/2021

Calibration Details	
TDS Conversion Factor (ppm)	0.65
Cell Constant	1.076
Reference Temperature	25.00 °C

Pre Measurement	
Actual Conductivity	6,772.4 µS/cm
Specific Conductivity	8,158.6 µS/cm

Post Measurement	
Actual Conductivity	6,640.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	5/4/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-6.9 mV
Temperature	16.10 °C

Pre Measurement

pH	7.04 pH
pH mV	-6.9 mV

Post Measurement

pH	7.02 pH
pH mV	-6.7 mV

Slope and Offset 1

Slope	-57.39 mV/pH
Offset	-5.7 mV

ORP

ORP Solution	Quick-Cal
Offset	9.2 mV
Temperature	16.10 °C
Pre Measurement	236.5 mV
Post Measurement	236.9 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	532229
Created	5/4/2021

Sensor	**RDO**
Serial Number	666320
Last Calibrated	5/4/2021

Calibration Details

Slope	1.001607
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.05 mg/L
Pre Measurement	100.06 %Sat
Post Measurement	100.00 %Sat
Temperature	17.94 °C
Barometric Pressure	969.87 mbar

Sensor	**Conductivity**
Serial Number	688655
Last Calibrated	5/4/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.025
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,872.0 µS/cm
Specific Conductivity	8,118.2 µS/cm

Post Measurement

Actual Conductivity	6,771.9 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723161
Last Calibrated	5/4/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-8.4 mV
Temperature	16.96 °C

Pre Measurement

pH	7.02 pH
pH mV	-8.0 mV

Post Measurement

pH	7.02 pH
pH mV	-8.1 mV

Slope and Offset 1

Slope	-57.57 mV/pH
Offset	-7.2 mV

ORP

ORP Solution	Quick-Cal
Offset	9.8 mV
Temperature	16.96 °C
Pre Measurement	234.7 mV
Post Measurement	235.6 mV

Sensor	**Turbidity**
Serial Number	772927
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	532229
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	514551
Created	5/5/2021

Sensor	**RDO**
Serial Number	652141
Last Calibrated	5/5/2021

Calibration Details

Slope	1.053706
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.84 mg/L
Pre Measurement	110.83 %Sat
Post Measurement	100.00 %Sat
Temperature	16.87 °C
Barometric Pressure	975.00 mbar

Sensor	**Conductivity**
Serial Number	594437
Last Calibrated	5/5/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.008
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,728.5 µS/cm
Specific Conductivity	7,953.1 µS/cm

Post Measurement

Actual Conductivity	6,768.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723223
Last Calibrated	5/5/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-9.0 mV
Temperature	16.94 °C

Pre Measurement

pH	7.04 pH
pH mV	-9.3 mV

Post Measurement

pH	7.02 pH
pH mV	-8.8 mV

Slope and Offset 1

Slope	-57.56 mV/pH
Offset	-7.9 mV

ORP

ORP Solution	Quick-Cal
Offset	8.8 mV
Temperature	16.94 °C
Pre Measurement	236.0 mV
Post Measurement	235.7 mV

Sensor	**Turbidity**
Serial Number	607777
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	514551
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	532229
Created	5/5/2021

Sensor	**RDO**
Serial Number	666320
Last Calibrated	5/5/2021

Calibration Details

Slope	1.002453
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.14 mg/L
Pre Measurement	99.88 %Sat
Post Measurement	100.00 %Sat
Temperature	17.63 °C
Barometric Pressure	974.35 mbar

Sensor	**Conductivity**
Serial Number	688655
Last Calibrated	5/5/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.024
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,771.4 µS/cm
Specific Conductivity	8,027.4 µS/cm

Post Measurement

Actual Conductivity	6,748.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	723161
Last Calibrated	5/5/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-8.2 mV
Temperature	16.81 °C

Pre Measurement

pH	7.01 pH
pH mV	-8.0 mV

Post Measurement

pH	7.02 pH
pH mV	-8.0 mV

Slope and Offset 1

Slope	-57.53 mV/pH
Offset	-7.1 mV

ORP

ORP Solution	Quick-Cal
Offset	10.2 mV
Temperature	16.81 °C
Pre Measurement	235.8 mV
Post Measurement	235.9 mV

Sensor	**Turbidity**
Serial Number	772927
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	532229
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	5/5/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	5/5/2021

Calibration Details

Slope	1.028913
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.44 mg/L
Pre Measurement	101.53 %Sat
Post Measurement	100.00 %Sat
Temperature	16.56 °C
Barometric Pressure	1,009.0 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	5/5/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.075
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,655.9 µS/cm
Specific Conductivity	8,000.7 µS/cm

Post Measurement

Actual Conductivity	6,655.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	5/5/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-6.5 mV
Temperature	16.20 °C

Pre Measurement

pH	7.01 pH
pH mV	-6.5 mV

Post Measurement

pH	7.02 pH
pH mV	-6.3 mV

Slope and Offset 1

Slope	-57.41 mV/pH
Offset	-5.3 mV

ORP

ORP Solution	Quick-Cal
Offset	8.9 mV
Temperature	16.20 °C
Pre Measurement	236.9 mV
Post Measurement	236.8 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	5/6/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	5/6/2021

Calibration Details

Slope	1.018635
Offset	0.00 mg/L

Calibration point 100%

Concentration	9.97 mg/L
Pre Measurement	101.12 %Sat
Post Measurement	100.00 %Sat
Temperature	14.40 °C
Barometric Pressure	1,007.1 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	5/6/2021

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.073
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,386.4 µS/cm
Specific Conductivity	8,023.2 µS/cm

Post Measurement

Actual Conductivity	6,367.9 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	5/6/2021

Calibration Details

Calibration Point 1	
pH of Buffer	7.03 pH
pH mV	-4.7 mV
Temperature	14.32 °C

Pre Measurement	
pH	7.04 pH
pH mV	-7.3 mV

Post Measurement	
pH	7.03 pH
pH mV	-4.5 mV

Slope and Offset 1	
Slope	-57.04 mV/pH
Offset	-3.0 mV

ORP	
ORP Solution	Quick-Cal
Offset	10.4 mV
Temperature	14.32 °C
Pre Measurement	239.7 mV
Post Measurement	239.6 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518902
Created	5/10/2021

Sensor	**RDO**
Serial Number	523950
Last Calibrated	5/10/2021

Calibration Details	
Slope	1.023059
Offset	0.00 mg/L

Calibration point 100%	
Concentration	10.55 mg/L
Pre Measurement	99.58 %Sat
Post Measurement	100.00 %Sat
Temperature	11.64 °C
Barometric Pressure	1,007.1 mbar

Sensor	**Conductivity**
Serial Number	605829
Last Calibrated	5/10/2021

Calibration Details	
TDS Conversion Factor (ppm)	0.65
Cell Constant	1.071
Reference Temperature	25.00 °C

Pre Measurement	
Actual Conductivity	5,934.5 µS/cm
Specific Conductivity	8,006.3 µS/cm

Post Measurement	
Actual Conductivity	5,929.9 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**pH/ORP**
Serial Number	758645
Last Calibrated	5/10/2021

Calibration Details

Calibration Point 1

pH of Buffer	7.03 pH
pH mV	-7.7 mV
Temperature	11.45 °C

Pre Measurement

pH	7.08 pH
pH mV	-7.6 mV

Post Measurement

pH	7.03 pH
pH mV	-7.3 mV

Slope and Offset 1

Slope	-56.47 mV/pH
Offset	-6.0 mV

ORP

ORP Solution	Quick-Cal
Offset	9.8 mV
Temperature	11.45 °C
Pre Measurement	245.9 mV
Post Measurement	244.0 mV

Sensor	**Turbidity**
Serial Number	771967
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518902
Last Calibrated	Factory Defaults

APPENDIX C

2021 FWGWMP Investigation-Derived Waste

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C.1 Characterization and Disposal Plan, Dated July 19, 2021

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July 19, 2021

Ms. Katie Tait, OHARNG
Camp James A. Garfield - Environmental Office
1438 State Route 534 SW
Newton Falls, OH 44444

Subject: **Spring 2021 Facility-wide Groundwater Monitoring Program (FWGWMP) Sampling - Investigation-Derived Waste (IDW) Recommended Characterization and Disposal Plan**
References: **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 2021* were performed from April 19, 2021 through May 10, 2021. One IDW stream was generated as part of the field activities and is summarized below:

- Eighteen (18), 55 gallon drums containing approximately 804 gallons of groundwater well purge water and equipment decontamination fluids (liquinox wash water, 10% nitric acid, isopropanol, and deionized water)

The waste stream was composited and sampled per requirements outlined in Section 8.0 of the *Facility-Wide Sampling and Analysis Plan* (USACE 2011) (herein referred to at the Facility-wide SAP). The purpose of this characterization and disposal plan is to recommend characterization and classification of the IDW and to propose methods for disposal. This characterization and disposal plan includes a summary of IDW generated (Attachment A), a summary of the analytical results (Attachment B), and the laboratory data package (Attachment C).

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. Sample FWGIDW-210401-WW was 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 B, Table B.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) PCBs were not detected;
3) The pH for the IDW is considered neutral (2 S.U. < pH < 12.5 S.U.);
4) The flash point is >60˚C (140˚F).

Given the observed analytical results, it is recommended that the liquid IDW be classified as non-hazardous, non-contaminated.

Recommended Disposal Pathways for IDW

Attachment A, Table A.1 presents the recommended disposal pathway identified as a result of IDW characterization data. This IDW has been characterized under provisions of the Facility-Wide SAP and in accordance with RCRA using TCLP analyses and generator knowledge. Leidos recommends that all IDW be disposed of as non-hazardous, non-contaminated waste to be transported offsite to a permitted municipal wastewater 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 a waste profile, waste manifest (or bill-of-lading), 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: Kevin Sedlak, ARNG, Camp James A. Garfield
Jay Trumble, USACE Louisville
Vasu Peterson, Leidos
Ryan Laurich, Leidos
Gabrielle Gromofsky, Leidos

Table A-1. Summary of Investigation-Derived Wastes and Disposal Recommendation

Container Number	Container Type and Size	Contents	Generation Date	Disposal Recommendation
Leidos-FWGW-045-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 50 gal	4/19/21-4/19/21	Permitted Treatment or Waste Facility
Leidos-FWGW-046-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/19/21-4/19/21	Permitted Treatment or Waste Facility
Leidos-FWGW-047-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 49 gal	4/19/21-4/19/21	Permitted Treatment or Waste Facility
Leidos-FWGW-048-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/19/21-4/19/21	Permitted Treatment or Waste Facility
Leidos-FWGW-049-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/19/21-4/19/21	Permitted Treatment or Waste Facility
Leidos-FWGW-050-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/19/21-4/20/21	Permitted Treatment or Waste Facility
Leidos-FWGW-051-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/19/21-4/20/21	Permitted Treatment or Waste Facility
Leidos-FWGW-052-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/19/21-5/7/21	Permitted Treatment or Waste Facility
Leidos-FWGW-053-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/19/21-4/20/21	Permitted Treatment or Waste Facility
Leidos-FWGW-054-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/21/21-4/21/21	Permitted Treatment or Waste Facility
Leidos-FWGW-055-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 42 gal	4/21/21-4/21/21	Permitted Treatment or Waste Facility
Leidos-FWGW-056-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 47 gal	4/20/21-5/7/21	Permitted Treatment or Waste Facility
Leidos-FWGW-057-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 50 gal	4/21/21-4/22/21	Permitted Treatment or Waste Facility
Leidos-FWGW-058-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 45 gal	4/21/21-4/22/21	Permitted Treatment or Waste Facility
Leidos-FWGW-059-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 47 gal	4/21/21-5/3/21	Permitted Treatment or Waste Facility
Leidos-FWGW-060-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 44 gal	4/21/21-5/10/21	Permitted Treatment or Waste Facility
Leidos-FWGW-061-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 48 gal	4/22/21-4/28/21	Permitted Treatment or Waste Facility
Leidos-FWGW-062-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 46 gal	4/22/21-4/27/21	Permitted Treatment or Waste Facility

ATTACHMENT A
ANALYTICAL RESULTS

Table B.1. Liquid IDW Sample Results (FWGIDW-210401-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	<0.075 U
Barium	7440-39-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	100	0.014 JQ
Cadmium	7440-43-9	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.007 U
Chromium	7440-47-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.013 U
Lead	7439-92-1	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.045 U
Mercury	7439-97-6	mg/L	Mercury (CVAA)	TCLP	40 CFR 261.24	0.2	<0.00008 U
Selenium	7782-49-2	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.095 U
Silver	7440-22-4	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.025 U
2,4-D	94-75-7	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	10	<0.018 UJ1M
Silvex (2,4,5-TP)	93-72-1	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	1	<0.0059 U
Chlordane (technical)	57-74-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.03	<0.004 U
Endrin	72-20-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.02	<0.0002 UQ
Heptachlor	76-44-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.0002 UQ
Heptachlor epoxide	1024-57-3	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.0002 U
Methoxychlor	72-43-5	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	10	<0.0005 UM
Toxaphene	8001-35-2	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.5	<0.0075 U
gamma-BHC (Lindane)	58-89-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.4	<0.0002 U
1,4-Dichlorobenzene	106-46-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	7.5	<0.005 U
2,4,5-Trichlorophenol	95-95-4	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	400	<0.01 U
2,4,6-Trichlorophenol	88-06-2	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	2	<0.01 U
2,4-Dinitrotoluene	121-14-2	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.01 U
2-Methylphenol (o-cresol)	95-48-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.01 U
3 & 4 Methylphenol (m,p-cresol)	15831-10-4	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.02 U
Hexachlorobenzene	118-74-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.01 U
Hexachlorobutadiene	87-68-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.15 U
Hexachloroethane	67-72-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	3	<0.15 U
Nitrobenzene	98-95-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	2	<0.005 U
Pentachlorophenol	87-86-5	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.08 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	<0.004 U
1,2-Dichloroethane	107-06-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.004 U
2-Butanone (MEK)	78-93-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.032 U
Benzene	71-43-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.002 U
Carbon tetrachloride	56-23-5	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.004 U
Chlorobenzene	108-90-7	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.002 U
Chloroform	67-66-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	6	<0.002 U
Tetrachloroethene	127-18-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.7	<0.004 U
Trichloroethene	79-01-6	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.002 U

Table B.1. Liquid IDW Sample Results (FWGIDW-210401-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	<0.008 UQ
PCB-1016	12674-11-2	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00042 U
PCB-1221	11104-28-2	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00026 UM
PCB-1232	11141-16-5	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00063 U
PCB-1242	53469-21-9	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.0011 U
PCB-1248	12672-29-6	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00032 U
PCB-1254	11097-69-1	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00026 U
PCB-1260	11096-82-5	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00042 U
PCB-1262	37324-23-5	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00053 U
PCB-1268	11100-14-4	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.0011 U
Flashpoint	N/A	Deg C	Ignitability, Pensky-Martens Closed-Cup Method	Total	40 CFR 261.21	>60˚C (140˚F)	>72˚C (160˚F)
Cyanide, Total	57-12-5	mg/L	Cyanide, Total	Total	40 CFR 261.23	See Note 1	<0.009 U
Sulfide, Total	18496-25-8	mg/L	Sulfide, Acid Soluble and Insoluble (Titrimetric)	Total	40 CFR 261.23	See Note 1	<1.9 U
pH adj. to 25 deg C	N/A	SU	pH	Total	40 CFR 261.22	2 ≤ pH ≤ 12.5	7.6 HF
Nitrate as N	14797-55-8	mg/L	Anions, Ion Chromatography	Total	NA	---	0.26 JHH3
Nitrite as N	14797-65-0	mg/L	Anions, Ion Chromatography	Total	NA	---	<0.1 UHH3
Temperature	N/A	Deg C	Temperature	Total	NA	---	19.9 HF

All analyses were from sample collected on 5/10/21 under sample ID FWGIDW-210401-WW.

Waste with PCB concentrations greater than 50 ppm (mg/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.

H = Sample was prepped or analyzed beyond the specified holding time.

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.

M-Manual integrated compound.

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: 280-148573-1 Containing Sample: FWGIDW-210401-WW

ANALYTICAL REPORT

Job Number: 280-148573-1

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

Donna Rydberg

Approved for release.
Donna R Rydberg
Senior Project Manager
6/3/2021 8:11 AM

Donna R Rydberg, Senior Project Manager
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0192
Donna.Rydberg@Eurofinset.com

06/03/2021

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.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Eurofins TestAmerica, Denver
4955 Yarrow Street, Arvada, CO 80002
Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com

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Definitions/Glossary

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

GC Semi VOA

Qualifier	Qualifier Description
J1	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
M	Manual integrated compound.
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

Metals

Qualifier	Qualifier Description
J	Estimated: The analyte was positively identified; the quantitation is an estimation
Q	One or more quality control criteria failed.
U	Undetected at the Limit of Detection.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
Q	One or more quality control criteria failed.
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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

CASE NARRATIVE

Client: Leidos, Inc.

Project: Leidos RFP# 001088 - Ravenna AAP-66

Report Number: 280-148573-1

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 sample was received on 5/13/2021 at 9:35 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.7º C.

Receipt Exceptions

The following sample was received outside of holding time: FWGIDW-210401-WW (280-148573-1) for Nitrate and Nitrite due to FEDX delay. The cooler was shipped by the client on 5/10/2021 and was received at the laboratory on 5/13/2021. The hold time expired on 5/12/2021. The client was notified and the data was analyzed and reported.

TCLP VOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for TCLP volatile organic compounds (GC-MS) in accordance with 1311. The samples were leached on 05/18/2021 and analyzed on 05/26/2021.

The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 280-536523 and analytical batch 280-537589 recovered outside control limits for vinyl chloride. The individual spike recoveries were in control.

No additional 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-210401-WW (280-148573-1) was analyzed for TCLP semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were leached on 05/17/2021, prepared on 05/20/2021 and analyzed on 05/25/2021.

The recovery for surrogate Terphenyl-d14 exceeded the surrogate recovery criteria in the LCS and LCSD associated with batch 537333. All other surrogates were in control. This surrogate was in control in the field sample. Data was reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP ORGANOCHLORINE PESTICIDES (GC)

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for TCLP Organochlorine Pesticides (GC) in accordance with SW 846 1311/8081B. The samples were leached on 05/17/2021, prepared on 05/20/2021 and 05/22/2021 and analyzed on 05/26/2021 and 05/27/2021.

The continuing calibration verification (CCV) associated with batch 280-537524 recovered outside of the control limits (20%) on the front column for Endrin and Heptachlor and low on the back column for gamma-BHC (Lindane). Results were reported from the front column. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: FWGIDW-210401-WW (280-148573-1), (CCV 280-537524/13), (CCV 280-537524/26) and (CCVIS 280-537524/4).

The continuing calibration verification (CCV) associated with batch 280-537828 recovered above the upper control limit (20%) on the back column low for Toxaphene and Tetrachloro-m-xylene. Results were reported as non-detect from the front column, which was within limits. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: (CCV 280-537828/15), (CCV 280-537828/4), (CCVIS 280-537828/6), (LCS 280-536436/2-F) and (LCSD 280-536436/3-D).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

POLYCHLORINATED BIPHENYLS (PCBS)

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for polychlorinated biphenyls (PCBs) in accordance with SW-846 8082A. The samples were prepared on 05/20/2021 and analyzed on 05/25/2021.

The opening and closing continuous calibration verification (CCV) associated with analytical batch 280-537365 recovered below the lower control limits (-20%D) for Tetrachloro-m-xylene on the back (confirmation) column. These analytes were in control on the front (primary) column. The opening CCV also recovered below lower control limits for DCB Decachlorobiphenyl on the back column. The samples associated are non-detects (ND); therefore, the data have been reported from the in primary column. The following samples are bracketed by the affected CCVs:FWGIDW-210401-WW (280-148573-1), (CCV 280-537365/18), (CCV 280-537365/45), (LCS 280-536795/4-A) and (LCSD 280-536795/5-A).

The following samples required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: FWGIDW-210401-WW (280-148573-1), (LCS 280-536795/4-A) and (LCSD 280-536795/5-A) associated with preparation batch 280-536795 and analytical batch 280-537365.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP CHLORINATED HERBICIDES

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for TCLP chlorinated herbicides in accordance with EPA SW-846 Methods 1311/8151A. The samples were leached on 05/17/2021, prepared on 05/19/2021 and analyzed on 05/26/2021.

2,4-D failed the recovery criteria high for the MS of sample FWGIDW-210401-WWMS (280-148573-1) in batch 280-537351. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP METALS

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for TCLP metals in accordance with EPA SW846 Methods 1311/6010C. The samples were leached on 05/17/2021, prepared on 05/27/2021 and analyzed on 05/28/2021.

The interference check standard solution (ICSA) associated with batch 280-537788 had results for one or more elements at a level greater than the limit of detection (LOD). The initial ICSA result (12.9 ppb) was > LOD (12 ppb) for Barium. It was confirmed using MS that this element is a trace impurity in the ICSA standard. These results are not indicative of a matrix interference.

Lead was detected in method blank LB3 280-536436/1-E at a level that was less than one half the LOQ; therefore, corrective action was deemed unnecessary. The value should be considered an estimate, and has been flagged “J” in accordance with the DoD QSM.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP MERCURY

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for TCLP mercury in accordance with SW-846 1311/7470. The samples were leached on 05/17/2021, and prepared and analyzed on 05/29/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

IGNITABILITY

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for ignitability in accordance with EPA SW-846 Method 1010. The samples were analyzed on 05/21/2021.

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 280-536971 recovered outside control limits for the following analytes: flashpoint. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

The following sample is not associated with a duplicate as none of the samples in the batch had a detectable flashpoint : FWGIDW-210401-WW (280-148573-1).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CYANIDE, TOTAL

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for Cyanide, Total in accordance with 9012B. The samples were prepared and analyzed on 05/21/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SULFIDE

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 05/14/2021.

Sulfide was detected in method blank MB 280-536190/2-A at a level that was less than one half the LOQ; therefore, corrective action was deemed unnecessary. The value should be considered an estimate, and has been flagged “J” in accordance with the DoD QSM.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for Corrosivity (pH) in accordance with EPA SW-846 9040C. The samples were analyzed on 05/18/2021.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ANIONS (48 HOURS)

Sample FWGIDW-210401-WW (280-148573-1) was analyzed for anions (48 hours) in accordance with 9056A (48 Hours). The samples were analyzed on 05/13/2021.

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

Job ID: 280-148573-1

Client Sample ID: FWGIDW-210401-WW

Lab Sample ID: 280-148573-1

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.014	J Q	1.0	0.013	0.0040	mg/L	1		6010C	TCLP
Flashpoint	>160	Q	1.00	1.00	1.00	Degrees F	1		1010A	Total/NA
pH adj. to 25 deg C	7.6	HF	0.1	0.1	0.1	SU	1		9040C	Total/NA
Temperature	19.9	HF	1.0	1.0	1.0	Degrees C	1		9040C	Total/NA
Nitrate as N	0.26	J H H3	0.50	0.20	0.090	mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-148573-1

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-210401-WW
Date Collected: 05/10/21 11:30
Date Received: 05/13/21 09:35

Lab Sample ID: 280-148573-1
Matrix: Water

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethene	0.0040	U	0.010	0.0040	0.0023	mg/L		05/26/21 23:46	1
1,2-Dichloroethane	0.0040	U	0.010	0.0040	0.0013	mg/L		05/26/21 23:46	1
2-Butanone (MEK)	0.032	U	0.10	0.032	0.020	mg/L		05/26/21 23:46	1
Benzene	0.0020	U	0.010	0.0020	0.0016	mg/L		05/26/21 23:46	1
Carbon tetrachloride	0.0040	U	0.010	0.0040	0.0019	mg/L		05/26/21 23:46	1
Chlorobenzene	0.0020	U	0.010	0.0020	0.0017	mg/L		05/26/21 23:46	1
Chloroform	0.0020	U	0.010	0.0020	0.0016	mg/L		05/26/21 23:46	1
Tetrachloroethene	0.0040	U	0.010	0.0040	0.0020	mg/L		05/26/21 23:46	1
Trichloroethene	0.0020	U	0.010	0.0020	0.0016	mg/L		05/26/21 23:46	1
Vinyl chloride	0.0080	U Q	0.010	0.0080	0.0010	mg/L		05/26/21 23:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*64 - 129*		*05/26/21 23:46*	*1*
4-Bromofluorobenzene (Surr)	*94*		*78 - 121*		*05/26/21 23:46*	*1*
Dibromofluoromethane (Surr)	*106*		*79 - 119*		*05/26/21 23:46*	*1*
Toluene-d8 (Surr)	*96*		*78 - 120*		*05/26/21 23:46*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-210401-WW
Date Collected: 05/10/21 11:30
Date Received: 05/13/21 09:35

Lab Sample ID: 280-148573-1
Matrix: Water

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0050	U	0.050	0.0050	0.0015	mg/L		05/25/21 18:24	1
2,4,5-Trichlorophenol	0.010	U	0.10	0.010	0.0026	mg/L		05/25/21 18:24	1
2,4,6-Trichlorophenol	0.010	U	0.10	0.010	0.0037	mg/L		05/25/21 18:24	1
2,4-Dinitrotoluene	0.010	U	0.10	0.010	0.0047	mg/L		05/25/21 18:24	1
2-Methylphenol	0.010	U	0.050	0.010	0.0028	mg/L		05/25/21 18:24	1
3 & 4 Methylphenol	0.020	U	0.10	0.020	0.0051	mg/L		05/25/21 18:24	1
Hexachlorobenzene	0.010	U	0.050	0.010	0.0048	mg/L		05/25/21 18:24	1
Hexachlorobutadiene	0.15	U	0.15	0.15	0.038	mg/L		05/25/21 18:24	1
Hexachloroethane	0.15	U	0.15	0.15	0.038	mg/L		05/25/21 18:24	1
Nitrobenzene	0.0050	U	0.10	0.0050	0.0022	mg/L		05/25/21 18:24	1
Pentachlorophenol	0.080	U	0.40	0.080	0.028	mg/L		05/25/21 18:24	1
Pyridine	0.10	U	0.10	0.10	0.025	mg/L		05/25/21 18:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*91*		*51 - 120*	*05/20/21 15:42*	*05/25/21 18:24*	*1*
2-Fluorobiphenyl	*76*		*49 - 120*	*05/20/21 15:42*	*05/25/21 18:24*	*1*
2-Fluorophenol (Surr)	*76*		*50 - 120*	*05/20/21 15:42*	*05/25/21 18:24*	*1*
Nitrobenzene-d5 (Surr)	*84*		*51 - 120*	*05/20/21 15:42*	*05/25/21 18:24*	*1*
Phenol-d5 (Surr)	*70*		*47 - 120*	*05/20/21 15:42*	*05/25/21 18:24*	*1*
Terphenyl-d14 (Surr)	*115*		*56 - 120*	*05/20/21 15:42*	*05/25/21 18:24*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Client Sample ID: FWGIDW-210401-WW
Date Collected: 05/10/21 11:30
Date Received: 05/13/21 09:35

Lab Sample ID: 280-148573-1
Matrix: Water

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endrin	0.00020	U Q	0.00050	0.00020	0.000079	mg/L		05/26/21 23:54	1

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Client Sample ID: FWGIDW-210401-WW **Lab Sample ID: 280-148573-1**
Date Collected: 05/10/21 11:30 **Matrix: Water**
Date Received: 05/13/21 09:35

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Heptachlor	0.00020	U Q	0.00050	0.00020	0.000077	mg/L		05/26/21 23:54	1
Heptachlor epoxide	0.00020	U	0.00050	0.00020	0.000075	mg/L		05/26/21 23:54	1
gamma-BHC (Lindane)	0.00020	U	0.00050	0.00020	0.000069	mg/L		05/26/21 23:54	1
Methoxychlor	0.00050	U M	0.0010	0.00050	0.00013	mg/L		05/26/21 23:54	1
Toxaphene	0.0075	U	0.020	0.0075	0.0037	mg/L		05/27/21 00:32	1
Chlordane (technical)	0.0040	U	0.0050	0.0040	0.0014	mg/L		05/26/21 23:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*85*		*28 - 115*	*05/20/21 13:19*	*05/26/21 23:54*	*1*
Tetrachloro-m-xylene	*80*		*28 - 115*	*05/22/21 14:22*	*05/27/21 00:32*	*1*
DCB Decachlorobiphenyl	*89*		*34 - 122*	*05/20/21 13:19*	*05/26/21 23:54*	*1*
DCB Decachlorobiphenyl	*93*		*34 - 122*	*05/22/21 14:22*	*05/27/21 00:32*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: FWGIDW-210401-WW **Lab Sample ID: 280-148573-1**
Date Collected: 05/10/21 11:30 **Matrix: Water**
Date Received: 05/13/21 09:35

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.42	U	1.1	0.42	0.13	ug/L		05/25/21 23:28	1
PCB-1221	0.26	U M	1.1	0.26	0.23	ug/L		05/25/21 23:28	1
PCB-1232	0.63	U	1.1	0.63	0.17	ug/L		05/25/21 23:28	1
PCB-1242	1.1	U	1.1	1.1	0.44	ug/L		05/25/21 23:28	1
PCB-1248	0.32	U	1.1	0.32	0.096	ug/L		05/25/21 23:28	1
PCB-1254	0.26	U	1.1	0.26	0.12	ug/L		05/25/21 23:28	1
PCB-1260	0.42	U	1.1	0.42	0.17	ug/L		05/25/21 23:28	1
PCB-1262	0.53	U	1.1	0.53	0.23	ug/L		05/25/21 23:28	1
PCB-1268	1.1	U	1.1	1.1	0.38	ug/L		05/25/21 23:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*79*		*25 - 120*	*05/20/21 13:17*	*05/25/21 23:28*	*1*
DCB Decachlorobiphenyl	*55*		*30 - 136*	*05/20/21 13:17*	*05/25/21 23:28*	*1*

Method: 8151A DOD - Herbicides (GC) - TCLP

Client Sample ID: FWGIDW-210401-WW **Lab Sample ID: 280-148573-1**
Date Collected: 05/10/21 11:30 **Matrix: Water**
Date Received: 05/13/21 09:35

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-D	0.018	U J1 M	0.039	0.018	0.0052	mg/L		05/26/21 08:23	1
Silvex (2,4,5-TP)	0.0059	U	0.0098	0.0059	0.0017	mg/L		05/26/21 08:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*81*		*10 - 131*	*05/19/21 12:45*	*05/26/21 08:23*	*1*

Method: 6010C - Metals (ICP) - TCLP

Client Sample ID: FWGIDW-210401-WW **Lab Sample ID: 280-148573-1**
Date Collected: 05/10/21 11:30 **Matrix: Water**
Date Received: 05/13/21 09:35

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	0.075	U	0.50	0.075	0.022	mg/L		05/28/21 06:12	1

Method: 6010C - Metals (ICP) - TCLP (Continued)

Client Sample ID: FWGIDW-210401-WW
Lab Sample ID: 280-148573-1
Date Collected: 05/10/21 11:30
Matrix: Water
Date Received: 05/13/21 09:35

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Barium	**0.014**	**J Q**	1.0	0.013	0.0040	mg/L		05/28/21 06:12	1
Cadmium	0.0070	U	0.10	0.0070	0.0020	mg/L		05/28/21 06:12	1
Chromium	0.013	U	0.50	0.013	0.0030	mg/L		05/28/21 06:12	1
Lead	0.045	U	0.50	0.045	0.014	mg/L		05/28/21 06:12	1
Selenium	0.095	U	0.10	0.095	0.032	mg/L		05/28/21 06:12	1
Silver	0.025	U	0.50	0.025	0.0098	mg/L		05/28/21 06:12	1

Method: 7470A - Mercury (CVAA) - TCLP

Client Sample ID: FWGIDW-210401-WW
Lab Sample ID: 280-148573-1
Date Collected: 05/10/21 11:30
Matrix: Water
Date Received: 05/13/21 09:35

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.000080	U	0.0020	0.000080	0.000030	mg/L		05/29/21 21:06	1

General Chemistry

Client Sample ID: FWGIDW-210401-WW
Lab Sample ID: 280-148573-1
Date Collected: 05/10/21 11:30
Matrix: Water
Date Received: 05/13/21 09:35

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Flashpoint	**>160**	**Q**	1.00	1.00	1.00	Degrees F		05/21/21 11:19	1
Cyanide, Total	0.0090	U	0.010	0.0090	0.0050	mg/L		05/21/21 11:52	1
Sulfide	1.9	U	4.0	1.9	0.79	mg/L		05/14/21 12:32	1
pH adj. to 25 deg C	**7.6**	**HF**	0.1	0.1	0.1	SU		05/18/21 16:02	1
Temperature	**19.9**	**HF**	1.0	1.0	1.0	Degrees C		05/18/21 16:02	1
Nitrate as N	**0.26**	**J H H3**	0.50	0.20	0.090	mg/L		05/13/21 23:24	1
Nitrite as N	0.10	U H H3	0.50	0.10	0.049	mg/L		05/13/21 23:24	1

Default Detection Limits

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Leach: 1311

Analyte	LOQ	DL	Units
1,1-Dichloroethene	0.010	0.0023	mg/L
1,2-Dichloroethane	0.010	0.0013	mg/L
2-Butanone (MEK)	0.10	0.020	mg/L
Benzene	0.010	0.0016	mg/L
Carbon tetrachloride	0.010	0.0019	mg/L
Chlorobenzene	0.010	0.0017	mg/L
Chloroform	0.010	0.0016	mg/L
Tetrachloroethene	0.010	0.0020	mg/L
Trichloroethene	0.010	0.0016	mg/L
Vinyl chloride	0.010	0.0010	mg/L

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Prep: 3510C

Leach: 1311

Analyte	LOQ	DL	Units
1,4-Dichlorobenzene	0.050	0.0015	mg/L
2,4,5-Trichlorophenol	0.10	0.0026	mg/L
2,4,6-Trichlorophenol	0.10	0.0037	mg/L
2,4-Dinitrotoluene	0.10	0.0047	mg/L
2-Methylphenol	0.050	0.0028	mg/L
3 & 4 Methylphenol	0.10	0.0051	mg/L
Hexachlorobenzene	0.050	0.0048	mg/L
Hexachlorobutadiene	0.15	0.038	mg/L
Hexachloroethane	0.15	0.038	mg/L
Nitrobenzene	0.10	0.0022	mg/L
Pentachlorophenol	0.40	0.028	mg/L
Pyridine	0.10	0.025	mg/L

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Prep: 3510C

Leach: 1311

Analyte	LOQ	DL	Units
Chlordane (technical)	0.0050	0.0014	mg/L
Endrin	0.00050	0.000079	mg/L
gamma-BHC (Lindane)	0.00050	0.000069	mg/L
Heptachlor	0.00050	0.000077	mg/L
Heptachlor epoxide	0.00050	0.000075	mg/L
Methoxychlor	0.0010	0.00013	mg/L
Toxaphene	0.020	0.0037	mg/L

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Prep: 3510C

Analyte	LOQ	DL	Units
PCB-1016	1.0	0.12	ug/L
PCB-1221	1.0	0.21	ug/L
PCB-1232	1.0	0.17	ug/L
PCB-1242	1.0	0.42	ug/L
PCB-1248	1.0	0.092	ug/L
PCB-1254	1.0	0.11	ug/L
PCB-1260	1.0	0.16	ug/L
PCB-1262	1.0	0.22	ug/L

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Prep: 3510C

Analyte	LOQ	DL	Units
PCB-1268	1.0	0.36	ug/L

Method: 8151A DOD - Herbicides (GC) - TCLP

Prep: 8151A

Leach: 1311

Analyte	LOQ	DL	Units
2,4-D	0.040	0.0053	mg/L
Silvex (2,4,5-TP)	0.010	0.0017	mg/L

Method: 6010C - Metals (ICP) - TCLP

Prep: 3010A

Leach: 1311

Analyte	LOQ	DL	Units
Arsenic	0.50	0.022	mg/L
Barium	1.0	0.0040	mg/L
Cadmium	0.10	0.0020	mg/L
Chromium	0.50	0.0030	mg/L
Lead	0.50	0.014	mg/L
Selenium	0.10	0.032	mg/L
Silver	0.50	0.0098	mg/L

Method: 7470A - Mercury (CVAA) - TCLP

Prep: 7470A

Leach: 1311

Analyte	LOQ	DL	Units
Mercury	0.0020	0.000030	mg/L

General Chemistry

Analyte	LOQ	DL	Units
Flashpoint	1.00	1.00	Degrees F
pH adj. to 25 deg C	0.1	0.1	SU
Temperature	1.0	1.0	Degrees C
Nitrate as N	0.50	0.090	mg/L
Nitrite as N	0.50	0.049	mg/L

General Chemistry

Prep: 9012B

Analyte	LOQ	DL	Units
Cyanide, Total	0.010	0.0050	mg/L

General Chemistry

Prep: 9030B

Analyte	LOQ	DL	Units
Sulfide	4.0	0.79	mg/L

Surrogate Summary

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(64-129)	(78-121)	(79-119)	(78-120)
280-148573-1	FWGIDW-210401-WW	102	94	106	96
LB3 280-536523/1-A	Method Blank	106	93	107	94
LCS 280-536523/2-A	Lab Control Sample	101	92	108	94
LCSD 280-536523/3-A	Lab Control Sample Dup	103	92	107	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: TCLP

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	PHL	TPHL
Lab Sample ID	Client Sample ID	(51-120)	(49-120)	(50-120)	(51-120)	(47-120)	(56-120)
280-148573-1	FWGIDW-210401-WW	91	76	76	84	70	115
LB3 280-536436/1-C	Method Blank	93	75	65	77	61	115
LCS 280-536436/2-C	Lab Control Sample	97	79	74	86	70	123 Q
LCSD 280-536436/3-B	Lab Control Sample Dup	105	84	79	92	76	122 Q

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
FBP = 2-Fluorobiphenyl
2FP = 2-Fluorophenol (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)	
		TCX1	DCBP1
Lab Sample ID	Client Sample ID	(28-115)	(34-122)
280-148573-1	FWGIDW-210401-WW	85	89
280-148573-1	FWGIDW-210401-WW	80	93
LB3 280-536436/1-D	Method Blank	78	85
LB3 280-536436/1-F	Method Blank	77	89
LCS 280-536436/2-D	Lab Control Sample	89	99
LCS 280-536436/2-F	Lab Control Sample	83	100
LCSD 280-536436/3-C	Lab Control Sample Dup	88	98
LCSD 280-536436/3-D	Lab Control Sample Dup	83	103

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCBP = DCB Decachlorobiphenyl

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCBP1
Lab Sample ID	Client Sample ID	(25-120)	(30-136)
280-148573-1	FWGIDW-210401-WW	79	55
LCS 280-536795/4-A	Lab Control Sample	96 M	93
LCSD 280-536795/5-A	Lab Control Sample Dup	95 M	95
MB 280-536795/1-A	Method Blank	97	106

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCBP = DCB Decachlorobiphenyl

Method: 8151A DOD - Herbicides (GC)

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)
		DCPAA1
Lab Sample ID	Client Sample ID	(10-131)
280-148573-1	FWGIDW-210401-WW	81
280-148573-1 MS	FWGIDW-210401-WW	90
280-148573-1 MSD	FWGIDW-210401-WW	85
LB3 280-536436/1-B	Method Blank	86
LCS 280-536436/2-B	Lab Control Sample	85

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

QC Sample Results

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 280-536523/1-A
Matrix: Water
Analysis Batch: 537589
Client Sample ID: Method Blank
Prep Type: TCLP

Analyte	LB3 Result	LB3 Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethene	0.0040	U	0.010	0.0040	0.0023	mg/L		05/26/21 22:14	1
1,2-Dichloroethane	0.0040	U	0.010	0.0040	0.0013	mg/L		05/26/21 22:14	1
2-Butanone (MEK)	0.032	U	0.10	0.032	0.020	mg/L		05/26/21 22:14	1
Benzene	0.0020	U	0.010	0.0020	0.0016	mg/L		05/26/21 22:14	1
Carbon tetrachloride	0.0040	U	0.010	0.0040	0.0019	mg/L		05/26/21 22:14	1
Chlorobenzene	0.0020	U	0.010	0.0020	0.0017	mg/L		05/26/21 22:14	1
Chloroform	0.0020	U	0.010	0.0020	0.0016	mg/L		05/26/21 22:14	1
Tetrachloroethene	0.0040	U	0.010	0.0040	0.0020	mg/L		05/26/21 22:14	1
Trichloroethene	0.0020	U	0.010	0.0020	0.0016	mg/L		05/26/21 22:14	1
Vinyl chloride	0.0080	U	0.010	0.0080	0.0010	mg/L		05/26/21 22:14	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*64 - 129*		*05/26/21 22:14*	*1*
4-Bromofluorobenzene (Surr)	*93*		*78 - 121*		*05/26/21 22:14*	*1*
Dibromofluoromethane (Surr)	*107*		*79 - 119*		*05/26/21 22:14*	*1*
Toluene-d8 (Surr)	*94*		*78 - 120*		*05/26/21 22:14*	*1*

Lab Sample ID: LCS 280-536523/2-A
Matrix: Water
Analysis Batch: 537589
Client Sample ID: Lab Control Sample
Prep Type: TCLP

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.250	0.253		mg/L		101	71 - 136
1,2-Dichloroethane	0.250	0.260		mg/L		104	70 - 135
2-Butanone (MEK)	1.00	0.858		mg/L		86	44 - 150
Benzene	0.250	0.273		mg/L		109	74 - 135
Carbon tetrachloride	0.250	0.286		mg/L		114	67 - 135
Chlorobenzene	0.250	0.256		mg/L		102	76 - 135
Chloroform	0.250	0.281		mg/L		112	76 - 120
Tetrachloroethene	0.250	0.277		mg/L		111	70 - 135
Trichloroethene	0.250	0.271		mg/L		108	73 - 135
Vinyl chloride	0.250	0.208		mg/L		83	40 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*64 - 129*
4-Bromofluorobenzene (Surr)	*92*		*78 - 121*
Dibromofluoromethane (Surr)	*108*		*79 - 119*
Toluene-d8 (Surr)	*94*		*78 - 120*

Lab Sample ID: LCSD 280-536523/3-A
Matrix: Water
Analysis Batch: 537589
Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	0.250	0.242		mg/L		97	71 - 136	4	20
1,2-Dichloroethane	0.250	0.254		mg/L		102	70 - 135	2	20
2-Butanone (MEK)	1.00	0.800		mg/L		80	44 - 150	7	32
Benzene	0.250	0.256		mg/L		103	74 - 135	6	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 280-536523/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537589

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon tetrachloride			0.250	0.271		mg/L		108	67 - 135	5	21
Chlorobenzene			0.250	0.247		mg/L		99	76 - 135	3	20
Chloroform			0.250	0.270		mg/L		108	76 - 120	4	20
Tetrachloroethene			0.250	0.261		mg/L		104	70 - 135	6	20
Trichloroethene			0.250	0.260		mg/L		104	73 - 135	4	20
Vinyl chloride			0.250	0.270	Q	mg/L		108	40 - 144	26	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*64 - 129*
4-Bromofluorobenzene (Surr)	*92*		*78 - 121*
Dibromofluoromethane (Surr)	*107*		*79 - 119*
Toluene-d8 (Surr)	*93*		*78 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 280-536436/1-C **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537333 **Prep Batch: 536799**

Analyte	LB3 Result	LB3 Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
1,4-Dichlorobenzene	0.0050	U	0.050	0.0050	0.0015	mg/L		05/25/21 17:22	1
2,4,5-Trichlorophenol	0.010	U	0.10	0.010	0.0026	mg/L		05/25/21 17:22	1
2,4,6-Trichlorophenol	0.010	U	0.10	0.010	0.0037	mg/L		05/25/21 17:22	1
2,4-Dinitrotoluene	0.010	U	0.10	0.010	0.0047	mg/L		05/25/21 17:22	1
2-Methylphenol	0.010	U	0.050	0.010	0.0028	mg/L		05/25/21 17:22	1
3 & 4 Methylphenol	0.020	U	0.10	0.020	0.0051	mg/L		05/25/21 17:22	1
Hexachlorobenzene	0.010	U	0.050	0.010	0.0048	mg/L		05/25/21 17:22	1
Hexachlorobutadiene	0.15	U	0.15	0.15	0.038	mg/L		05/25/21 17:22	1
Hexachloroethane	0.15	U	0.15	0.15	0.038	mg/L		05/25/21 17:22	1
Nitrobenzene	0.0050	U	0.10	0.0050	0.0022	mg/L		05/25/21 17:22	1
Pentachlorophenol	0.080	U	0.40	0.080	0.028	mg/L		05/25/21 17:22	1
Pyridine	0.10	U	0.10	0.10	0.025	mg/L		05/25/21 17:22	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*93*		*51 - 120*	*05/20/21 15:42*	*05/25/21 17:22*	*1*
2-Fluorobiphenyl	*75*		*49 - 120*	*05/20/21 15:42*	*05/25/21 17:22*	*1*
2-Fluorophenol (Surr)	*65*		*50 - 120*	*05/20/21 15:42*	*05/25/21 17:22*	*1*
Nitrobenzene-d5 (Surr)	*77*		*51 - 120*	*05/20/21 15:42*	*05/25/21 17:22*	*1*
Phenol-d5 (Surr)	*61*		*47 - 120*	*05/20/21 15:42*	*05/25/21 17:22*	*1*
Terphenyl-d14 (Surr)	*115*		*56 - 120*	*05/20/21 15:42*	*05/25/21 17:22*	*1*

Lab Sample ID: LCS 280-536436/2-C **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537333 **Prep Batch: 536799**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene			0.250	0.164		mg/L		66	29 - 112
2,4,5-Trichlorophenol			0.250	0.198		mg/L		79	53 - 123

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 280-536436/2-C **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537333 **Prep Batch: 536799**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,6-Trichlorophenol	0.250	0.201		mg/L		80	50 - 125
2,4-Dinitrotoluene	0.100	0.0730	J	mg/L		73	57 - 128
2-Methylphenol	0.250	0.203		mg/L		81	30 - 117
3 & 4 Methylphenol	0.500	0.412		mg/L		82	29 - 110
Hexachlorobenzene	0.100	0.105		mg/L		105	53 - 125
Hexachlorobutadiene	0.250	0.168		mg/L		67	22 - 124
Hexachloroethane	0.250	0.138	J	mg/L		55	21 - 115
Nitrobenzene	0.250	0.202		mg/L		81	45 - 121
Pentachlorophenol	0.500	0.276	J	mg/L		55	35 - 138
Pyridine	0.250	0.193		mg/L		77	10 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*97*		*51 - 120*
2-Fluorobiphenyl	*79*		*49 - 120*
2-Fluorophenol (Surr)	*74*		*50 - 120*
Nitrobenzene-d5 (Surr)	*86*		*51 - 120*
Phenol-d5 (Surr)	*70*		*47 - 120*
Terphenyl-d14 (Surr)	*123*	*Q*	*56 - 120*

Lab Sample ID: LCSD 280-536436/3-B **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537333 **Prep Batch: 536799**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.250	0.172		mg/L		69	29 - 112	5	30
2,4,5-Trichlorophenol	0.250	0.216		mg/L		86	53 - 123	9	30
2,4,6-Trichlorophenol	0.250	0.214		mg/L		86	50 - 125	6	30
2,4-Dinitrotoluene	0.100	0.0737	J	mg/L		74	57 - 128	1	30
2-Methylphenol	0.250	0.222		mg/L		89	30 - 117	9	30
3 & 4 Methylphenol	0.500	0.441		mg/L		88	29 - 110	7	30
Hexachlorobenzene	0.100	0.102		mg/L		102	53 - 125	4	30
Hexachlorobutadiene	0.250	0.183		mg/L		73	22 - 124	9	47
Hexachloroethane	0.250	0.154		mg/L		62	21 - 115	11	30
Nitrobenzene	0.250	0.219		mg/L		88	45 - 121	8	30
Pentachlorophenol	0.500	0.288	J	mg/L		58	35 - 138	4	30
Pyridine	0.250	0.176		mg/L		70	10 - 121	9	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*105*		*51 - 120*
2-Fluorobiphenyl	*84*		*49 - 120*
2-Fluorophenol (Surr)	*79*		*50 - 120*
Nitrobenzene-d5 (Surr)	*92*		*51 - 120*
Phenol-d5 (Surr)	*76*		*47 - 120*
Terphenyl-d14 (Surr)	*122*	*Q*	*56 - 120*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: LB3 280-536436/1-D **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537524 **Prep Batch: 536803**

Analyte	LB3 Result	LB3 Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Endrin	0.00020	U	0.00050	0.00020	0.000079	mg/L		05/27/21 00:13	1
Heptachlor	0.00020	U	0.00050	0.00020	0.000077	mg/L		05/27/21 00:13	1
Heptachlor epoxide	0.00020	U	0.00050	0.00020	0.000075	mg/L		05/27/21 00:13	1
gamma-BHC (Lindane)	0.00020	U	0.00050	0.00020	0.000069	mg/L		05/27/21 00:13	1
Methoxychlor	0.00050	U	0.0010	0.00050	0.00013	mg/L		05/27/21 00:13	1
Chlordane (technical)	0.0040	U	0.0050	0.0040	0.0014	mg/L		05/27/21 00:13	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*78*		*28 - 115*	*05/20/21 13:19*	*05/27/21 00:13*	*1*
DCB Decachlorobiphenyl	*85*		*34 - 122*	*05/20/21 13:19*	*05/27/21 00:13*	*1*

Lab Sample ID: LCS 280-536436/2-D **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537524 **Prep Batch: 536803**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Endrin	0.00500	0.00593		mg/L		119	66 - 143
Heptachlor	0.00500	0.00555		mg/L		111	59 - 143
Heptachlor epoxide	0.00500	0.00505		mg/L		101	37 - 142
gamma-BHC (Lindane)	0.00500	0.00500		mg/L		100	68 - 142
Methoxychlor	0.00500	0.00602		mg/L		120	30 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*89*		*28 - 115*
DCB Decachlorobiphenyl	*99*		*34 - 122*

Lab Sample ID: LCSD 280-536436/3-C **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537524 **Prep Batch: 536803**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Endrin	0.00500	0.00581		mg/L		116	66 - 143	2	30
Heptachlor	0.00500	0.00551		mg/L		110	59 - 143	1	30
Heptachlor epoxide	0.00500	0.00502		mg/L		100	37 - 142	1	30
gamma-BHC (Lindane)	0.00500	0.00496		mg/L		99	68 - 142	1	30
Methoxychlor	0.00500	0.00576		mg/L		115	30 - 150	4	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*88*		*28 - 115*
DCB Decachlorobiphenyl	*98*		*34 - 122*

Lab Sample ID: LB3 280-536436/1-F **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537524 **Prep Batch: 537135**

Analyte	LB3 Result	LB3 Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Toxaphene	0.0075	U	0.020	0.0075	0.0037	mg/L		05/27/21 00:50	1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LB3 280-536436/1-F
Matrix: Water
Analysis Batch: 537524

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 537135

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*77*		*28 - 115*	*05/22/21 14:22*	*05/27/21 00:50*	*1*
DCB Decachlorobiphenyl	*89*		*34 - 122*	*05/22/21 14:22*	*05/27/21 00:50*	*1*

Lab Sample ID: LCS 280-536436/2-F
Matrix: Water
Analysis Batch: 537524

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 537135

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Toxaphene			0.200	0.159	M	mg/L		79	63 - 142		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*83*		*28 - 115*
DCB Decachlorobiphenyl	*100*		*34 - 122*

Lab Sample ID: LCSD 280-536436/3-D
Matrix: Water
Analysis Batch: 537524

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 537135

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toxaphene			0.200	0.183	M	mg/L		92	63 - 142	14	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*83*		*28 - 115*
DCB Decachlorobiphenyl	*103*		*34 - 122*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 280-536795/1-A
Matrix: Water
Analysis Batch: 537365

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 536795

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
PCB-1016	0.40	U	1.0	0.40	0.12	ug/L		05/25/21 20:41	1
PCB-1221	0.25	U M	1.0	0.25	0.21	ug/L		05/25/21 20:41	1
PCB-1232	0.60	U	1.0	0.60	0.17	ug/L		05/25/21 20:41	1
PCB-1242	1.0	U	1.0	1.0	0.42	ug/L		05/25/21 20:41	1
PCB-1248	0.30	U	1.0	0.30	0.092	ug/L		05/25/21 20:41	1
PCB-1254	0.25	U	1.0	0.25	0.11	ug/L		05/25/21 20:41	1
PCB-1260	0.40	U	1.0	0.40	0.16	ug/L		05/25/21 20:41	1
PCB-1262	0.50	U	1.0	0.50	0.22	ug/L		05/25/21 20:41	1
PCB-1268	1.0	U	1.0	1.0	0.36	ug/L		05/25/21 20:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*97*		*25 - 120*	*05/20/21 13:17*	*05/25/21 20:41*	*1*
DCB Decachlorobiphenyl	*106*		*30 - 136*	*05/20/21 13:17*	*05/25/21 20:41*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCS 280-536795/4-A
Matrix: Water
Analysis Batch: 537365

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 536795

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
PCB-1016	2.00	2.20	M	ug/L		110	46 - 129
PCB-1260	2.00	2.28		ug/L		114	45 - 134

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*96*	*M*	*25 - 120*
DCB Decachlorobiphenyl	*93*		*30 - 136*

Lab Sample ID: LCSD 280-536795/5-A
Matrix: Water
Analysis Batch: 537365

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 536795

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
PCB-1016	2.00	2.23		ug/L		111	46 - 129	1	30
PCB-1260	2.00	2.31		ug/L		115	45 - 134	1	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*95*	*M*	*25 - 120*
DCB Decachlorobiphenyl	*95*		*30 - 136*

Method: 8151A DOD - Herbicides (GC)

Lab Sample ID: LB3 280-536436/1-B
Matrix: Water
Analysis Batch: 537351

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 536691

Analyte	LB3 Result	LB3 Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
2,4-D	0.018	U M	0.040	0.018	0.0053	mg/L		05/26/21 07:39	1
Silvex (2,4,5-TP)	0.0060	U M	0.010	0.0060	0.0017	mg/L		05/26/21 07:39	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*86*		*10 - 131*	*05/19/21 12:45*	*05/26/21 07:39*	*1*

Lab Sample ID: LCS 280-536436/2-B
Matrix: Water
Analysis Batch: 537351

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 536691

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.0500	0.0544		mg/L		109	13 - 115
Silvex (2,4,5-TP)	0.0500	0.0418		mg/L		84	10 - 158

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*85*		*10 - 131*

Method: 8151A DOD - Herbicides (GC) (Continued)

Lab Sample ID: 280-148573-1 MS
Matrix: Water
Analysis Batch: 537351

Client Sample ID: FWGIDW-210401-WW
Prep Type: TCLP
Prep Batch: 536691

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-D	0.018	U J1 M	0.0481	0.0556	J1	mg/L		116	13 - 115
Silvex (2,4,5-TP)	0.0059	U	0.0481	0.0433		mg/L		90	10 - 158

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*90*		*10 - 131*

Lab Sample ID: 280-148573-1 MSD
Matrix: Water
Analysis Batch: 537351

Client Sample ID: FWGIDW-210401-WW
Prep Type: TCLP
Prep Batch: 536691

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4-D	0.018	U J1 M	0.0481	0.0482		mg/L		100	13 - 115	14	30
Silvex (2,4,5-TP)	0.0059	U	0.0481	0.0410		mg/L		85	10 - 158	5	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*85*		*10 - 131*

Method: 6010C - Metals (ICP)

Lab Sample ID: LB3 280-536436/1-E
Matrix: Water
Analysis Batch: 537788

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 537114

Analyte	LB3 Result	LB3 Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Arsenic	0.075	U	0.50	0.075	0.022	mg/L		05/28/21 06:05	1
Barium	0.013	U Q	1.0	0.013	0.0040	mg/L		05/28/21 06:05	1
Cadmium	0.0070	U	0.10	0.0070	0.0020	mg/L		05/28/21 06:05	1
Chromium	0.013	U	0.50	0.013	0.0030	mg/L		05/28/21 06:05	1
Lead	0.0153	J	0.50	0.045	0.014	mg/L		05/28/21 06:05	1
Selenium	0.095	U	0.10	0.095	0.032	mg/L		05/28/21 06:05	1
Silver	0.025	U	0.50	0.025	0.0098	mg/L		05/28/21 06:05	1

Lab Sample ID: LCS 280-536436/2-E
Matrix: Water
Analysis Batch: 537788

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 537114

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	5.00	4.69		mg/L		94	80 - 120
Barium	12.0	11.6	Q	mg/L		97	80 - 120
Cadmium	2.00	1.90		mg/L		95	80 - 120
Chromium	6.00	5.80		mg/L		97	80 - 120
Lead	6.00	5.82		mg/L		97	80 - 120
Selenium	3.00	2.82		mg/L		94	80 - 120
Silver	1.05	0.999		mg/L		95	80 - 120

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 280-148573-1 MS
Matrix: Water
Analysis Batch: 537788

Client Sample ID: FWGIDW-210401-WW
Prep Type: TCLP
Prep Batch: 537114

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.075	U	5.00	4.42		mg/L		88	80 - 120
Barium	0.014	J Q	12.0	10.8	Q	mg/L		90	80 - 120
Cadmium	0.0070	U	2.00	1.77		mg/L		88	80 - 120
Chromium	0.013	U	6.00	5.42		mg/L		90	80 - 120
Lead	0.045	U	6.00	5.43		mg/L		90	80 - 120
Selenium	0.095	U	3.00	2.64		mg/L		88	80 - 120
Silver	0.025	U	1.05	0.943		mg/L		90	80 - 120

Lab Sample ID: 280-148573-1 MSD
Matrix: Water
Analysis Batch: 537788

Client Sample ID: FWGIDW-210401-WW
Prep Type: TCLP
Prep Batch: 537114

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.075	U	5.00	5.09		mg/L		102	80 - 120	14	20
Barium	0.014	J Q	12.0	12.5	Q	mg/L		104	80 - 120	15	20
Cadmium	0.0070	U	2.00	2.04		mg/L		102	80 - 120	14	20
Chromium	0.013	U	6.00	6.24		mg/L		104	80 - 120	14	20
Lead	0.045	U	6.00	6.26		mg/L		104	80 - 120	14	20
Selenium	0.095	U	3.00	3.04		mg/L		101	80 - 120	14	20
Silver	0.025	U	1.05	1.08		mg/L		102	80 - 120	13	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LB3 280-536436/1-G
Matrix: Water
Analysis Batch: 537973

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 537950

Analyte	LB3 Result	LB3 Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Mercury	0.000080	U	0.0020	0.000080	0.000030	mg/L		05/29/21 20:59	1

Lab Sample ID: LCS 280-536436/2-G
Matrix: Water
Analysis Batch: 537973

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 537950

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00500	0.00505		mg/L		101	90 - 116

Lab Sample ID: LCSD 280-536436/3-E
Matrix: Water
Analysis Batch: 537973

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 537950

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.00500	0.00504		mg/L		101	90 - 116	0	10

Lab Sample ID: 280-148573-1 MS
Matrix: Water
Analysis Batch: 537973

Client Sample ID: FWGIDW-210401-WW
Prep Type: TCLP
Prep Batch: 537950

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.000080	U	0.00500	0.00502		mg/L		100	90 - 116

Method: 7470A - Mercury (CVAA)

Lab Sample ID: 280-148573-1 MSD **Client Sample ID: FWGIDW-210401-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 537973 **Prep Batch: 537950**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.000080	U	0.00500	0.00497		mg/L		99	90 - 116	1	10

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: MB 280-536971/2 **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 536971

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Flashpoint	>160.0		1.00	1.00	1.00	Degrees F		05/21/21 11:19	1

Lab Sample ID: MB 280-536971/8 **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 536971

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Flashpoint	>160.0		1.00	1.00	1.00	Degrees F		05/21/21 11:19	1

Lab Sample ID: LCS 280-536971/1 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 536971

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Flashpoint			139	147.0	Q	Degrees F		106	96 - 104		

Lab Sample ID: LCSD 280-536971/7 **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 536971

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Flashpoint			139	149.0	Q	Degrees F		107	96 - 104	1	10

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 410-129163/2-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 129280 **Prep Batch: 129163**

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	0.0090	U	0.010	0.0090	0.0050	mg/L		05/21/21 11:37	1

Lab Sample ID: HLCS 410-129163/3-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 129280 **Prep Batch: 129163**

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.200	0.216		mg/L		108			

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: LCS 410-129163/1-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 129280 **Prep Batch: 129163**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.200	0.215		mg/L		107	83 - 116

Lab Sample ID: LLCS 410-129163/4-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 129280 **Prep Batch: 129163**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.0500	0.0519		mg/L		104	

Method: 9034 - Sulfide, Acid Soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 280-536190/2-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 536192 **Prep Batch: 536190**

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Sulfide	0.800	J	4.0	1.9	0.79	mg/L		05/14/21 12:32	1

Lab Sample ID: LCS 280-536190/1-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 536192 **Prep Batch: 536190**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	19.5	15.2		mg/L		78	44 - 110

Method: 9040C - pH

Lab Sample ID: LCS 280-536675/4 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 536675

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.1		SU		101	99 - 101

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-535995/6 **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 535995

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	0.20	U	0.50	0.20	0.090	mg/L		05/13/21 15:43	1
Nitrite as N	0.10	U	0.50	0.10	0.049	mg/L		05/13/21 15:43	1

Lab Sample ID: LCS 280-535995/4 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 535995

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	5.23		mg/L		105	87 - 111

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: LCSD 280-535995/5
Matrix: Water
Analysis Batch: 535995

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	5.22		mg/L		104	87 - 111	0	10

Lab Sample ID: MRL 280-535995/3
Matrix: Water
Analysis Batch: 535995

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	0.500	0.481	J	mg/L		96	50 - 150
Nitrite as N	0.500	0.507		mg/L		101	50 - 150

GC/MS VOA

Leach Batch: 536523

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	1311	
LB3 280-536523/1-A	Method Blank	TCLP	Water	1311	
LCS 280-536523/2-A	Lab Control Sample	TCLP	Water	1311	
LCSD 280-536523/3-A	Lab Control Sample Dup	TCLP	Water	1311	

Analysis Batch: 537589

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	8260B	536523
LB3 280-536523/1-A	Method Blank	TCLP	Water	8260B	536523
LCS 280-536523/2-A	Lab Control Sample	TCLP	Water	8260B	536523
LCSD 280-536523/3-A	Lab Control Sample Dup	TCLP	Water	8260B	536523

GC/MS Semi VOA

Leach Batch: 536436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	1311	
LB3 280-536436/1-C	Method Blank	TCLP	Water	1311	
LCS 280-536436/2-C	Lab Control Sample	TCLP	Water	1311	
LCSD 280-536436/3-B	Lab Control Sample Dup	TCLP	Water	1311	

Prep Batch: 536799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	3510C	536436
LB3 280-536436/1-C	Method Blank	TCLP	Water	3510C	536436
LCS 280-536436/2-C	Lab Control Sample	TCLP	Water	3510C	536436
LCSD 280-536436/3-B	Lab Control Sample Dup	TCLP	Water	3510C	536436

Analysis Batch: 537333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	8270D	536799
LB3 280-536436/1-C	Method Blank	TCLP	Water	8270D	536799
LCS 280-536436/2-C	Lab Control Sample	TCLP	Water	8270D	536799
LCSD 280-536436/3-B	Lab Control Sample Dup	TCLP	Water	8270D	536799

GC Semi VOA

Leach Batch: 536436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	1311	
LB3 280-536436/1-B	Method Blank	TCLP	Water	1311	
LB3 280-536436/1-D	Method Blank	TCLP	Water	1311	
LB3 280-536436/1-F	Method Blank	TCLP	Water	1311	
LCS 280-536436/2-B	Lab Control Sample	TCLP	Water	1311	
LCS 280-536436/2-D	Lab Control Sample	TCLP	Water	1311	
LCS 280-536436/2-F	Lab Control Sample	TCLP	Water	1311	
LCSD 280-536436/3-C	Lab Control Sample Dup	TCLP	Water	1311	
LCSD 280-536436/3-D	Lab Control Sample Dup	TCLP	Water	1311	
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	1311	
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	1311	

GC Semi VOA

Prep Batch: 536691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	8151A	536436
LB3 280-536436/1-B	Method Blank	TCLP	Water	8151A	536436
LCS 280-536436/2-B	Lab Control Sample	TCLP	Water	8151A	536436
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	8151A	536436
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	8151A	536436

Prep Batch: 536795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	3510C	
MB 280-536795/1-A	Method Blank	Total/NA	Water	3510C	
LCS 280-536795/4-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 280-536795/5-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Prep Batch: 536803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	3510C	536436
LB3 280-536436/1-D	Method Blank	TCLP	Water	3510C	536436
LCS 280-536436/2-D	Lab Control Sample	TCLP	Water	3510C	536436
LCSD 280-536436/3-C	Lab Control Sample Dup	TCLP	Water	3510C	536436

Prep Batch: 537135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	3510C	536436
LB3 280-536436/1-F	Method Blank	TCLP	Water	3510C	536436
LCS 280-536436/2-F	Lab Control Sample	TCLP	Water	3510C	536436
LCSD 280-536436/3-D	Lab Control Sample Dup	TCLP	Water	3510C	536436

Analysis Batch: 537351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	8151A DOD	536691
LB3 280-536436/1-B	Method Blank	TCLP	Water	8151A DOD	536691
LCS 280-536436/2-B	Lab Control Sample	TCLP	Water	8151A DOD	536691
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	8151A DOD	536691
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	8151A DOD	536691

Analysis Batch: 537365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	8082A	536795
MB 280-536795/1-A	Method Blank	Total/NA	Water	8082A	536795
LCS 280-536795/4-A	Lab Control Sample	Total/NA	Water	8082A	536795
LCSD 280-536795/5-A	Lab Control Sample Dup	Total/NA	Water	8082A	536795

Analysis Batch: 537524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	8081B	536803
280-148573-1	FWGIDW-210401-WW	TCLP	Water	8081B	537135
LB3 280-536436/1-D	Method Blank	TCLP	Water	8081B	536803
LB3 280-536436/1-F	Method Blank	TCLP	Water	8081B	537135
LCS 280-536436/2-D	Lab Control Sample	TCLP	Water	8081B	536803
LCS 280-536436/2-F	Lab Control Sample	TCLP	Water	8081B	537135
LCSD 280-536436/3-C	Lab Control Sample Dup	TCLP	Water	8081B	536803

GC Semi VOA (Continued)

Analysis Batch: 537524 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 280-536436/3-D	Lab Control Sample Dup	TCLP	Water	8081B	537135

Metals

Leach Batch: 536436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	1311	
LB3 280-536436/1-E	Method Blank	TCLP	Water	1311	
LB3 280-536436/1-G	Method Blank	TCLP	Water	1311	
LCS 280-536436/2-E	Lab Control Sample	TCLP	Water	1311	
LCS 280-536436/2-G	Lab Control Sample	TCLP	Water	1311	
LCSD 280-536436/3-E	Lab Control Sample Dup	TCLP	Water	1311	
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	1311	
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	1311	

Prep Batch: 537114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	3010A	536436
LB3 280-536436/1-E	Method Blank	TCLP	Water	3010A	536436
LCS 280-536436/2-E	Lab Control Sample	TCLP	Water	3010A	536436
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	3010A	536436
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	3010A	536436

Analysis Batch: 537788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	6010C	537114
LB3 280-536436/1-E	Method Blank	TCLP	Water	6010C	537114
LCS 280-536436/2-E	Lab Control Sample	TCLP	Water	6010C	537114
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	6010C	537114
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	6010C	537114

Prep Batch: 537950

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	7470A	536436
LB3 280-536436/1-G	Method Blank	TCLP	Water	7470A	536436
LCS 280-536436/2-G	Lab Control Sample	TCLP	Water	7470A	536436
LCSD 280-536436/3-E	Lab Control Sample Dup	TCLP	Water	7470A	536436
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	7470A	536436
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	7470A	536436

Analysis Batch: 537973

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	TCLP	Water	7470A	537950
LB3 280-536436/1-G	Method Blank	TCLP	Water	7470A	537950
LCS 280-536436/2-G	Lab Control Sample	TCLP	Water	7470A	537950
LCSD 280-536436/3-E	Lab Control Sample Dup	TCLP	Water	7470A	537950
280-148573-1 MS	FWGIDW-210401-WW	TCLP	Water	7470A	537950
280-148573-1 MSD	FWGIDW-210401-WW	TCLP	Water	7470A	537950

General Chemistry

Prep Batch: 129163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	9012B	
MB 410-129163/2-A	Method Blank	Total/NA	Water	9012B	
HLCS 410-129163/3-A	Lab Control Sample	Total/NA	Water	9012B	
LCS 410-129163/1-A	Lab Control Sample	Total/NA	Water	9012B	
LLCS 410-129163/4-A	Lab Control Sample	Total/NA	Water	9012B	

Analysis Batch: 129280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	9012B	129163
MB 410-129163/2-A	Method Blank	Total/NA	Water	9012B	129163
HLCS 410-129163/3-A	Lab Control Sample	Total/NA	Water	9012B	129163
LCS 410-129163/1-A	Lab Control Sample	Total/NA	Water	9012B	129163
LLCS 410-129163/4-A	Lab Control Sample	Total/NA	Water	9012B	129163

Analysis Batch: 535995

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	9056A	
MB 280-535995/6	Method Blank	Total/NA	Water	9056A	
LCS 280-535995/4	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-535995/5	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-535995/3	Lab Control Sample	Total/NA	Water	9056A	

Prep Batch: 536190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	9030B	
MB 280-536190/2-A	Method Blank	Total/NA	Water	9030B	
LCS 280-536190/1-A	Lab Control Sample	Total/NA	Water	9030B	

Analysis Batch: 536192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	9034	536190
MB 280-536190/2-A	Method Blank	Total/NA	Water	9034	536190
LCS 280-536190/1-A	Lab Control Sample	Total/NA	Water	9034	536190

Analysis Batch: 536675

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	9040C	
LCS 280-536675/4	Lab Control Sample	Total/NA	Water	9040C	

Analysis Batch: 536971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-148573-1	FWGIDW-210401-WW	Total/NA	Water	1010A	
MB 280-536971/2	Method Blank	Total/NA	Water	1010A	
MB 280-536971/8	Method Blank	Total/NA	Water	1010A	
LCS 280-536971/1	Lab Control Sample	Total/NA	Water	1010A	
LCSD 280-536971/7	Lab Control Sample Dup	Total/NA	Water	1010A	

Lab Chronicle

Client Sample ID: FWGIDW-210401-WW

Lab Sample ID: 280-148573-1

Date Collected: 05/10/21 11:30
Matrix: Water
Date Received: 05/13/21 09:35

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	536523	05/18/21 11:06	EKB	TAL DEN
TCLP	Analysis	8260B		1	0.5 mL	5 mL	537589	05/26/21 23:46	PP	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	536436	05/17/21 16:42	TGH	TAL DEN
TCLP	Prep	3510C			200 mL	1 mL	536799	05/20/21 15:42	SKS	TAL DEN
TCLP	Analysis	8270D		1			537333	05/25/21 18:24	SP	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	536436	05/17/21 16:42	TGH	TAL DEN
TCLP	Prep	3510C			100 mL	10 mL	536803	05/20/21 13:19	SKS	TAL DEN
TCLP	Analysis	8081B		1			537524	05/26/21 23:54	MD	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	536436	05/17/21 16:42	TGH	TAL DEN
TCLP	Prep	3510C			100 mL	10 mL	537135	05/22/21 14:22	CDH	TAL DEN
TCLP	Analysis	8081B		1			537524	05/27/21 00:32	MD	TAL DEN
Total/NA	Prep	3510C			949.7 mL	10 mL	536795	05/20/21 13:17	SKS	TAL DEN
Total/NA	Analysis	8082A		1			537365	05/25/21 23:28	MAM	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	536436	05/17/21 16:42	TGH	TAL DEN
TCLP	Prep	8151A			102 mL	10 mL	536691	05/19/21 12:45	DFB1	TAL DEN
TCLP	Analysis	8151A DOD		1			537351	05/26/21 08:23	MB	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	536436	05/17/21 16:42	TGH	TAL DEN
TCLP	Prep	3010A			10 mL	50 mL	537114	05/27/21 15:30	EC	TAL DEN
TCLP	Analysis	6010C		1			537788	05/28/21 06:12	LMT	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	536436	05/17/21 16:42	TGH	TAL DEN
TCLP	Prep	7470A			30 mL	50 mL	537950	05/29/21 14:45	NK	TAL DEN
TCLP	Analysis	7470A		1			537973	05/29/21 21:06	NK	TAL DEN
Total/NA	Analysis	1010A		1			536971	05/21/21 11:19	SPG	TAL DEN
Total/NA	Prep	9012B			50 mL	50 mL	129163	05/21/21 08:45	UNJS	ELLE
Total/NA	Analysis	9012B		1			129280	05/21/21 11:52	P684	ELLE
Total/NA	Prep	9030B			50 mL	50 mL	536190	05/14/21 12:23	SAH	TAL DEN
Total/NA	Analysis	9034		1			536192	05/14/21 12:32	SAH	TAL DEN
Total/NA	Analysis	9040C		1			536675	05/18/21 16:02	QJB	TAL DEN
Total/NA	Analysis	9056A		1	10 mL	10 mL	535995	05/13/21 23:24	JMB	TAL DEN

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300
TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-148573-1

Laboratory: Eurofins TestAmerica, Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9040C		Water	Temperature

Laboratory: Eurofins Lancaster Laboratories Env, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	1.01	11-30-22
Alaska	State	PA00009	06-30-22
Alaska (UST)	State	17-027	02-28-22
Arizona	State	AZ0780	03-12-22
Arkansas DEQ	State	19-053-0	08-09-21
California	State	2792	01-31-22
Colorado	State	PA00009	06-30-21
Connecticut	State	PH-0746	06-30-21
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-22
Delaware (DW)	State	N/A	02-01-22
Florida	NELAP	E87997	06-30-21
Hawaii	State	N/A	01-31-22
Illinois	NELAP	004559	01-31-22
Iowa	State	361	03-02-22
Kansas	NELAP	E-10151	10-31-21
Kentucky (DW)	State	KY90088	01-01-22
Kentucky (UST)	State	1.01	11-30-22
Kentucky (WW)	State	KY90088	12-31-21
Louisiana	NELAP	02055	06-30-21
Maine	State	2019012	03-12-22
Maryland	State	100	06-30-22
Massachusetts	State	M-PA009	06-30-21
Michigan	State	9930	01-31-22
Minnesota	NELAP	042-999-487	12-31-21
Missouri	State	450	01-31-22
Montana (DW)	State	0098	01-01-22
Montana (UST)	State	0098	01-01-22
Nebraska	State	NE-OS-32-17	01-31-22
Nevada	State	PA000092019-3	07-31-21
New Hampshire	NELAP	273019	01-10-22
New Jersey	NELAP	PA011	06-30-21
New York	NELAP	10670	04-01-22
North Carolina (DW)	State	42705	07-31-21
North Carolina (WW/SW)	State	521	12-31-21
North Dakota	State	R-205	01-31-22
Oklahoma	NELAP	R-205	08-31-21
Oregon	NELAP	PA200001-018	09-12-21
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-22
Rhode Island	State	LAO00338	01-31-22

Accreditation/Certification Summary

Client: Leidos, Inc.
Job ID: 280-148573-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Laboratory: Eurofins Lancaster Laboratories Env, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
South Carolina	State	89002002	01-31-22
Tennessee	State	02838	01-31-22
Texas	NELAP	T104704194-20-38	08-31-21
Utah	NELAP	PA000092019-16	03-01-22
Vermont	State	VT - 36037	10-29-21
Virginia	NELAP	10561	06-14-21
Washington	State	C457	04-12-22
West Virginia (DW)	State	9906 C	12-31-21
West Virginia DEP	State	055	06-30-21
Wyoming	State	8TMS-L	01-31-22
Wyoming (UST)	A2LA	1.01	11-30-22

Method Summary

Client: Leidos, Inc. Job ID: 280-148573-1
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 DEN
9012B	Cyanide, Total and/or Amenable	EPA	ELLE
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	ELLE
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:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-148573-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
280-148573-1	FWGIDW-210401-WW	Water	05/10/21 11:30	05/13/21 09:35	

Eurofins TestAmerica, Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)

Sampler:

Lab PM: Rydberg, Donna R

Carrier Tracking No(s):

COC No: 280-568935.1

Client Contact: Shipping/Receiving

Phone:

E-Mail: Donna.Rydberg@Eurofinset.com

State of Origin: Ohio

Page: Page 1 of 1

Company: Eurofins Lancaster Laboratories Env LLC

Accreditations Required (See note): DoD - A2LA

Job #: 280-148573-1

Address: 2425 New Holland Pike, ,

Due Date Requested: 6/2/2021

City: Lancaster

TAT Requested (days):

State, Zip: PA, 17601

Phone: 717-656-2300(Tel)

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)	9012B_DOD5/9012B_Prep_DOD5 Total Cyanide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
FWGIDW-210401-WW (280-148573-1)	5/10/21	11:30 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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 Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

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
	5/18/21 1300				
				5/20/21 1035	ELLE

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 5 4

C.2 Waste Manifest

Pending

APPENDIX D

Laboratory Analytical Results and Screening

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D.1 Spring 2021 Analytical Results

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Appendix D.1 Spring 2021 Analytical Results

	Station	069mw-010	069mw-011	069mw-012	069mw-012	069mw-013	069mw-014	DETmw-003	DETmw-003	DETmw-004	FBQmw-170	FBQmw-171	FBQmw-172
	Sample Id	069MW-010-0004-GW	069MW-011-0004-GW	069MW-012-9004-GW	069MW-012-0004-GW	069MW-013-0004-GW	069MW-014-0004-GW	DET-003-210402-GW	DET-003-210401-GW	DET-004-210401-GW	FBQmw-170-210401-GW	FBQmw-171-210401-GW	FBQmw-172-210401-GW
	Date	05/25/21	05/25/21	05/25/21	05/25/21	05/25/21	05/25/21	05/04/21	05/04/21	05/04/21	05/06/21	05/05/21	05/05/21
	Sample Type	GR	GR	FD	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	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Homewood	Homewood	Homewood
Analyte (mg/L)	**CAS Number**												
Metals													
Aluminum	7429-90-5	NA	NA	NA	NA	NA	NA	0.018 J	0.02 J	0.02 J	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA	NA	NA	NA	0.0019 J	0.00088 J	0.00068 J	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA	NA	NA	NA	0.0087	0.0087	<0.001 U	NA	NA	NA
Barium	7440-39-3	NA	NA	NA	NA	NA	NA	0.045	0.043	0.055	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA	NA	NA	NA	<0.0003 U	<0.0003 U	<0.0003 U	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	88	88	130	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA	NA	NA	NA	<0.0018 U	<0.0018 U	<0.0018 U	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA	NA	NA	NA	0.00035 J	0.00031 J	<0.00035 U	NA	NA	NA
Copper	7440-50-8	NA	NA	NA	NA	NA	NA	<0.0018 U	<0.0018 U	0.0011 J	NA	NA	NA
Iron	7439-89-6	NA	NA	NA	NA	NA	NA	1.9	1.8	<0.085 U	NA	NA	NA
Lead	7439-92-1	NA	NA	NA	NA	NA	NA	<0.0007 U	<0.0007 U	<0.0007 U	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	32	32	26	NA	NA	NA
Manganese	7439-96-5	NA	NA	NA	NA	NA	NA	0.23	0.23	0.037	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA	NA	NA	NA	<0.00008 U	<0.00008 U	<0.00008 U	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U	0.00041 J	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	1.9 J	1.9 J	1.2 J	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Silver	7440-22-4	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.00005 U	<0.0001 U	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	11	11	1.5 J	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA	<0.003 U	<0.003 U	<0.003 U	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA	NA	NA	NA	<0.008 U	<0.008 U	0.014 J	NA	NA	NA
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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia	7664-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA	NA	NA	NA	<0.009 UJ	<0.009 UJ	<0.009 UJ	NA	NA	NA
Total Organic Carbon	N997	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	NA	NA	NA	<0.00021 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
1,3-Dinitrobenzene	99-65-0	NA	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4,6-Trinitrotoluene	118-96-7	NA	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4-Diamino-6-nitrotoluene	6629-29-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00036 U	<0.00037 U	<0.00036 U
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA	NA	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2,6-Diamino-4-nitrotoluene	59229-75-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00032 U	<0.00033 U	<0.00032 U
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA	NA	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	NA	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 UJ	<0.0001 UJ	<0.0001 UJ
2-Nitrotoluene	88-72-2	NA	NA	NA	NA	NA	NA	NA	<0.00021 U	<0.0002 U	<0.0002 UJ	<0.0002 UJ	<0.0002 UJ
3,5-Dinitroaniline	618-87-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0003 U	<0.00031 U	<0.0003 U
3-Nitrotoluene	99-08-1	NA	NA	NA	NA	NA	NA	NA	<0.00042 U	<0.00041 U	<0.00041 UJ	<0.00041 UJ	<0.00039 UJ
4-Amino-2,6-Dinitrotoluene	19406-51-0	NA	NA	NA	NA	NA	NA	NA	<0.00013 U	<0.00012 U	<0.00012 UJ	<0.00012 UJ	<0.00012 UJ

Appendix D.1 Spring 2021 Analytical Results

Station		069mw-010	069mw-011	069mw-012	069mw-012	069mw-013	069mw-014	DETmw-003	DETmw-003	DETmw-004	FBQmw-170	FBQmw-171	FBQmw-172
Sample Id		069MW-010-0004-GW	069MW-011-0004-GW	069MW-012-9004-GW	069MW-012-0004-GW	069MW-013-0004-GW	069MW-014-0004-GW	DET-003-210402-GW	DET-003-210401-GW	DET-004-210401-GW	FBQmw-170-210401-GW	FBQmw-171-210401-GW	FBQmw-172-210401-GW
Date		05/25/21	05/25/21	05/25/21	05/25/21	05/25/21	05/25/21	05/04/21	05/04/21	05/04/21	05/06/21	05/05/21	05/05/21
Sample Type		GR	GR	FD	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	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Homewood	Homewood	Homewood
Analyte (mg/L)	**CAS Number**												
4-Nitrotoluene	99-99-0	NA	NA	NA	NA	NA	NA	NA	<0.00042 U	<0.00041 U	<0.00041 UJ	<0.00041 UJ	<0.00039 UJ
DNX	80251-29-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00025 U	<0.00025 U	<0.00025 U
HMX	2691-41-0	NA	NA	NA	NA	NA	NA	NA	<0.00021 U	0.0012	<0.0002 U	<0.0002 U	<0.0002 U
MNX	5755-27-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00029 U	<0.00029 U	<0.00029 U
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA	NA	<0.00021 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Nitroglycerin	55-63-0	NA	NA	NA	NA	NA	NA	NA	<0.0021 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
PETN	78-11-5	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.00099 U
RDX	121-82-4	NA	NA	NA	NA	NA	NA	NA	<0.00021 U	0.00067	<0.0002 U	<0.0002 U	<0.0002 U
TNX	13980-04-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00025 U	<0.00025 U	<0.00025 U
Tetryl	479-45-8	NA	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
SVOCs													
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	<0.00004 U	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA	<0.0043 U	<0.0043 U	<0.0042 U	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA	<0.00097 U	<0.00099 U	<0.00096 U	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA	<0.0019 U	<0.002 U	<0.0019 U	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA	<0.0019 U	<0.002 U	<0.0019 U	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	NA	<0.029 U	<0.03 U	<0.029 U	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA	<0.0043 U	<0.0043 U	<0.0042 U	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA	<0.0043 U	<0.0043 U	<0.0042 U	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA	<0.0043 U	<0.0043 U	<0.0042 U	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	NA	<0.0085 U	<0.0087 U	<0.0084 U	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA	<0.0019 U	<0.002 U	<0.0019 U	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	NA	<0.00097 U	<0.00099 U	<0.00096 U	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	NA	<0.0048 U	<0.0049 U	<0.0048 U	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA	<0.0039 U	<0.004 U	<0.0038 U	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	NA	<0.00001 U	<0.00001 U	<0.00001 U	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	NA	<0.0019 U	<0.002 U	<0.0019 U	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	NA	<0.0019 U	<0.002 U	<0.0019 U	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	NA	<0.0043 U	<0.0043 U	<0.0042 U	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	NA	<0.00097 U	<0.00099 U	<0.00096 U	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	NA	<0.00097 U	<0.00099 U	<0.00096 U	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	NA	<0.00048 U	<0.00049 U	<0.00048 U	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	NA	<0.00004 U	<0.00004 U	<0.00004 U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA	<0.0019 U	<0.002 U	<0.0019 U	NA	NA	NA

Appendix D.1 Spring 2021 Analytical Results

Station		069mw-010	069mw-011	069mw-012	069mw-012	069mw-013	069mw-014	DETmw-003	DETmw-003	DETmw-004	FBQmw-170	FBQmw-171	FBQmw-172
Sample Id		069MW-010-0004-GW	069MW-011-0004-GW	069MW-012-9004-GW	069MW-012-0004-GW	069MW-013-0004-GW	069MW-014-0004-GW	DET-003-210402-GW	DET-003-210401-GW	DET-004-210401-GW	FBQmw-170-210401-GW	FBQmw-171-210401-GW	FBQmw-172-210401-GW
Date		05/25/21	05/25/21	05/25/21	05/25/21	05/25/21	05/25/21	05/04/21	05/04/21	05/04/21	05/06/21	05/05/21	05/05/21
Sample Type		GR	GR	FD	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	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Homewood	Homewood	Homewood
Analyte (mg/L)	**CAS Number**												
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	NA	<0.058 U	<0.059 U	<0.057 U	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA	<0.0043 U	<0.0043 U	<0.0042 U	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	NA	<0.00048 U	<0.00049 U	<0.00048 U	NA	NA	NA
PCBs													
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	NA	<0.00039 U	<0.0004 U	<0.00039 U	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	NA	<0.00024 U	<0.00025 U	<0.00024 U	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	NA	<0.00058 U	<0.0006 U	<0.00058 U	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	NA	<0.00096 U	<0.001 U	<0.00096 U	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	NA	<0.00029 U	<0.0003 U	<0.00029 U	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	NA	<0.00024 U	<0.00025 U	<0.00024 U	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	NA	<0.00039 U	<0.0004 U	<0.00039 U	NA	NA	NA
Pesticides													
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	NA	<0.00005 U	<0.00005 U	<0.00005 U	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	NA	<0.00077 U	<0.0008 U	<0.00077 U	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA	<0.00002 U	<0.00002 U	<0.00002 U	NA	NA	NA
VOCs													
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
2-Butanone	78-93-3	NA	NA	NA	NA	NA	NA	<0.004 U	<0.004 U	<0.004 U	NA	NA	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	NA	<0.004 U	<0.004 U	<0.004 U	NA	NA	NA

Appendix D.1 Spring 2021 Analytical Results

	Station	069mw-010	069mw-011	069mw-012	069mw-012	069mw-013	069mw-014	DETmw-003	DETmw-003	DETmw-004	FBQmw-170	FBQmw-171	FBQmw-172
	Sample Id	**069MW-010-0004-GW**	**069MW-011-0004-GW**	**069MW-012-9004-GW**	**069MW-012-0004-GW**	**069MW-013-0004-GW**	**069MW-014-0004-GW**	**DET-003-210402-GW**	**DET-003-210401-GW**	**DET-004-210401-GW**	**FBQmw-170-210401-GW**	**FBQmw-171-210401-GW**	**FBQmw-172-210401-GW**
	Date	**05/25/21**	**05/25/21**	**05/25/21**	**05/25/21**	**05/25/21**	**05/25/21**	**05/04/21**	**05/04/21**	**05/04/21**	**05/06/21**	**05/05/21**	**05/05/21**
	Sample Type	**GR**	**GR**	**FD**	**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**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Homewood**	**Homewood**	**Homewood**
Analyte (mg/L)	**CAS Number**												
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	NA	<0.0032 U	<0.0032 U	<0.0032 U	NA	NA	NA
Acetone	67-64-1	NA	NA	NA	NA	NA	NA	<0.0064 U	<0.0064 U	<0.0064 U	NA	NA	NA
Benzene	71-43-2	NA	NA	NA	NA	NA	NA	<0.0004 U	0.00054 J	<0.0004 U	NA	NA	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Bromoform	75-25-2	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA
Bromomethane	74-83-9	NA	NA	NA	NA	NA	NA	<0.0008 UJ	<0.0008 UJ	<0.0008 UJ	NA	NA	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
Carbon tetrachloride	56-23-5	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Chloroethane	75-00-3	NA	NA	NA	NA	NA	NA	<0.0016 U	<0.0016 U	<0.0016 U	NA	NA	NA
Chloroform	67-66-3	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Chloromethane	74-87-3	<0.0005 U	<0.0005 U	<0.0005 U	<0.0005 U	<0.0005 U	<0.0005 U	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	NA	NA	<0.0004 U	0.00016 J	<0.0004 U	NA	NA	NA
Methylene chloride	75-09-2	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.002 U	<0.002 U	<0.002 U	NA	NA	NA
Styrene	100-42-5	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Toluene	108-88-3	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	NA	NA	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	NA	NA	<0.0008 U	<0.0008 U	<0.0008 U	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	NA	NA	<0.0004 U	<0.0004 U	<0.0004 U	NA	NA	NA

Appendix D.1 Spring 2021 Analytical Results

	Station	FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016
	Sample Id	FBQmw-173-210401-GW	FBQmw-174-210401-GW	FBQmw-175-210402-GW	FBQmw-175-210401-GW	FWGmw-004-210402-GW	FWGmw-004-210401-GW	FWGmw-007-210401-GW	FWGmw-010-210401-GW	FWGmw-011-210401-GW	FWGmw-012-210401-GW	FWGmw-015-210401-GW	FWGmw-016-210401-GW
	Date	05/04/21	05/04/21	05/04/21	05/04/21	04/29/21	04/29/21	05/03/21	05/03/21	04/27/21	04/27/21	04/29/21	04/29/21
	Sample Type	GR	GR	FD	GR	FD	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	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon
Analyte (mg/L)	**CAS Number**												
Metals													
Aluminum	7429-90-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anions													
Nitrate	14797-55-8	<0.2 U	3.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrite	14797-65-0	<0.1 U	0.049 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	14808-79-8	32	60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	18496-25-8	<1.9 UJ	<1.9 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous													
Alkalinity	N33	13	8.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia	7664-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	0.53	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	<0.0002 U	<0.00021 U	<0.0002 U	<0.00022 U	<0.0002 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
1,3-Dinitrobenzene	99-65-0	<0.0001 U	<0.0001 U	<0.0001 U	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4,6-Trinitrotoluene	118-96-7	<0.0001 U	0.0017	<0.0001 U	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4-Diamino-6-nitrotoluene	6629-29-4	<0.00036 U	<0.00037 U	<0.00036 U	<0.0004 U	NA	NA	NA	<0.00036 U	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	<0.00008 U	0.00037	<0.00008 U	<0.00009 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2,6-Diamino-4-nitrotoluene	59229-75-3	<0.00032 U	<0.00033 U	<0.00032 U	<0.00035 U	NA	NA	NA	<0.00032 U	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	<0.00008 U	<0.00008 U	<0.00008 U	<0.00009 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	0.00009 J	0.0086	<0.0001 U	<0.00011 UJ	<0.0001 UJ	<0.0001 UJ	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 UJ	<0.0001 UJ
2-Nitrotoluene	88-72-2	<0.0002 U	<0.00021 U	<0.0002 U	<0.00022 UJ	<0.0002 UJ	<0.0002 UJ	<0.00021 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 UJ	<0.0002 UJ
3,5-Dinitroaniline	618-87-1	<0.0003 U	0.00068	<0.0003 U	<0.00033 U	NA	NA	NA	<0.0003 U	NA	NA	NA	NA
3-Nitrotoluene	99-08-1	<0.0004 U	<0.00041 U	<0.0004 U	<0.00044 UJ	<0.0004 UJ	<0.0004 UJ	<0.00041 U	<0.0004 U	<0.00039 U	<0.00041 U	<0.0004 UJ	<0.00041 UJ
4-Amino-2,6-Dinitrotoluene	19406-51-0	<0.00012 U	0.011	<0.00012 U	<0.00013 UJ	<0.00012 U	<0.00012 U	<0.00012 U	<0.00012 U	<0.00012 U	<0.00012 U	<0.00012 U	<0.00012 U

Appendix D.1 Spring 2021 Analytical Results

	Station	FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016
	Sample Id	**FBQmw-173-210401-GW**	**FBQmw-174-210401-GW**	**FBQmw-175-210402-GW**	**FBQmw-175-210401-GW**	**FWGmw-004-210402-GW**	**FWGmw-004-210401-GW**	**FWGmw-007-210401-GW**	**FWGmw-010-210401-GW**	**FWGmw-011-210401-GW**	**FWGmw-012-210401-GW**	**FWGmw-015-210401-GW**	**FWGmw-016-210401-GW**
	Date	**05/04/21**	**05/04/21**	**05/04/21**	**05/04/21**	**04/29/21**	**04/29/21**	**05/03/21**	**05/03/21**	**04/27/21**	**04/27/21**	**04/29/21**	**04/29/21**
	Sample Type	**GR**	**GR**	**FD**	**GR**	**FD**	**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**	**Homewood**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Upper Sharon**	**Unconsolidated**	**Upper Sharon**
Analyte (mg/L)	**CAS Number**												
4-Nitrotoluene	99-99-0	<0.0004 U	<0.00041 U	<0.0004 U	<0.00044 U	<0.0004 UJ	<0.0004 UJ	<0.00041 U	<0.0004 U	<0.00039 U	<0.00041 U	<0.0004 UJ	<0.00041 UJ
DNX	80251-29-2	<0.00025 U	<0.00026 U	<0.00025 U	<0.00028 U	NA	NA	NA	<0.00025 U	NA	NA	NA	NA
HMX	2691-41-0	<0.0002 U	<0.00021 U	<0.0002 U	<0.00022 U	<0.0002 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
MNX	5755-27-1	<0.00029 U	<0.0003 U	<0.00029 U	<0.00032 U	NA	NA	NA	<0.00029 U	NA	NA	NA	NA
Nitrobenzene	98-95-3	<0.0002 U	<0.00021 U	<0.0002 U	<0.00022 U	<0.0002 UJ	<0.0002 UJ	<0.00021 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 UJ	<0.0002 UJ
Nitroglycerin	55-63-0	<0.002 U	<0.0021 U	<0.002 U	<0.0022 U	<0.002 U	<0.002 U	<0.0021 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
PETN	78-11-5	<0.001 U	<0.001 U	<0.001 U	<0.0011 U	<0.001 U	<0.00099 U	<0.001 U	<0.001 U	<0.00098 U	<0.001 U	<0.001 U	<0.001 U
RDX	121-82-4	<0.0002 U	<0.00021 U	<0.0002 U	<0.00022 U	<0.0002 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
TNX	13980-04-6	<0.00025 U	<0.00026 U	<0.00025 U	<0.00028 U	NA	NA	NA	<0.00025 U	NA	NA	NA	NA
Tetryl	479-45-8	<0.0001 U	<0.0001 U	<0.0001 U	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
SVOCs													
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-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-Nitrophenol	88-75-5	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-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
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
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
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
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
Indeno(1,2,3-cd)pyrene	193-39-5	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

Appendix D.1 Spring 2021 Analytical Results

Station		FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016
Sample Id		FBQmw-173-210401-GW	FBQmw-174-210401-GW	FBQmw-175-210402-GW	FBQmw-175-210401-GW	FWGmw-004-210402-GW	FWGmw-004-210401-GW	FWGmw-007-210401-GW	FWGmw-010-210401-GW	FWGmw-011-210401-GW	FWGmw-012-210401-GW	FWGmw-015-210401-GW	FWGmw-016-210401-GW
Date		05/04/21	05/04/21	05/04/21	05/04/21	04/29/21	04/29/21	05/03/21	05/03/21	04/27/21	04/27/21	04/29/21	04/29/21
Sample Type		GR	GR	FD	GR	FD	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	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon
Analyte (mg/L)	**CAS Number**												
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
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

Appendix D.1 Spring 2021 Analytical Results

	Station	FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016
	Sample Id	FBQmw-173-210401-GW	FBQmw-174-210401-GW	FBQmw-175-210402-GW	FBQmw-175-210401-GW	FWGmw-004-210402-GW	FWGmw-004-210401-GW	FWGmw-007-210401-GW	FWGmw-010-210401-GW	FWGmw-011-210401-GW	FWGmw-012-210401-GW	FWGmw-015-210401-GW	FWGmw-016-210401-GW
	Date	05/04/21	05/04/21	05/04/21	05/04/21	04/29/21	04/29/21	05/03/21	05/03/21	04/27/21	04/27/21	04/29/21	04/29/21
	Sample Type	GR	GR	FD	GR	FD	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	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon
Analyte (mg/L)	**CAS Number**												
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
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

Appendix D.1 Spring 2021 Analytical Results

	Station	FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246
	Sample Id	FWGmw-018-210401-GW	FWGmw-020-210401-GW	FWGmw-021-210401-GW	FWGmw-023-210401-GW	FWGmw-024-210401-GW	LL10mw-003-210401-GW	LL12mw-185-210402-GW	LL12mw-185-210401-GW	LL12mw-187-210401-GW	LL12mw-244-210401-GW	LL12mw-245-210401-GW	LL12mw-246-210401-GW
	Date	04/29/21	04/29/21	04/29/21	05/05/21	04/29/21	04/29/21	05/03/21	05/03/21	05/03/21	05/03/21	05/05/21	05/03/21
	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	Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
Metals													
Aluminum	7429-90-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anions													
Nitrate	14797-55-8	<0.2 U	<0.2 U	NA	NA	NA	NA	63 J	64 J	1500 J	<0.2 U	0.11 J	<0.2 U
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
Ammonia	7664-41-7	NA	NA	NA	NA	NA	NA	<0.05 U	<0.05 U	780	0.023 J	<0.05 U	0.088 J
Cyanide	57-12-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	NA	NA	<0.0002 U	<0.00021 U	<0.00019 U	NA	NA	NA	NA	NA	NA	NA
1,3-Dinitrobenzene	99-65-0	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trinitrotoluene	118-96-7	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA	NA	NA	NA	NA
2,4-Diamino-6-nitrotoluene	6629-29-4	NA	NA	NA	<0.00038 U	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	<0.00008 U	<0.00008 U	<0.00008 U	NA	NA	NA	NA	NA	NA	NA
2,6-Diamino-4-nitrotoluene	59229-75-3	NA	NA	NA	<0.00033 U	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	<0.00008 U	<0.00008 U	<0.00008 U	NA	NA	NA	NA	NA	NA	NA
2-Amino-4,6-Dinitrotoluene	35572-78-2	NA	NA	0.00015 J	<0.0001 UJ	<0.0001 UJ	NA	NA	NA	NA	NA	NA	NA
2-Nitrotoluene	88-72-2	NA	NA	<0.0002 UJ	<0.00021 UJ	<0.00019 UJ	NA	NA	NA	NA	NA	NA	NA
3,5-Dinitroaniline	618-87-1	NA	NA	NA	<0.00031 U	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitrotoluene	99-08-1	NA	NA	<0.0004 UJ	<0.00042 UJ	<0.00039 UJ	NA	NA	NA	NA	NA	NA	NA
4-Amino-2,6-Dinitrotoluene	19406-51-0	NA	NA	<0.00012 U	<0.00013 UJ	<0.00012 U	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2021 Analytical Results

	Station	FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246
	Sample Id	FWGmw-018-210401-GW	FWGmw-020-210401-GW	FWGmw-021-210401-GW	FWGmw-023-210401-GW	FWGmw-024-210401-GW	LL10mw-003-210401-GW	LL12mw-185-210402-GW	LL12mw-185-210401-GW	LL12mw-187-210401-GW	LL12mw-244-210401-GW	LL12mw-245-210401-GW	LL12mw-246-210401-GW
	Date	04/29/21	04/29/21	04/29/21	05/05/21	04/29/21	04/29/21	05/03/21	05/03/21	05/03/21	05/03/21	05/05/21	05/03/21
	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	Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
4-Nitrotoluene	99-99-0	NA	NA	<0.0004 UJ	<0.00042 UJ	<0.00039 UJ	NA	NA	NA	NA	NA	NA	NA
DNX	80251-29-2	NA	NA	NA	<0.00026 U	NA	NA	NA	NA	NA	NA	NA	NA
HMX	2691-41-0	NA	NA	<0.0002 U	<0.00021 U	<0.00019 U	NA	NA	NA	NA	NA	NA	NA
MNX	5755-27-1	NA	NA	NA	<0.0003 U	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	<0.0002 UJ	<0.00021 U	<0.00019 UJ	NA	NA	NA	NA	NA	NA	NA
Nitroglycerin	55-63-0	NA	NA	<0.002 U	<0.0021 U	<0.0019 U	NA	NA	NA	NA	NA	NA	NA
PETN	78-11-5	NA	NA	<0.001 U	<0.001 U	<0.00097 U	NA	NA	NA	NA	NA	NA	NA
RDX	121-82-4	NA	NA	0.00033 J	<0.00021 U	<0.00019 U	NA	NA	NA	NA	NA	NA	NA
TNX	13980-04-6	NA	NA	NA	<0.00026 U	NA	NA	NA	NA	NA	NA	NA	NA
Tetryl	479-45-8	NA	NA	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA	NA	NA	NA	NA
SVOCs													
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-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-Nitrophenol	88-75-5	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-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
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
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
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
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
Indeno(1,2,3-cd)pyrene	193-39-5	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

Appendix D.1 Spring 2021 Analytical Results

Station		FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246
Sample Id		FWGmw-018-210401-GW	FWGmw-020-210401-GW	FWGmw-021-210401-GW	FWGmw-023-210401-GW	FWGmw-024-210401-GW	LL10mw-003-210401-GW	LL12mw-185-210402-GW	LL12mw-185-210401-GW	LL12mw-187-210401-GW	LL12mw-244-210401-GW	LL12mw-245-210401-GW	LL12mw-246-210401-GW
Date		04/29/21	04/29/21	04/29/21	05/05/21	04/29/21	04/29/21	05/03/21	05/03/21	05/03/21	05/03/21	05/05/21	05/03/21
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		Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
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
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	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene	540-59-0	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	<0.004 U	<0.004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	<0.004 U	<0.004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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	Station	FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246
	Sample Id	FWGmw-018-210401-GW	FWGmw-020-210401-GW	FWGmw-021-210401-GW	FWGmw-023-210401-GW	FWGmw-024-210401-GW	LL10mw-003-210401-GW	LL12mw-185-210402-GW	LL12mw-185-210401-GW	LL12mw-187-210401-GW	LL12mw-244-210401-GW	LL12mw-245-210401-GW	LL12mw-246-210401-GW
	Date	04/29/21	04/29/21	04/29/21	05/05/21	04/29/21	04/29/21	05/03/21	05/03/21	05/03/21	05/03/21	05/05/21	05/03/21
	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	Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
4-Methyl-2-pentanone	108-10-1	<0.0032 U	<0.0032 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	<0.0064 U	<0.0064 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	<0.0002 U	<0.0002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	<0.001 U	<0.001 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	<0.0004 U	<0.0004 UJ	NA	NA	NA	0.0024	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	<0.0016 U	<0.0016 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	<0.002 U	<0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	<0.0002 U	<0.0002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	<0.0008 U	<0.0008 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	<0.0004 U	<0.0004 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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	Station	LL1mw-063	LL1mw-064	LL1mw-079	LL1mw-080	LL1mw-081	LL1mw-082	LL1mw-083	LL1mw-084	LL1mw-084	LL1mw-086	LL1mw-087	LL1mw-087
	Sample Id	LL1mw-063-210401-GW	LL1mw-064-210401-GW	LL1mw-079-210401-GW	LL1mw-080-210401-GW	LL1mw-081-210401-GW	LL1mw-082-210401-GW	LL1mw-083-210401-GW	LL1mw-084-210402-GW	LL1mw-084-210401-GW	LL1mw-086-210401-GW	LL1mw-087-210402-GW	LL1mw-087-210401-GW
	Date	04/27/21	04/26/21	05/05/21	04/26/21	04/26/21	05/10/21	04/26/21	04/26/21	04/26/21	04/28/21	04/26/21	04/26/21
	Sample Type	GR	GR	GR	GR	GR	GR	GR	FD	GR	GR	FD	GR
	Filter Status	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
	Aquifer	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
Metals													
Aluminum	7429-90-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anions													
Nitrate	14797-55-8	NA	NA	0.11 J	NA	NA	NA	NA	0.46 J	0.44 J	NA	NA	NA
Nitrite	14797-65-0	NA	NA	<0.1 U	NA	NA	NA	NA	<0.1 U	<0.1 U	NA	NA	NA
Sulfate	14808-79-8	NA	NA	82	NA	NA	NA	NA	130	130	NA	NA	NA
Sulfide	18496-25-8	NA	NA	<1.9 U	NA	NA	NA	NA	0.8 J	1.6 J	NA	NA	NA
Miscellaneous													
Alkalinity	N33	NA	NA	72	NA	NA	NA	NA	38	39	NA	NA	NA
Ammonia	7664-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	NA	NA	0.56	NA	NA	NA	NA	NA	1.4	NA	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	<0.00019 U	<0.0002 U	<0.0002 U	0.00023	<0.00019 U	<0.0002 U	0.0032 J	0.0011	0.00081	<0.00021 U	<0.00021 U	<0.00021 U
1,3-Dinitrobenzene	99-65-0	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 UJ	0.00076	0.00064	<0.0001 U	<0.0001 U	<0.00011 U
2,4,6-Trinitrotoluene	118-96-7	<0.0001 U	<0.0001 U	<0.0001 U	0.00016	<0.0001 U	<0.0001 U	0.0015 J	0.003	0.0023	<0.0001 U	<0.0001 U	<0.00011 U
2,4-Diamino-6-nitrotoluene	6629-29-4	<0.00034 UJ	<0.00037 U	<0.00036 U	<0.00034 U	0.0016 J	<0.00036 U	<0.00035 U	<0.00037 U	<0.00037 U	<0.00037 U	<0.00037 U	<0.00037 U
2,4-Dinitrotoluene	121-14-2	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	0.002 J	<0.00008 U	0.00077	<0.00008 U	<0.00008 U	<0.00009 U
2,6-Diamino-4-nitrotoluene	59229-75-3	<0.00031 UJ	<0.00033 U	<0.00032 U	<0.0003 U	0.00045 J	<0.00032 U	<0.00031 U	<0.00033 U	<0.00033 U	<0.00033 U	<0.00033 U	<0.00033 U
2,6-Dinitrotoluene	606-20-2	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	0.00097 J	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00009 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	0.00027 J	<0.0001 U	0.00059 J	0.0011	0.0004	<0.0001 U	0.0066	0.0076	0.0058	<0.0001 U	<0.0001 U	<0.0001 U
2-Nitrotoluene	88-72-2	<0.00019 U	<0.0002 UJ	<0.0002 UJ	<0.0002 UJ	<0.00019 UJ	<0.0002 U	<0.0002 UJ	<0.00021 UJ	<0.0002 UJ	<0.00021 U	<0.00021 UJ	<0.00021 UJ
3,5-Dinitroaniline	618-87-1	<0.00029 U	<0.0003 U	<0.0003 U	0.00036 J	0.00021 J	<0.0003 U	0.002	0.0016	0.0014	<0.00031 U	<0.00031 U	<0.00032 U
3-Nitrotoluene	99-08-1	<0.00038 U	<0.0004 UJ	<0.0004 UJ	<0.00041 UJ	<0.00039 UJ	<0.00041 U	<0.00039 UJ	<0.00041 UJ	<0.0004 UJ	<0.00041 U	<0.00042 UJ	<0.00042 UJ
4-Amino-2,6-Dinitrotoluene	19406-51-0	0.00086	<0.00012 U	0.00084 J	0.0031	<0.00012 U	<0.00012 U	0.013 J	0.019	0.017	<0.00012 U	<0.00013 U	<0.00013 U

Appendix D.1 Spring 2021 Analytical Results

Station		**LL1mw-063**	**LL1mw-064**	**LL1mw-079**	**LL1mw-080**	**LL1mw-081**	**LL1mw-082**	**LL1mw-083**	**LL1mw-084**	**LL1mw-084**	**LL1mw-086**	**LL1mw-087**	**LL1mw-087**
Sample Id		**LL1mw-063-210401-GW**	**LL1mw-064-210401-GW**	**LL1mw-079-210401-GW**	**LL1mw-080-210401-GW**	**LL1mw-081-210401-GW**	**LL1mw-082-210401-GW**	**LL1mw-083-210401-GW**	**LL1mw-084-210402-GW**	**LL1mw-084-210401-GW**	**LL1mw-086-210401-GW**	**LL1mw-087-210402-GW**	**LL1mw-087-210401-GW**
Date		**04/27/21**	**04/26/21**	**05/05/21**	**04/26/21**	**04/26/21**	**05/10/21**	**04/26/21**	**04/26/21**	**04/26/21**	**04/28/21**	**04/26/21**	**04/26/21**
Sample Type		**GR**	**GR**	**GR**	**GR**	**GR**	**GR**	**GR**	**FD**	**GR**	**GR**	**FD**	**GR**
Filter Status		**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**
Aquifer		**Unconsolidated**	**Unconsolidated**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**
Analyte (mg/L)	**CAS Number**												
4-Nitrotoluene	99-99-0	<0.00038 U	<0.0004 U	<0.0004 UJ	<0.00041 U	<0.00039 U	<0.00041 U	<0.00039 UJ	<0.00041 U	<0.0004 U	<0.00041 U	<0.00042 U	<0.00042 U
DNX	80251-29-2	<0.00024 U	<0.00025 U	<0.00025 U	<0.00025 U	<0.00024 U	<0.00025 U	<0.00024 U	<0.00026 U	<0.00025 U	<0.00026 U	<0.00026 U	<0.00026 U
HMX	2691-41-0	0.001	<0.0002 U	0.00017 J	0.0044	<0.00019 U	<0.0002 U	<0.0002 U	0.0043	0.0052	<0.00021 U	<0.00021 U	<0.00021 U
MNX	5755-27-1	<0.00028 U	<0.00029 U	<0.00029 U	0.00076	<0.00028 U	0.0002 J	<0.00028 U	<0.0003 U	0.0021	<0.0003 U	<0.0003 U	<0.00031 U
Nitrobenzene	98-95-3	<0.00019 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.00019 U	<0.0002 U	<0.0002 UJ	<0.00021 U	<0.0002 U	<0.00021 U	<0.00021 U	<0.00021 U
Nitroglycerin	55-63-0	<0.0019 U	<0.002 U	<0.002 U	<0.002 U	<0.0019 U	<0.002 U	<0.002 UJ	<0.0021 U	<0.002 U	<0.0021 U	<0.0021 U	<0.0021 U
PETN	78-11-5	<0.00096 U	<0.001 U	<0.00099 U	<0.001 U	<0.00097 U	<0.001 U	<0.00098 UJ	<0.001 U	<0.00099 U	<0.001 U	<0.001 U	<0.0011 U
RDX	121-82-4	<0.00019 U	<0.0002 U	0.00011 J	0.023	<0.00019 U	0.0012 J	<0.0002 UJ	0.0004	0.00043	<0.00021 U	<0.00021 U	<0.00021 U
TNX	13980-04-6	<0.00024 U	<0.00025 U	<0.00025 U	<0.00025 U	0.00051	<0.00025 U	<0.00024 U	0.00023 J	0.00027 J	<0.00026 U	<0.00026 U	<0.00026 U
Tetryl	479-45-8	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 UJ	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.00011 U
SVOCs													
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-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-Nitrophenol	88-75-5	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-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
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
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
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
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
Indeno(1,2,3-cd)pyrene	193-39-5	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

Appendix D.1 Spring 2021 Analytical Results

	Station	LL1mw-063	LL1mw-064	LL1mw-079	LL1mw-080	LL1mw-081	LL1mw-082	LL1mw-083	LL1mw-084	LL1mw-084	LL1mw-086	LL1mw-087	LL1mw-087
	Sample Id	LL1mw-063-210401-GW	LL1mw-064-210401-GW	LL1mw-079-210401-GW	LL1mw-080-210401-GW	LL1mw-081-210401-GW	LL1mw-082-210401-GW	LL1mw-083-210401-GW	LL1mw-084-210402-GW	LL1mw-084-210401-GW	LL1mw-086-210401-GW	LL1mw-087-210402-GW	LL1mw-087-210401-GW
	Date	04/27/21	04/26/21	05/05/21	04/26/21	04/26/21	05/10/21	04/26/21	04/26/21	04/26/21	04/28/21	04/26/21	04/26/21
	Sample Type	GR	GR	GR	GR	GR	GR	GR	FD	GR	GR	FD	GR
	Filter Status	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
	Aquifer	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
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
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

Appendix D.1 Spring 2021 Analytical Results

Station		LL1mw-063	LL1mw-064	LL1mw-079	LL1mw-080	LL1mw-081	LL1mw-082	LL1mw-083	LL1mw-084	LL1mw-084	LL1mw-086	LL1mw-087	LL1mw-087
Sample Id		LL1mw-063-210401-GW	LL1mw-064-210401-GW	LL1mw-079-210401-GW	LL1mw-080-210401-GW	LL1mw-081-210401-GW	LL1mw-082-210401-GW	LL1mw-083-210401-GW	LL1mw-084-210402-GW	LL1mw-084-210401-GW	LL1mw-086-210401-GW	LL1mw-087-210402-GW	LL1mw-087-210401-GW
Date		04/27/21	04/26/21	05/05/21	04/26/21	04/26/21	05/10/21	04/26/21	04/26/21	04/26/21	04/28/21	04/26/21	04/26/21
Sample Type		GR	GR	GR	GR	GR	GR	GR	FD	GR	GR	FD	GR
Filter Status		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Aquifer		Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
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
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

Appendix D.1 Spring 2021 Analytical Results

Station		LL1mw-089	LL1mw-089	LL2mw-059	LL3mw-237	LL3mw-238	LL3mw-239	LL3mw-241	LL3mw-245	SCFmw-004	WBGmw-006	WBGmw-007	WBGmw-008
Sample Id		LL1mw-089-210402-GW	LL1mw-089-210401-GW	LL2mw-059-210401-GW	LL3mw-237-210401-GW	LL3mw-238-210401-GW	LL3mw-239-210401-GW	LL3mw-241-210401-GW	LL3mw-245-210401-GW	SCFmw-004-210401-GW	WBGmw-006-210401-GW	WBGmw-007-210401-GW	WBGmw-008-210401-GW
Date		04/26/21	04/26/21	04/28/21	04/28/21	04/28/21	04/28/21	04/28/21	05/05/21	04/27/21	04/28/21	04/28/21	04/27/21
Sample Type		FD	GR	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		Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	CAS Number												
Metals													
Aluminum	7429-90-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anions													
Nitrate	14797-55-8	NA	NA	NA	NA	0.46 J	0.74 J	NA	NA	NA	<0.2 U	NA	NA
Nitrite	14797-65-0	NA	NA	NA	NA	<0.1 U	<0.1 U	NA	NA	NA	<0.1 U	NA	NA
Sulfate	14808-79-8	NA	NA	NA	NA	45 J	40 J	NA	NA	NA	27 J	NA	NA
Sulfide	18496-25-8	NA	NA	NA	NA	<1.9 U	<1.9 U	NA	NA	NA	0.8 J	NA	NA
Miscellaneous													
Alkalinity	N33	NA	NA	NA	NA	140	55	NA	NA	NA	270	NA	NA
Ammonia	7664-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	NA	NA	NA	NA	2.2	0.78	NA	NA	NA	0.83	NA	NA
Explosives/Propellants													
1,3,5-Trinitrobenzene	99-35-4	<0.0002 U	<0.00021 U	0.0017	<0.00021 U	0.0087	<0.0002 U	0.0016	<0.0002 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U
1,3-Dinitrobenzene	99-65-0	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.00011 U	<0.0001 U	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4,6-Trinitrotoluene	118-96-7	<0.0001 U	<0.0001 U	<0.0001 U	0.00041	0.03 J	0.00021	0.001	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4-Diamino-6-nitrotoluene	6629-29-4	<0.00037 U	<0.00037 U	NA	<0.00037 U	<0.00038 U	<0.00037 U	<0.00038 U	<0.00036 U	NA	<0.00038 U	<0.00035 U	<0.00037 UJ
2,4-Dinitrotoluene	121-14-2	<0.00008 U	<0.00008 U	0.00038	<0.00008 U	<0.00009 U	0.00006 J	<0.00009 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2,6-Diamino-4-nitrotoluene	59229-75-3	<0.00033 U	<0.00033 U	NA	<0.00033 U	<0.00034 U	<0.00033 U	<0.00034 U	<0.00032 U	NA	<0.00034 U	<0.00031 U	<0.00032 UJ
2,6-Dinitrotoluene	606-20-2	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00009 U	<0.00008 U	<0.00009 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	<0.0001 U	<0.0001 U	0.00046	0.0027	0.0067	0.00055	0.001	<0.0001 UJ	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2-Nitrotoluene	88-72-2	<0.0002 UJ	<0.00021 UJ	<0.00021 U	<0.00021 U	<0.00021 U	<0.0002 U	<0.00021 U	<0.0002 UJ	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U
3,5-Dinitroaniline	618-87-1	<0.00031 U	<0.00031 U	NA	0.00027 J	0.00067	0.00027 J	0.00025 J	<0.0003 U	NA	<0.00031 U	<0.00029 U	<0.0003 U
3-Nitrotoluene	99-08-1	<0.00041 UJ	<0.00041 UJ	<0.00042 U	<0.00042 U	<0.00043 U	<0.00041 U	<0.00043 U	<0.0004 UJ	<0.0004 U	<0.00042 U	<0.00039 U	<0.00041 U
4-Amino-2,6-Dinitrotoluene	19406-51-0	<0.00012 U	<0.00012 U	0.00048 J	0.0061	0.017	0.00083	0.0012 J	<0.00012 UJ	<0.00012 U	<0.00013 U	<0.00012 U	<0.00012 U

Appendix D.1 Spring 2021 Analytical Results

	Station	**LL1mw-089**	**LL1mw-089**	**LL2mw-059**	**LL3mw-237**	**LL3mw-238**	**LL3mw-239**	**LL3mw-241**	**LL3mw-245**	**SCFmw-004**	**WBGmw-006**	**WBGmw-007**	**WBGmw-008**
	Sample Id	**LL1mw-089-210402-GW**	**LL1mw-089-210401-GW**	**LL2mw-059-210401-GW**	**LL3mw-237-210401-GW**	**LL3mw-238-210401-GW**	**LL3mw-239-210401-GW**	**LL3mw-241-210401-GW**	**LL3mw-245-210401-GW**	**SCFmw-004-210401-GW**	**WBGmw-006-210401-GW**	**WBGmw-007-210401-GW**	**WBGmw-008-210401-GW**
	Date	**04/26/21**	**04/26/21**	**04/28/21**	**04/28/21**	**04/28/21**	**04/28/21**	**04/28/21**	**05/05/21**	**04/27/21**	**04/28/21**	**04/28/21**	**04/27/21**
	Sample Type	**FD**	**GR**	**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	**Unconsolidated**	**Unconsolidated**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Basal Sharon Congl**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**
Analyte (mg/L)	**CAS Number**												
4-Nitrotoluene	99-99-0	<0.00041 U	<0.00041 U	<0.00042 U	<0.00042 U	<0.00043 U	<0.00041 U	<0.00043 U	<0.0004 UJ	<0.0004 U	<0.00042 U	<0.00039 U	<0.00041 U
DNX	80251-29-2	<0.00026 U	<0.00026 U	NA	<0.00026 U	<0.00027 U	<0.00025 U	<0.00027 U	<0.00025 U	NA	0.00011 J	<0.00025 U	<0.00025 U
HMX	2691-41-0	<0.0002 U	<0.00021 U	<0.00021 U	<0.00021 U	0.0035 J	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U	0.0034	<0.0002 U	<0.0002 U
MNX	5755-27-1	<0.0003 U	<0.0003 U	NA	<0.0003 U	<0.00031 U	<0.0003 U	<0.00031 U	<0.00029 U	NA	0.00043 J	<0.00028 U	<0.00029 U
Nitrobenzene	98-95-3	<0.0002 U	<0.00021 U	<0.00021 U	<0.00021 U	<0.00021 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.0002 U
Nitroglycerin	55-63-0	<0.002 U	<0.0021 U	<0.0021 U	<0.0021 U	<0.0021 U	<0.002 U	<0.0021 U	<0.002 U	<0.002 U	<0.0021 U	<0.002 U	<0.002 U
PETN	78-11-5	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.0011 U	<0.001 U	<0.0011 U	<0.00099 U	<0.001 U	<0.001 U	<0.00098 U	<0.001 U
RDX	121-82-4	<0.0002 U	<0.00021 U	<0.00021 U	<0.00021 U	0.0019	0.0012	0.00065 J	<0.0002 U	<0.0002 U	0.0081	<0.0002 U	<0.0002 U
TNX	13980-04-6	<0.00026 U	<0.00026 U	NA	<0.00026 U	<0.00027 U	<0.00025 U	<0.00027 U	<0.00025 U	NA	<0.00026 U	<0.00025 U	<0.00025 U
Tetryl	479-45-8	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.00011 U	<0.0001 U	<0.00011 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
SVOCs													
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-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-Nitrophenol	88-75-5	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-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
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
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
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
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
Indeno(1,2,3-cd)pyrene	193-39-5	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

Appendix D.1 Spring 2021 Analytical Results

Station		LL1mw-089	LL1mw-089	LL2mw-059	LL3mw-237	LL3mw-238	LL3mw-239	LL3mw-241	LL3mw-245	SCFmw-004	WBGmw-006	WBGmw-007	WBGmw-008
Sample Id		LL1mw-089-210402-GW	LL1mw-089-210401-GW	LL2mw-059-210401-GW	LL3mw-237-210401-GW	LL3mw-238-210401-GW	LL3mw-239-210401-GW	LL3mw-241-210401-GW	LL3mw-245-210401-GW	SCFmw-004-210401-GW	WBGmw-006-210401-GW	WBGmw-007-210401-GW	WBGmw-008-210401-GW
Date		04/26/21	04/26/21	04/28/21	04/28/21	04/28/21	04/28/21	04/28/21	05/05/21	04/27/21	04/28/21	04/28/21	04/27/21
Sample Type		FD	GR	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		Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Unconsolidated	Unconsolidated	Unconsolidated
Analyte (mg/L)	**CAS Number**												
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
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

Appendix D.1 Spring 2021 Analytical Results

	Station	LL1mw-089	LL1mw-089	LL2mw-059	LL3mw-237	LL3mw-238	LL3mw-239	LL3mw-241	LL3mw-245	SCFmw-004	WBGmw-006	WBGmw-007	WBGmw-008
	Sample Id	**LL1mw-089-210402-GW**	**LL1mw-089-210401-GW**	**LL2mw-059-210401-GW**	**LL3mw-237-210401-GW**	**LL3mw-238-210401-GW**	**LL3mw-239-210401-GW**	**LL3mw-241-210401-GW**	**LL3mw-245-210401-GW**	**SCFmw-004-210401-GW**	**WBGmw-006-210401-GW**	**WBGmw-007-210401-GW**	**WBGmw-008-210401-GW**
	Date	**04/26/21**	**04/26/21**	**04/28/21**	**04/28/21**	**04/28/21**	**04/28/21**	**04/28/21**	**05/05/21**	**04/27/21**	**04/28/21**	**04/28/21**	**04/27/21**
	Sample Type	**FD**	**GR**	**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	**Unconsolidated**	**Unconsolidated**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**	**Basal Sharon Congl**	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**
Analyte (mg/L)	**CAS Number**												
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
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

Appendix D.1 Spring 2021 Analytical Results

	Station	WBGmw-009	WBGmw-014	WBGmw-018	WBGmw-019	WBGmw-020	WBGmw-021
	Sample Id	WBGmw-009-210401-GW	WBGmw-014-210401-GW	WBGmw-018-210401-GW	WBGmw-019-210401-GW	WBGmw-020-210401-GW	WBGmw-021-210401-GW
	Date	04/27/21	04/27/21	04/28/21	04/28/21	04/27/21	04/28/21
	Sample Type	GR	GR	GR	GR	GR	GR
	Filter Status	Total	Total	Total	Total	Total	Total
	Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	**CAS Number**						
Metals							
Aluminum	7429-90-5	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	NA	NA	NA	NA	NA	NA
Anions							
Nitrate	14797-55-8	NA	NA	0.3 J	NA	NA	NA
Nitrite	14797-65-0	NA	NA	<0.1 U	NA	NA	NA
Sulfate	14808-79-8	NA	NA	8.9 J	NA	NA	NA
Sulfide	18496-25-8	NA	NA	0.8 J	NA	NA	NA
Miscellaneous							
Alkalinity	N33	NA	NA	38	NA	NA	NA
Ammonia	7664-41-7	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	NA	NA	1.7	NA	NA	NA
Explosives/Propellants							
1,3,5-Trinitrobenzene	99-35-4	<0.00019 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.00019 U	<0.00021 U
1,3-Dinitrobenzene	99-65-0	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4,6-Trinitrotoluene	118-96-7	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2,4-Diamino-6-nitrotoluene	6629-29-4	<0.00035 UJ	<0.00035 UJ	<0.00037 U	<0.00036 U	<0.00035 UJ	<0.00038 U
2,4-Dinitrotoluene	121-14-2	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2,6-Diamino-4-nitrotoluene	59229-75-3	<0.00031 UJ	<0.00031 UJ	<0.00033 U	<0.00032 U	<0.00031 UJ	<0.00033 U
2,6-Dinitrotoluene	606-20-2	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U	<0.00008 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
2-Nitrotoluene	88-72-2	<0.00019 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.00019 U	<0.00021 U
3,5-Dinitroaniline	618-87-1	<0.00029 U	<0.00029 U	<0.00031 U	<0.0003 U	<0.00029 U	<0.00031 U
3-Nitrotoluene	99-08-1	<0.00039 U	<0.00039 U	<0.00042 U	<0.0004 U	<0.00039 U	<0.00042 U
4-Amino-2,6-Dinitrotoluene	19406-51-0	<0.00012 U	<0.00012 U	<0.00012 U	<0.00012 U	<0.00012 U	<0.00013 U

Appendix D.1 Spring 2021 Analytical Results

	Station	WBGmw-009	WBGmw-014	WBGmw-018	WBGmw-019	WBGmw-020	WBGmw-021
	Sample Id	WBGmw-009-210401-GW	WBGmw-014-210401-GW	WBGmw-018-210401-GW	WBGmw-019-210401-GW	WBGmw-020-210401-GW	WBGmw-021-210401-GW
	Date	04/27/21	04/27/21	04/28/21	04/28/21	04/27/21	04/28/21
	Sample Type	GR	GR	GR	GR	GR	GR
	Filter Status	Total	Total	Total	Total	Total	Total
	Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	**CAS Number**						
4-Nitrotoluene	99-99-0	<0.00039 U	<0.00039 U	<0.00042 U	<0.0004 U	<0.00039 U	<0.00042 U
DNX	80251-29-2	<0.00024 U	<0.00024 U	<0.00026 U	<0.00025 U	<0.00024 U	<0.00026 U
HMX	2691-41-0	0.00083	<0.0002 U	<0.00021 U	<0.0002 U	<0.00019 U	<0.00021 U
MNX	5755-27-1	<0.00028 U	<0.00028 U	<0.0003 U	<0.00029 U	<0.00028 U	<0.0003 U
Nitrobenzene	98-95-3	<0.00019 U	<0.0002 U	<0.00021 U	<0.0002 U	<0.00019 U	<0.00021 U
Nitroglycerin	55-63-0	<0.0019 U	<0.002 U	<0.0021 U	<0.002 U	<0.0019 U	<0.0021 U
PETN	78-11-5	<0.00097 U	<0.00098 U	<0.001 U	<0.001 U	<0.00097 U	<0.001 U
RDX	121-82-4	0.0016	<0.0002 U	<0.00021 U	<0.0002 U	<0.00019 U	<0.00021 U
TNX	13980-04-6	<0.00024 U	<0.00024 U	<0.00026 U	<0.00025 U	<0.00024 U	<0.00026 U
Tetryl	479-45-8	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U	<0.0001 U
SVOCs							
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2021 Analytical Results

	Station	WBGmw-009	WBGmw-014	WBGmw-018	WBGmw-019	WBGmw-020	WBGmw-021
	Sample Id	**WBGmw-009-210401-GW**	**WBGmw-014-210401-GW**	**WBGmw-018-210401-GW**	**WBGmw-019-210401-GW**	**WBGmw-020-210401-GW**	**WBGmw-021-210401-GW**
	Date	**04/27/21**	**04/27/21**	**04/28/21**	**04/28/21**	**04/27/21**	**04/28/21**
	Sample Type	**GR**	**GR**	**GR**	**GR**	**GR**	**GR**
	Filter Status	**Total**	**Total**	**Total**	**Total**	**Total**	**Total**
	Aquifer	**Unconsolidated**	**Unconsolidated**	**Unconsolidated**	**Upper Sharon**	**Upper Sharon**	**Upper Sharon**
Analyte (mg/L)	**CAS Number**						
Pentachlorophenol	87-86-5	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	NA	NA	NA	NA	NA	NA
PCBs							
PCB-1016	12674-11-2	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	NA	NA	NA	NA	NA	NA
Pesticides							
4,4'-DDD	72-54-8	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	NA	NA	NA	NA	NA	NA
VOCs							
1,1,1-Trichloroethane	71-55-6	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene	540-59-0	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	78-87-5	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2021 Analytical Results

	Station	WBGmw-009	WBGmw-014	WBGmw-018	WBGmw-019	WBGmw-020	WBGmw-021
	Sample Id	WBGmw-009-210401-GW	WBGmw-014-210401-GW	WBGmw-018-210401-GW	WBGmw-019-210401-GW	WBGmw-020-210401-GW	WBGmw-021-210401-GW
	Date	04/27/21	04/27/21	04/28/21	04/28/21	04/27/21	04/28/21
	Sample Type	GR	GR	GR	GR	GR	GR
	Filter Status	Total	Total	Total	Total	Total	Total
	Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon
Analyte (mg/L)	**CAS Number**						
4-Methyl-2-pentanone	108-10-1	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	NA	NA	NA	NA	NA	NA

D.2 Chemical-Specific Screening Criteria

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Appendix D.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	GW Screening Level	GW Screening Level 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-Diamino-6-nitrotoluene	6629-29-4	--	--	--	--	--	--	--	--	--	--
Explosives/Propellants	2,4-Dinitrotoluene	121-14-2	0.00129	0.00012	--	0.00024	0.00024	RSL	--	--	--	--
Explosives/Propellants	2,6-Diamino-4-nitrotoluene	59229-75-3	--	--	--	--	--	--	--	--	--	--
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	3,5-Dinitroaniline	618-87-1	--	--	--	--	--	--	--	--	--	--
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	DNX	80251-29-2	--	--	--	--	--	--	--	--	--	--
Explosives/Propellants	HMX	2691-41-0	--	--	--	0.1	0.1	RSL	--	--	--	--
Explosives/Propellants	MNX	5755-27-1	--	--	--	--	--	--	--	--	--	--
Explosives/Propellants	Nitrobenzene	98-95-3	0.0164	0.000521	--	0.00014	0.000521	RC	--	--	--	--
Explosives/Propellants	Nitroglycerin	55-63-0	0.054	0.00501	--	0.0002	0.00501	RA	--	--	--	--
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	TNX	13980-04-6	--	--	--	--	--	--	--	--	--	--
Explosives/Propellants	Tetryl	479-45-8	--	--	--	0.0039	0.0039	RSL	--	--	--	--
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
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	1.91	BKG	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	0.075	BKG	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	--	--	--	--	--	--	--	--	--	--

Appendix D.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	GW Screening Level	GW Screening Level Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
Miscellaneous	Ammonia	7664-41-7	--	--	--	--	--	--	--	--	--	--
Miscellaneous	Cyanide	57-12-5	--	--	0.2	0.00015	0.2	MCL	--	--	--	--
Miscellaneous	Total Organic Carbon	N997	--	--	--	--	--	--	--	--	--	--
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	--	0.00000092	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-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-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-Nitrophenol	88-75-5	--	--	--	--	--	--	--	--	--	--
SVOCs	4-Chloro-3-methylphenol	59-50-7	--	--	--	0.14	0.14	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	--	--	--	--

Appendix D.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	GW Screening Level	GW Screening Level Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
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	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	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	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	Indeno(1,2,3-cd)pyrene	193-39-5	0.000024	0.000002	--	0.00025	0.00025	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	--	--	--	--

Appendix D.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	GW Screening Level	GW Screening Level Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
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	--	--	--	--

D.3 Spring 2021 Detected Concentrations

Appendix D.3 Spring 2021 Detected Concentrations

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	Result Exceeds Screening and Background Criteria (Y/N)?
Homewood	FBQmw-173	5/4/2021	FBQmw-173-210401-GW	Grab	Anions	Sulfate	32					N
Homewood	FBQmw-173	5/4/2021	FBQmw-173-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.00009	J	0.0039	RSL		N
Homewood	FBQmw-173	5/4/2021	FBQmw-173-210401-GW	Grab	Miscellaneous	Alkalinity	13					N
Homewood	FBQmw-173	5/4/2021	FBQmw-173-210401-GW	Grab	Miscellaneous	Total Organic Carbon	0.53					N
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Anions	Nitrate	3.4		10	MCL		N
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Anions	Nitrite	0.049	J	1	MCL		N
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Anions	Sulfate	60					N
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.0017		0.00098	RSL		Y
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.00037		0.00024	RSL		Y
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0086		0.0039	RSL		Y
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.00068					N
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.011		0.0039	RSL		Y
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Miscellaneous	Alkalinity	8.3	J				N
Homewood	FBQmw-174	5/4/2021	FBQmw-174-210401-GW	Grab	Miscellaneous	Total Organic Carbon	1.9					N
Homewood	LL10mw-003	4/29/2021	LL10mw-003-210401-GW	Grab	VOCs	Carbon tetrachloride	0.0024		0.005	MCL		N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Aluminum	0.018	J	2	RSL	0.386	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Aluminum	0.02	J	2	RSL	0.386	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Antimony	0.0019	J	0.006	MCL	0	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Antimony	0.00088	J	0.006	MCL	0	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Arsenic	0.0087		0.01	MCL	0.003	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Arsenic	0.0087		0.01	MCL	0.003	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Barium	0.043		2	MCL	0.034	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Barium	0.045		2	MCL	0.034	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Calcium	88				107	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Calcium	88				107	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Cobalt	0.00031	J	0.0208	RC	0.00083	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Cobalt	0.00035	J	0.0208	RC	0.00083	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Iron	1.8		1.91	BKG	1.91	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Iron	1.9		1.91	BKG	1.91	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Magnesium	32				55.3	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Magnesium	32				55.3	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Manganese	0.23		0.075	BKG	0.075	Y
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Manganese	0.23		0.075	BKG	0.075	Y
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Potassium	1.9	J			4.84	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Potassium	1.9	J			4.84	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210402-GW	Field Duplicate	Metals, Total	Sodium	11				18.2	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	Metals, Total	Sodium	11				18.2	N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	VOCs	Benzene	0.00054	J	0.005	MCL		N
Unconsolidated	DETmw-003	5/4/2021	DET-003-210401-GW	Grab	VOCs	Ethylbenzene	0.00016	J	0.7	MCL		N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Explosives/Propellants	HMX	0.0012		0.1	RSL		N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Explosives/Propellants	RDX	0.00067		0.00097	RSL		N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Aluminum	0.02	J	2	RSL	0.386	N

Appendix D.3 Spring 2021 Detected Concentrations

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	Result Exceeds Screening and Background Criteria (Y/N)?
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Antimony	0.00068	J	0.006	MCL	0	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Barium	0.055		2	MCL	0.034	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Calcium	130				107	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Copper	0.0011	J	1.3	MCL	0.005	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Magnesium	26				55.3	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Manganese	0.037		0.075	BKG	0.075	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Nickel	0.00041	J	0.039	RSL	0.002	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Potassium	1.2	J			4.84	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Sodium	1.5	J			18.2	N
Unconsolidated	DETmw-004	5/4/2021	DET-004-210401-GW	Grab	Metals, Total	Zinc	0.014	J	0.6	RSL	0.005	N
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Anions	Sulfate	27	J				N
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Anions	Sulfide	0.8	J				N
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Explosives/Propellants	DNX	0.00011	J				N
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Explosives/Propellants	HMX	0.0034		0.1	RSL		N
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Explosives/Propellants	MNX	0.00043	J				N
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Explosives/Propellants	RDX	0.0081		0.00097	RSL		Y
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Miscellaneous	Alkalinity	270					N
Unconsolidated	WBGmw-006	4/28/2021	WBGmw-006-210401-GW	Grab	Miscellaneous	Total Organic Carbon	0.83					N
Unconsolidated	WBGmw-009	4/27/2021	WBGmw-009-210401-GW	Grab	Explosives/Propellants	HMX	0.00083		0.1	RSL		N
Unconsolidated	WBGmw-009	4/27/2021	WBGmw-009-210401-GW	Grab	Explosives/Propellants	RDX	0.0016		0.00097	RSL		Y
Unconsolidated	WBGmw-018	4/28/2021	WBGmw-018-210401-GW	Grab	Anions	Nitrate	0.3	J	10	MCL		N
Unconsolidated	WBGmw-018	4/28/2021	WBGmw-018-210401-GW	Grab	Anions	Sulfate	8.9	J				N
Unconsolidated	WBGmw-018	4/28/2021	WBGmw-018-210401-GW	Grab	Anions	Sulfide	0.8	J				N
Unconsolidated	WBGmw-018	4/28/2021	WBGmw-018-210401-GW	Grab	Miscellaneous	Alkalinity	38					N
Unconsolidated	WBGmw-018	4/28/2021	WBGmw-018-210401-GW	Grab	Miscellaneous	Total Organic Carbon	1.7					N
Unconsolidated	LL1mw-063	4/27/2021	LL1mw-063-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.00027	J	0.0039	RSL		N
Unconsolidated	LL1mw-063	4/27/2021	LL1mw-063-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.00086		0.0039	RSL		N
Unconsolidated	LL1mw-063	4/27/2021	LL1mw-063-210401-GW	Grab	Explosives/Propellants	HMX	0.001		0.1	RSL		N
Unconsolidated	LL12mw-185	5/3/2021	LL12mw-185-210402-GW	Field Duplicate	Anions	Nitrate	63	J	10	MCL		Y
Unconsolidated	LL12mw-185	5/3/2021	LL12mw-185-210401-GW	Grab	Anions	Nitrate	64	J	10	MCL		Y
Unconsolidated	LL12mw-187	5/3/2021	LL12mw-187-210401-GW	Grab	Anions	Nitrate	1500	J	10	MCL		Y
Unconsolidated	LL12mw-187	5/3/2021	LL12mw-187-210401-GW	Grab	Miscellaneous	Ammonia	780					N
Unconsolidated	LL12mw-244	5/3/2021	LL12mw-244-210401-GW	Grab	Miscellaneous	Ammonia	0.023	J				N
Unconsolidated	LL12mw-245	5/5/2021	LL12mw-245-210401-GW	Grab	Anions	Nitrate	0.11	J	10	MCL		N
Unconsolidated	LL12mw-246	5/3/2021	LL12mw-246-210401-GW	Grab	Miscellaneous	Ammonia	0.088	J				N
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Anions	Nitrate	0.11	J	10	MCL		N
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Anions	Sulfate	82					N
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.00059	J	0.0039	RSL		N
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.00084	J	0.0039	RSL		N
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Explosives/Propellants	HMX	0.00017	J	0.1	RSL		N
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Explosives/Propellants	RDX	0.00011	J	0.00097	RSL		N
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Miscellaneous	Alkalinity	72					N

Appendix D.3 Spring 2021 Detected Concentrations

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	Result Exceeds Screening and Background Criteria (Y/N)?
Upper Sharon	LL1mw-079	5/5/2021	LL1mw-079-210401-GW	Grab	Miscellaneous	Total Organic Carbon	0.56					N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	0.00023		0.059	RSL		N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.00016		0.00098	RSL		N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0011		0.0039	RSL		N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.00036	J				N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.0031		0.0039	RSL		N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	HMX	0.0044		0.1	RSL		N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	MNX	0.00076					N
Upper Sharon	LL1mw-080	4/26/2021	LL1mw-080-210401-GW	Grab	Explosives/Propellants	RDX	0.023		0.00097	RSL		Y
Upper Sharon	LL1mw-081	4/26/2021	LL1mw-081-210401-GW	Grab	Explosives/Propellants	2,4-Diamino-6-nitrotoluene	0.0016	J				N
Upper Sharon	LL1mw-081	4/26/2021	LL1mw-081-210401-GW	Grab	Explosives/Propellants	2,6-Diamino-4-nitrotoluene	0.00045	J				N
Upper Sharon	LL1mw-081	4/26/2021	LL1mw-081-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0004		0.0039	RSL		N
Upper Sharon	LL1mw-081	4/26/2021	LL1mw-081-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.00021	J				N
Upper Sharon	LL1mw-081	4/26/2021	LL1mw-081-210401-GW	Grab	Explosives/Propellants	TNX	0.00051					N
Upper Sharon	LL1mw-082	5/10/2021	LL1mw-082-210401-GW	Grab	Explosives/Propellants	MNX	0.0002	J				N
Upper Sharon	LL1mw-082	5/10/2021	LL1mw-082-210401-GW	Grab	Explosives/Propellants	RDX	0.0012	J	0.00097	RSL		Y
Upper Sharon	LL1mw-083	4/26/2021	LL1mw-083-210401-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	0.0032	J	0.059	RSL		N
Upper Sharon	LL1mw-083	4/26/2021	LL1mw-083-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.0015	J	0.00098	RSL		Y
Upper Sharon	LL1mw-083	4/26/2021	LL1mw-083-210401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.002	J	0.00024	RSL		Y
Upper Sharon	LL1mw-083	4/26/2021	LL1mw-083-210401-GW	Grab	Explosives/Propellants	2,6-Dinitrotoluene	0.00097	J	0.000122	RA		Y
Upper Sharon	LL1mw-083	4/26/2021	LL1mw-083-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0066		0.0039	RSL		Y
Upper Sharon	LL1mw-083	4/26/2021	LL1mw-083-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.002					N
Upper Sharon	LL1mw-083	4/26/2021	LL1mw-083-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.013	J	0.0039	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Anions	Nitrate	0.44	J	10	MCL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Anions	Nitrate	0.46	J	10	MCL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Anions	Sulfate	130					N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Anions	Sulfate	130					N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Anions	Sulfide	0.8	J				N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Anions	Sulfide	1.6	J				N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	0.00081		0.059	RSL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	1,3,5-Trinitrobenzene	0.0011		0.059	RSL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	1,3-Dinitrobenzene	0.00064		0.0002	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	1,3-Dinitrobenzene	0.00076		0.0002	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.0023		0.00098	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	2,4,6-Trinitrotoluene	0.003		0.00098	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.00077		0.00024	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0058		0.0039	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0076		0.0039	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.0014					N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	3,5-Dinitroaniline	0.0016					N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.017		0.0039	RSL		Y
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.019		0.0039	RSL		Y

Appendix D.3 Spring 2021 Detected Concentrations

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	Result Exceeds Screening and Background Criteria (Y/N)?
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	HMX	0.0043		0.1	RSL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	HMX	0.0052		0.1	RSL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	MNX	0.0021					N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	RDX	0.0004		0.00097	RSL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	RDX	0.00043		0.00097	RSL		N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Explosives/Propellants	TNX	0.00023	J				N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Explosives/Propellants	TNX	0.00027	J				N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210402-GW	Field Duplicate	Miscellaneous	Alkalinity	38					N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Miscellaneous	Alkalinity	39					N
Upper Sharon	LL1mw-084	4/26/2021	LL1mw-084-210401-GW	Grab	Miscellaneous	Total Organic Carbon	1.4					N
Upper Sharon	LL2mw-059	4/28/2021	LL2mw-059-210401-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	0.0017		0.059	RSL		N
Upper Sharon	LL2mw-059	4/28/2021	LL2mw-059-210401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.00038		0.00024	RSL		Y
Upper Sharon	LL2mw-059	4/28/2021	LL2mw-059-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.00046		0.0039	RSL		N
Upper Sharon	LL2mw-059	4/28/2021	LL2mw-059-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.00048	J	0.0039	RSL		N
Upper Sharon	LL3mw-237	4/28/2021	LL3mw-237-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.00041		0.00098	RSL		N
Upper Sharon	LL3mw-237	4/28/2021	LL3mw-237-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0027		0.0039	RSL		N
Upper Sharon	LL3mw-237	4/28/2021	LL3mw-237-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.00027	J				N
Upper Sharon	LL3mw-237	4/28/2021	LL3mw-237-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.0061		0.0039	RSL		Y
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Anions	Nitrate	0.46	J	10	MCL		N
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Anions	Sulfate	45	J				N
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	0.0087		0.059	RSL		N
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.03	J	0.00098	RSL		Y
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.0067		0.0039	RSL		Y
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.00067					N
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.017		0.0039	RSL		Y
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Explosives/Propellants	HMX	0.0035	J	0.1	RSL		N
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Explosives/Propellants	RDX	0.0019		0.00097	RSL		Y
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Miscellaneous	Alkalinity	140					N
Upper Sharon	LL3mw-238	4/28/2021	LL3mw-238-210401-GW	Grab	Miscellaneous	Total Organic Carbon	2.2					N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Anions	Nitrate	0.74	J	10	MCL		N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Anions	Sulfate	40	J				N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.00021		0.00098	RSL		N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.000055	J	0.00024	RSL		N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.00055		0.0039	RSL		N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.00027	J				N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.00083		0.0039	RSL		N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Explosives/Propellants	RDX	0.0012		0.00097	RSL		Y
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Miscellaneous	Alkalinity	55					N
Upper Sharon	LL3mw-239	4/28/2021	LL3mw-239-210401-GW	Grab	Miscellaneous	Total Organic Carbon	0.78					N
Upper Sharon	LL3mw-241	4/28/2021	LL3mw-241-210401-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	0.0016		0.059	RSL		N
Upper Sharon	LL3mw-241	4/28/2021	LL3mw-241-210401-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.001		0.00098	RSL		Y
Upper Sharon	LL3mw-241	4/28/2021	LL3mw-241-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.001		0.0039	RSL		N

Appendix D.3 Spring 2021 Detected Concentrations

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	Result Exceeds Screening and Background Criteria (Y/N)?
Upper Sharon	LL3mw-241	4/28/2021	LL3mw-241-210401-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.00025	J				N
Upper Sharon	LL3mw-241	4/28/2021	LL3mw-241-210401-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.0012	J	0.0039	RSL		N
Upper Sharon	LL3mw-241	4/28/2021	LL3mw-241-210401-GW	Grab	Explosives/Propellants	RDX	0.00065	J	0.00097	RSL		N
Upper Sharon	FWGmw-021	4/29/2021	FWGmw-021-210401-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.00015	J	0.0039	RSL		N
Upper Sharon	FWGmw-021	4/29/2021	FWGmw-021-210401-GW	Grab	Explosives/Propellants	RDX	0.00033	J	0.00097	RSL		N

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APPENDIX E

Laboratory Data Packages

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E.1 SPRING 2021 LABORATORY DATA PACKAGES

(Data Packages are provided on CD)

Analytical Report Job Number: 280-147883-1
Analytical Report Job Number: 280-147883-2
Analytical Report Job Number: 280-147948-1
Analytical Report Job Number: 280-147948-2
Analytical Report Job Number: 280-148007-1
Analytical Report Job Number: 280-148007-2
Analytical Report Job Number: 280-148071-1
Analytical Report Job Number: 280-148151-1
Analytical Report Job Number: 280-148151-2
Analytical Report Job Number: 280-148219-1
Analytical Report Job Number: 280-148219-2
Analytical Report Job Number: 280-148291-1
Analytical Report Job Number: 280-148291-2
Analytical Report Job Number: 280-148385-1
Analytical Report Job Number: 280-148385-2
Analytical Report Job Number: 280-148505-1
Analytical Report Job Number: 280-148505-2
Analytical Report Job Number: 280-148573-2

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APPENDIX F

Spring 2021 FWGWMP Data Quality Report

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LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

2,4-DANT	2,4-Diamino-6-Nitrotoluene
2,6-DANT	2,6-Diamino-4-Nitrotoluene
3,5-DNA	3,5-Dinitroanaline
ADR	Automated Data Review
DNX	Hexahydro-1,3-Dinitroso-5-Dinitro-1,3,5-Triazine
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
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample
LOD	Limit of Detection
LOQ	Limit of Quantitation
MDL	Method Detection Level
MNX	Hexahydro-1-Nitroso-3,5-Dinitro-1,3,5-Triazine
MPC	Measurement Performance Criteria
MPR	Monthly Progress Report
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PAH	Polycyclic Aromatic Hydrocarbon
PARCCS	Precision, Accuracy, Representativeness, Comparability, Completeness, and Sensitivity
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	Semivolatile Organic Compound
TestAmerica	Laboratories, Inc.
TNX	Hexahydro-1,3,5-Trinitroso-1,3,5-Triazine
TOC	Total Organic Carbon
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound

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F. PROJECT QUALITY ASSURANCE SUMMARY

F.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 that were followed to ensure data generated by Leidos during the implementation of the Spring 2021 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 2021* (Leidos 2021; herein referred to as the 2021 Addendum). Implementation of the 2020 Addendum was conducted 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 report documents the quality of the data collected during the Spring 2021 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., precision, accuracy, representativeness, comparability, completeness, and sensitivity [PARCCS]).

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 2021 Addendum (Leidos 2021). 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.

F.2 QUALITY ASSURANCE PROGRAM

The QAPP within the RIWP (TEC-Weston 2016) was 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 percent; volatile organic compound (VOC) trip blanks were to accompany each cooler containing water samples for VOC determinations; field blanks and equipment blanks were collected as needed 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. Note that during the Spring 2021 event, only dedicated sampling equipment was used; therefore, field blanks and equipment blanks were not required.

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.

F.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.

F.2.2 Daily Activity Logs

The Field Manager and individual field team members completed Task Team Activity Log Sheets. These include information such as, but not limited to, onsite sub-tier contractors, onsite equipment, work performed summaries, QC activities, health and safety activities, problems encountered, and corrective actions. A separate Daily Tailgate Safety Briefing log was completed by the Field Manager on a daily basis.

F.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 all analyses. TestAmerica Denver is accredited by the

U.S. Department of Defense (DoD) for the analyses they performed. 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) or version under which the laboratory is accredited; 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 the data quality indicators of PARCCS.

F.2.4 Field Change Requests

While no new FCRs were necessary during the Spring 2021 sampling event, the existing FCRs related to the work are summarized below:

- 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.
- LEIDOS_FWGW_010 – Specifies that post-sample water quality parameters may not be an accurate characterization of groundwater, and water quality parameters recorded at the time of stabilization (before sampling) are the parameters used for evaluation.

F.3 DATA VERIFICATION/VALIDATION

The objective when evaluating the project data quality is to determine its usability. The evaluation is based on the evaluation of laboratory QC measures, field QC measures, and project DQOs. This project utilized ADR software to facilitate laboratory data review. The ADR output was reviewed by the project-designated verification staff, as discussed below.

F.3.1 Field Data Verification

Field-generated documents, such as Task Team Activity Log Sheets, Daily Tailgate Safety Briefing logs, and Low-flow Test Reports (purge logs) were peer-reviewed.

F.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:

- 2021 Addendum (Leidos 2021);
- RIWP, including Appendix A.2 QAPP (TEC-Weston 2016);
- DoD QSM, Version 5.0 (DoD 2017) or version under which the laboratory is accredited;

- 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 2020).

Upon receipt of analytical data, QA staff performed a systematic examination of 100 percent of the reports, including ADR outputs. Discrepancies identified during this process were recorded and documented. Any discrepancies were resolved prior to database flag entry. The 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 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 performed 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.

F.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. No results were qualified as unusable during this event.

F.3.4 Data Compliance

A total of 53 environmental groundwater samples were collected along with 7 field duplicates, with approximately 1,549 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 100 percent of the sample analyses performed during the Spring 2021 sampling event.

Table F-1 summarizes the number of environmental and QA split samples collected during the Spring 2021 sampling event. Cross-references for field duplicates and field QC samples and the associated primary samples are presented in Table F-2 along with the requested parameters for each sample. Table F-3 summarizes the qualified analyses grouped by parameter, and Table F-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 limit 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 holding time exceedances, sample condition, calibration nonconformances, confirmation result differences, noncompliant MS recoveries, laboratory duplicates, blank contamination, surrogate recoveries, and LCS recoveries, as well as professional judgment.

During the Spring 2021 sampling event, seven field duplicates were collected and analyzed with primary samples. Three trip blanks were collected and analyzed for VOCs. 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 F-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.

F.4 DATA QUALITY EVALUATION

F.4.1 Volatile Organic Groundwater Analysis

Analytical holding times were met for VOC samples. One sample was qualified due to sample condition at the time of analysis; although headspace was not present at time of receipt, headspace presumably developed due to effervescence or off-gassing during storage prior to analysis and the sample was conservatively qualified as estimated (J, UJ) based on sample condition and professional judgment. Initial calibrations and continuing calibration criteria were achieved with the exception of one compound in one continuing calibration standard, resulting in three data points qualified as estimated (UJ). Surrogate recoveries and internal area counts were within control limits for all analyses. No results were qualified based on laboratory method blanks. Two trip blanks contained trace VOC detections; this did not impact samples results which were all non-detect. All LCS and MS/MSD recoveries were within criteria. No 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 D and can be found in the RVAAP Environmental Information Management System (REIMS).

F.4.2 Semivolatile Organic Groundwater Analysis

Extraction and analytical holding times were met for all samples. Initial and continuing calibration criteria were met for all compounds. 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 MS/MSD recoveries were within control limits. No semivolatile 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 D and can be found in REIMS.

F.4.3 Polycyclic Aromatic Hydrocarbon Groundwater Analysis

Extraction and analytical holding times were met for all samples. Initial and continuing calibration criteria were met. Internal standard area counts and compound retention times met criteria throughout the data analyses. Surrogate recoveries met criteria. Method blanks were free from contamination. LCS and MS/MSD recoveries and relative percent difference (RPD) values met criteria. No polycyclic aromatic hydrocarbon (PAH) samples required dilutions. No data were estimated or rejected for any reason. All values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.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 and MS/MSD recoveries and RPD values were within criteria. No pesticide samples required dilutions. Column comparisons were not required as all compounds were non-detect. No pesticide data were estimated or rejected for any reason. All pesticide values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.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 as needed. 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 samples required a dilution. No PCB data were estimated or rejected for any reason. All PCB values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.4.6 Explosives Groundwater Analysis

This sampling event included the analysis of an expanded list of explosives compounds per the Addendum (Leidos 2021). The compounds included 3,5-dinitroanaline (3,5-DNA); hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX); hexahydro-1,3-dinitroso-5-dinitro-1,3,5-triazine (DNX); hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX); 2,4-diamino-6-nitrotoluene (2,4-DANT); and 2,6-diamino-4-nitrotoluene (2,6-DANT). Two compounds (2,4-DANT, 2,6-DANT) were reported in separate data packages, since the laboratory does not yet hold accreditation for those compounds. Analytical holding times were met for all samples. Surrogate recovery for 2 samples were outside control limits and resulted in 15 data points qualified as estimated (J/UJ). Initial and continuing calibration criteria were met. All method blanks were free of contamination. Column comparison criteria were exceeded for 12 results in 9 samples, which caused these data points to be qualified as estimated (J). LCS recoveries for 6 compounds exceeded criteria, resulting in 80 results being qualified as estimated (UJ). One set of samples for 2,4-DANT and 2,6-DANT did not have an associated LCS/laboratory control sample duplicate (LCSD), as a separate spike was required but inadvertently omitted from the preparation batch; this resulted in 10 data points qualified as estimated (UJ). One or more compounds in three samples analyzed as an MS/MSD exceeded recovery criteria, resulting in nine data points qualified as estimated (UJ). One sample for explosives required a dilution for one compound. 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 D and can be found in REIMS.

F.4.7 Metals Groundwater Analysis

Analytical holding times were met for all samples. LCS and MS/MSD recoveries met criteria and MS/MSD RPD values were within control limits. Method blank contamination resulted in two results being qualified as non-detect (U) when sample results were less than 10 times the blank results. Initial and continuing calibration criteria met criteria. Calibration blank contamination was evaluated similar to method blanks and resulted in four values being qualified as non-detect (U). 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 D and can be found in REIMS.

F.4.8 Anions and MNA Parameters

Sample analysis included nitrate, nitrite, sulfate, sulfide, and total organic carbon (TOC). Analytical holding times were met with the exception of two samples for sulfide; results for these samples were qualified as estimated (UJ). Initial and continuing calibration criteria were met for all compounds. Three samples for nitrate exceeded the upper calibration limit; the samples were re-analyzed at a dilution past the holding time (by more than a factor of 2); therefore, the original results were reported and qualified as estimated (J). Method and calibration blanks were free from contamination with the exception of two method blanks for sulfide, which resulted in three data points qualified as non-detect. MS/MSD recoveries were outside criteria for sulfate and nitrate, which resulted in seven results qualified as estimated (J); RPD values met criteria. Laboratory duplicate results met criteria. One nitrate result was reported from a dilution. 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 D and can be found in REIMS.

F.4.9 Cyanide

Analytical holding times were exceeded for the three samples collected for cyanide; results were qualified as estimated (UJ). Initial and continuing calibration criteria were met for all compounds. Method blanks were free from contamination. LCS recovery and MS/MSD recoveries and 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 D and can be found in REIMS.

F.4.10 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. No dilutions were required. No data were rejected or qualified for any reason. Reported values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.4.11 Ammonia

Analytical holding times were exceeded for two samples and results were qualified as estimated (J). Two results were qualified as estimated (J) based on professional judgment; although the samples were collected in preserved bottles, the pH at time of analysis was above criteria. Initial and continuing calibration criteria were met for ammonia. Method and calibration blanks were free from contamination. LCS recoveries were within criteria. No data were rejected. Reported values are considered technically sound and defensible. Complete data summary tables, with associated qualifiers, are provided in Appendix D and can be found in REIMS.

F.4.12 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 F-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 or LOQ. All field duplicate comparisons met criteria with the exception of three explosives results in the sample and field duplicate collected from LL1mw-084; both the parent and field results for the three compounds were less than five times the LOQ and the difference between the results was greater than the LOQ (note data are not qualified based on field duplicate results).

F.4.13 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 limit of detection (LOD) was greater than the project action limit. These limits 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, several compounds not listed in the QAPP were reported with LODs greater than the screening criteria: benzo(a)anthracene; benzo(b)fluoranthene; and Aroclor 1016. With these exceptions, 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 five 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 to 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 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, UJ), as summarized above and in Table F-4.

Table F-5 summarizes analytes that were detected in the two of the three trip blanks associated with this sampling event. Trace concentration of acetone were detected, at concentrations less than the reporting level; there was no impact on sample data. The transportation and sample storage process, and the procedures and precautions employed, were effective in preserving the integrity of the sample analysis.

F.4.14 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 onsite by the TestAmerica courier and then delivered or shipped to the appropriate laboratory location; samples were received within temperature specifications and in good condition. Holding times were met for all samples.

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. Table F-7 presents the standardized parameter groups, sample containers, preservation techniques, and associated holding times for environmental media.

F.4.15 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 percent, as defined in Tables 12-1 through 12-17 of the FWGWMP Plan (Portage Environmental 2004). All samples specified in the Addendum (Leidos 2021) were collected as planned, and usable results were generated for 100 percent of sample analyses performed.

F.5 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of the Spring 2021 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 U). No data were rejected. Data that have been qualified as estimated indicate accuracy, precision, or sensitivity did not meet all requirements, but results are considered adequate for evaluating project objectives. All undetected analytes were reported at detection levels that were adequate for use during data interpretation and statistical applications, except as discussed previously.

Data produced for this project demonstrate they can withstand scientific scrutiny; are appropriate for their 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.

F.6 REFERENCES

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Leidos 2021. *Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Addendum for 2021, Former Ravenna Army Ammunition Plant,, Portage and Trumbull Counties, Ohio*. May.

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Table F-1. Number of Samples Collected – Spring 2021 Sampling Event

Media	Environmental Samples	Field Duplicates	USACE Split Samples	Trip Blanks	Equipment Rinsate Blanks[a]	Source Water Blanks[b]
Groundwater	53	7	7	3	0	0

[a] Equipment rinsate blanks were specified for collection at a frequency of one per field cycle for the entire annual sampling event for the RVAAP-66 Facility-wide Groundwater area of concern; only dedicated sampling equipment was needed; therefore, no rinsate blanks were collected.

[b] Source water blanks for deionized and potable water used during equipment decontamination were evaluated for the entire RVAAP-66 Facility-wide Groundwater area of concern; none were collected during this event.

USACE = U.S. Army Corps of Engineers

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Table F-2. Identification of Regular and QC Samples Collected – Spring 2021 Sampling Event

Media	Environmental Samples	Lab SDG	Field Duplicates	Trip Blanks	Metals	Explosives	Expanded Explosives	VOCs	SVOCs / PAHs	PCBs	Pesticides	Cyanide	Nitrate	MNA	Alkalinity	TOC	Ammonia
Groundwater	DET-003-210401-GW	280-148219-1	DET-003-210402-GW	FWGTB-210403-TB	X	X		X	X	X	X	X					
Groundwater	DET-004-210401-GW	280-148219-1		FWGTB-210403-TB	X	X		X	X	X	X	X					
Groundwater	FBQmw-170-210401-GW	280-148385-1				X	X										
Groundwater	FBQmw-171-210401-GW	280-148291-1				X	X										
Groundwater	FBQmw-172-210401-GW	280-148291-1				X	X										
Groundwater	FBQmw-173-210401-GW	280-148219-1				X	X						X	X	X	X	
Groundwater	FBQmw-174-210401-GW	280-148219-1				X	X						X	X	X	X	
Groundwater	FBQmw-175-210401-GW	280-148219-1	FBQmw-175-210402-GW			X	X										
Groundwater	FWGmw-004-210401-GW	280-148071-1	FWGmw-004-210402-GW			X											
Groundwater	FWGmw-007-210401-GW	280-148151-1				X											
Groundwater	FWGmw-010-210401-GW	280-148151-1				X	X										
Groundwater	FWGmw-011-210401-GW	280-147948-1				X											
Groundwater	FWGmw-012-210401-GW	280-147948-1				X											
Groundwater	FWGmw-015-210401-GW	280-148071-1				X											
Groundwater	FWGmw-016-210401-GW	280-148071-1				X											
Groundwater	FWGmw-018-210401-GW	280-148071-1		FWGTB-210401-TB				X					X				
Groundwater	FWGmw-020-210401-GW	280-148071-1		FWGTB-210401-TB				X					X				
Groundwater	FWGmw-021-210401-GW	280-148071-1				X											
Groundwater	FWGmw-023-210401-GW	280-148291-1				X	X										
Groundwater	FWGmw-024-210401-GW	280-148071-1				X											
Groundwater	LL10mw-003-210401-GW	280-148071-1		FWGTB-210402-TB				X									
Groundwater	LL12mw-185-210401-GW	280-148151-1	LL12mw-185-210402-GW										X				X
Groundwater	LL12mw-187-210401-GW	280-148151-1											X				X
Groundwater	LL12mw-244-210401-GW	280-148151-1											X				X
Groundwater	LL12mw-245-210401-GW	280-148291-1											X				X

Table F-2. Identification of Regular and QC Samples Collected – Spring 2021 Sampling Event (Continued)

Media	Environmental Samples	Lab SDG	Field Duplicates	Trip Blanks	Metals	Explosives	Expanded Explosives	VOCs	SVOCs / PAHs	PCBs	Pesticides	Cyanide	Nitrate	MNA	Alkalinity	TOC	Ammonia
Groundwater	LL12mw-246-210401-GW	280-148151-1											X				X
Groundwater	LL1mw-063-210401-GW	280-147948-1				X	X										
Groundwater	LL1mw-064-210401-GW	280-147883-1				X	X										
Groundwater	LL1mw-079-210401-GW	280-148291-1				X	X						X	X	X	X	
Groundwater	LL1mw-080-210401-GW	280-147883-1				X	X										
Groundwater	LL1mw-081-210401-GW	280-147883-1				X	X										
Groundwater	LL1mw-082-210401-GW	280-148505-1				X	X										
Groundwater	LL1mw-083-210401-GW	280-147883-1				X	X										
Groundwater	LL1mw-084-210401-GW	280-147883-1	LL1mw-084-210402-GW			X	X						X	X	X	X	
Groundwater	LL1mw-086-210401-GW	280-148007-1				X	X										
Groundwater	LL1mw-087-210401-GW	280-147883-1	LL1mw-087-210402-GW			X	X										
Groundwater	LL1mw-089-210401-GW	280-147883-1	LL1mw-089-210402-GW			X	X										
Groundwater	LL2mw-059-210401-GW	280-148007-1				X											
Groundwater	LL3mw-237-210401-GW	280-148007-1				X	X										
Groundwater	LL3mw-238-210401-GW	280-148007-1				X	X						X	X	X	X	
Groundwater	LL3mw-239-210401-GW	280-148007-1				X	X						X	X	X	X	
Groundwater	LL3mw-241-210401-GW	280-148007-1				X	X										
Groundwater	LL3mw-245-210401-GW	280-148291-1				X	X										
Groundwater	SCFmw-004-210401-GW	280-147948-1				X											
Groundwater	WBGmw-006-210401-GW	280-148007-1				X	X						X	X	X	X	
Groundwater	WBGmw-007-210401-GW	280-148007-1				X	X										
Groundwater	WBGmw-008-210401-GW	280-147948-1				X	X										
Groundwater	WBGmw-009-210401-GW	280-147948-1				X	X										
Groundwater	WBGmw-014-210401-GW	280-147948-1				X	X										
Groundwater	WBGmw-018-210401-GW	280-148007-1				X	X						X	X	X	X	

Table F-2. Identification of Regular and QC Samples Collected – Spring 2021 Sampling Event (Continued)

Media	Environmental Samples	Lab SDG	Field Duplicates	Trip Blanks	Metals	Explosives	Expanded Explosives	VOCs	SVOCs / PAHs	PCBs	Pesticides	Cyanide	Nitrate	MNA	Alkalinity	TOC	Ammonia
Groundwater	WBGmw-019-210401-GW	280-148007-1				X	X										
Groundwater	WBGmw-020-210401-GW	280-147948-1				X	X										
Groundwater	WBGmw-021-210401-GW	280-148007-1				X	X										

Note: Trip blanks only accompany samples for VOCs in water.

MNA = Monitored Natural Attenuation. MNA suite includes anions, total organic carbon, alkalinity, pH, and water quality parameters.
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
QC = Quality Control
SDG = Sample Delivery Group
SVOC = Semivolatile Organic Compound
TB = Trip Blank
VOC = Volatile Organic Compound.

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Table F-3. Summary of Qualified Results for Samples – Spring 2021 Sampling Event

Analysis Group	Val. Qual[a]	Validation Code[b]	Number Qualified	Total Number of Analyses	Percent Qualified
All Analyses	J		61	1549	3.9
All Analyses	UJ		142	1549	9.2
All Analyses	U		6	1549	0.4
All Analyses	None		1340	1549	86.5
Metals	J	Rl	15	69	21.7
Metals	U	Mb	1	69	1.4
Metals	U	Mb,F12	1	69	1.4
Metals	U	Rl,F12	3	69	4.3
Metals	None	None	49	69	71.0
Explosives	J	Lcs	1	1022	0.1
Explosives	J	Lcs,M08	2	1022	0.2
Explosives	J	M08	9	1022	0.9
Explosives	J	Rl	3	1022	0.3
Explosives	J	Rl,M08	1	1022	0.1
Explosives	J	Surr	6	1022	0.6
Explosives	UJ	Lcs	70	1022	6.8
Explosives	UJ	Ms	4	1022	0.4
Explosives	UJ	Ms, Lcs	5	1022	0.5
Explosives	UJ	P05	10	1022	1.0
Explosives	UJ	Surr	7	1022	0.7
Explosives	UJ	Surr, Lcs	2	1022	0.2
Explosives	None	None	902	1022	88.3
VOCs	J	Rl	2	181	1.1
VOCs	UJ	A05	36	181	19.9
VOCs	UJ	C05	3	181	1.7
VOCs	None	None	140	181	77.4
SVOCs	None	None	69	69	100.0
PAHs	None	None	54	54	100.0
PCBs	None	None	21	21	100.0
Pesticides	None	None	63	63	100.0
Cyanide	UJ	A01	3	3	100.0
Nitrate	J	Ms	1	17	5.9
Nitrate	J	Ms, Rl	2	17	11.8
Nitrate	J	N03	3	17	17.6
Nitrate	J	Rl	4	17	23.5
Nitrate	None	None	7	17	41.2
MNA	J	Ms	4	18	22.2
MNA	J	Rl	1	18	5.6
MNA	None	None	13	18	72.2
Alkalinity	J	Rl	1	9	11.0
Alkalinity	None	None	8	9	89.0
TOC	None	None	8	8	100.0
Ammonia	J	Rl,A06	2	6	33.0
Ammonia	None	None	4	6	67.0
Sulfide	J	Rl	4	9	44.4
Sulfide	UJ	Mb,A01	2	9	22.2
Sulfide	U	Mb	1	9	11.1
Sulfide	None	None	2	9	22.2

Table F-3. Summary of Qualified Results for Samples – Spring 2021 Sampling Event (Continued)

[a] Validation Qualifiers: J = estimated, U = not detected, UJ = not detected and associated value estimated

[b] ADR Validation Reason Codes: ADR LCS = laboratory control sample, MB = method blank, MS = matrix spike, RL = reporting limit, Surr = surrogate recovery

Manual Validation Reason Codes: A01 = holding time, A05 = sample condition - headspace, A06 – professional judgment due to sample pH, C05 = calibration nonconformance, F12 = calibration blank, M08 = column comparison difference, N03 = professional judgment – calibration range exceeded, P05 = missing LCS

PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
SVOC = Semivolatile Organic Compound
VOC = Volatile Organic Compound

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Metals	Groundwater	ALUMINUM	280-148219-1	DET-003-210401-GW	20	300	J	J	Rl
Metals	Groundwater	ALUMINUM	280-148219-1	DET-003-210402-GW	18	300	J	J	Rl
Metals	Groundwater	ALUMINUM	280-148219-1	DET-004-210401-GW	20	300	J	J	Rl
Metals	Groundwater	ANTIMONY	280-148219-1	DET-003-210401-GW	0.88	6	J	J	Rl
Metals	Groundwater	ANTIMONY	280-148219-1	DET-003-210402-GW	1.9	6	J	J	Rl
Metals	Groundwater	ANTIMONY	280-148219-1	DET-004-210401-GW	0.68	6	J	J	Rl
Metals	Groundwater	BERYLLIUM	280-148219-1	DET-003-210402-GW	0.3	1	J	U	Rl,F12
Metals	Groundwater	COBALT	280-148219-1	DET-003-210401-GW	0.31	1	J	J	Rl
Metals	Groundwater	COBALT	280-148219-1	DET-003-210402-GW	0.35	1	J	J	Rl
Metals	Groundwater	COPPER	280-148219-1	DET-004-210401-GW	1.1	2	J	J	Rl
Metals	Groundwater	IRON	280-148219-1	DET-004-210401-GW	85	100	J	U	Mb
Metals	Groundwater	LEAD	280-148219-1	DET-003-210401-GW	0.7	3	J	U	Mb,F12
Metals	Groundwater	NICKEL	280-148219-1	DET-004-210401-GW	0.41	3	J	J	Rl
Metals	Groundwater	POTASSIUM	280-148219-1	DET-003-210401-GW	1900	3000	J	J	Rl
Metals	Groundwater	POTASSIUM	280-148219-1	DET-003-210402-GW	1900	3000	J	J	Rl
Metals	Groundwater	POTASSIUM	280-148219-1	DET-004-210401-GW	1200	3000	J	J	Rl
Metals	Groundwater	SILVER	280-148219-1	DET-003-210401-GW	0.048	5	J Q	U	Rl,F12
Metals	Groundwater	SILVER	280-148219-1	DET-003-210402-GW	0.1	5	J Q	U	Rl,F12
Metals	Groundwater	SODIUM	280-148219-1	DET-004-210401-GW	1500	5000	J	J	Rl
Metals	Groundwater	ZINC	280-148219-1	DET-004-210401-GW	14	20	J	J	Rl
Explosives	Groundwater	1,3,5-TRINITROBENZENE	280-147883-1	LL1mw-083-210401-GW	3.2	0.2	Q	J	Surr
Explosives	Groundwater	1,3-DINITROBENZENE	280-147883-1	LL1mw-083-210401-GW	0.098	0.11	U Q M	UJ	Surr
Explosives	Groundwater	2,4,6-TRINITROTOLUENE	280-147883-1	LL1mw-083-210401-GW	1.5	0.11	Q	J	Surr
Explosives	Groundwater	2,4,6-TRINITROTOLUENE	280-148007-1	LL3mw-238-210401-GW	30	1.2	D Q	J	Surr
Explosives	Groundwater	2,4-DINITROTOLUENE	280-147883-1	LL1mw-083-210401-GW	2	0.098	Q	J	Surr
Explosives	Groundwater	2,4-DINITROTOLUENE	280-148007-1	LL3mw-239-210401-GW	0.055	0.1	J	J	Rl
Explosives	Groundwater	2,4-diamino-6-nitrotoluene	280-147948-2	LL1mw-063-210401-GW	0.34	0.96	U	UJ	P05
Explosives	Groundwater	2,4-diamino-6-nitrotoluene	280-147883-2	LL1mw-081-210401-GW	1.6	0.96	p	J	M08
Explosives	Groundwater	2,4-diamino-6-nitrotoluene	280-147948-2	WBGmw-008-210401-GW	0.37	1	U	UJ	P05
Explosives	Groundwater	2,4-diamino-6-nitrotoluene	280-147948-2	WBGmw-009-210401-GW	0.35	0.97	U	UJ	P05

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Explosives	Groundwater	2,4-diamino-6-nitrotoluene	280-147948-2	WBGmw-014-210401-GW	0.35	0.98	U	UJ	P05
Explosives	Groundwater	2,4-diamino-6-nitrotoluene	280-147948-2	WBGmw-020-210401-GW	0.35	0.97	U	UJ	P05
Explosives	Groundwater	2,6-DINITROTOLUENE	280-147883-1	LL1mw-083-210401-GW	0.97	0.098	Q	J	Surr
Explosives	Groundwater	2,6-diamino-4-nitrotoluene	280-147948-2	LL1mw-063-210401-GW	0.31	0.96	U	UJ	P05
Explosives	Groundwater	2,6-diamino-4-nitrotoluene	280-147948-2	WBGmw-008-210401-GW	0.32	1	U	UJ	P05
Explosives	Groundwater	2,6-diamino-4-nitrotoluene	280-147948-2	WBGmw-009-210401-GW	0.31	0.97	U	UJ	P05
Explosives	Groundwater	2,6-diamino-4-nitrotoluene	280-147948-2	WBGmw-014-210401-GW	0.31	0.98	U	UJ	P05
Explosives	Groundwater	2,6-diamino-4-nitrotoluene	280-147948-2	WBGmw-020-210401-GW	0.31	0.97	U	UJ	P05
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148385-1	FBQmw-170-210401-GW	0.051	0.11	U *-	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148291-1	FBQmw-171-210401-GW	0.1	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148291-1	FBQmw-172-210401-GW	0.099	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148219-1	FBQmw-173-210401-GW	0.09	0.11	J J1	J	Rl,M08
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148219-1	FBQmw-175-210401-GW	0.11	0.12	U J1	UJ	Ms
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148071-1	FWGmw-004-210401-GW	0.099	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148071-1	FWGmw-004-210402-GW	0.1	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148071-1	FWGmw-015-210401-GW	0.1	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148071-1	FWGmw-016-210401-GW	0.1	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148071-1	FWGmw-021-210401-GW	0.15	0.11	Q J1	J	Lcs,M08
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148291-1	FWGmw-023-210401-GW	0.1	0.12	U Q	UJ	Lcs

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148071-1	FWGmw-024-210401-GW	0.097	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-147948-1	LL1mw-063-210401-GW	0.27	0.11	J1	J	M08
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148291-1	LL1mw-079-210401-GW	0.59	0.11	Q J1	J	Lcs,M08
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-148291-1	LL3mw-245-210401-GW	0.099	0.11	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148385-1	FBQmw-170-210401-GW	0.087	0.21	U *-	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148291-1	FBQmw-171-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148291-1	FBQmw-172-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148219-1	FBQmw-175-210401-GW	0.22	0.23	U J1	UJ	Ms
Explosives	Groundwater	2-NITROTOLUENE	280-148071-1	FWGmw-004-210401-GW	0.2	0.21	U J1 Q	UJ	Ms, Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148071-1	FWGmw-004-210402-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148071-1	FWGmw-015-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148071-1	FWGmw-016-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148071-1	FWGmw-021-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148291-1	FWGmw-023-210401-GW	0.21	0.22	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148071-1	FWGmw-024-210401-GW	0.19	0.2	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-064-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-148291-1	LL1mw-079-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-080-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-081-210401-GW	0.19	0.2	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-083-210401-GW	0.2	0.2	U Q	UJ	Surr, Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-084-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-084-210402-GW	0.21	0.22	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-087-210401-GW	0.21	0.22	U J1 Q	UJ	Ms, Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-087-210402-GW	0.21	0.22	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-089-210401-GW	0.21	0.22	U Q	UJ	Lcs
Explosives	Groundwater	2-NITROTOLUENE	280-147883-1	LL1mw-089-210402-GW	0.2	0.21	U Q	UJ	Lcs

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Explosives	Groundwater	2-NITROTOLUENE	280-148291-1	LL3mw-245-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148385-1	FBQmw-170-210401-GW	0.2	0.41	U *-	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148291-1	FBQmw-171-210401-GW	0.41	0.41	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148291-1	FBQmw-172-210401-GW	0.39	0.39	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148219-1	FBQmw-175-210401-GW	0.44	0.44	U J1	UJ	Ms
Explosives	Groundwater	3-NITROTOLUENE	280-148071-1	FWGmw-004-210401-GW	0.4	0.4	U Q J1	UJ	Ms, Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148071-1	FWGmw-004-210402-GW	0.4	0.4	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148071-1	FWGmw-015-210401-GW	0.4	0.4	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148071-1	FWGmw-016-210401-GW	0.41	0.41	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148071-1	FWGmw-021-210401-GW	0.4	0.4	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148291-1	FWGmw-023-210401-GW	0.42	0.42	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148071-1	FWGmw-024-210401-GW	0.39	0.39	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-064-210401-GW	0.4	0.4	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148291-1	LL1mw-079-210401-GW	0.4	0.4	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-080-210401-GW	0.41	0.41	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-081-210401-GW	0.39	0.39	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-083-210401-GW	0.39	0.39	U Q	UJ	Surr, Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-084-210401-GW	0.4	0.4	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-084-210402-GW	0.41	0.41	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-087-210401-GW	0.42	0.42	U J1 Q	UJ	Ms, Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-087-210402-GW	0.42	0.42	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-089-210401-GW	0.41	0.41	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-147883-1	LL1mw-089-210402-GW	0.41	0.41	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-148291-1	LL3mw-245-210401-GW	0.4	0.4	U Q	UJ	Lcs
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148385-1	FBQmw-170-210401-GW	0.058	0.15	U *-	UJ	Lcs
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148291-1	FBQmw-171-210401-GW	0.12	0.15	U Q	UJ	Lcs

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148291-1	FBQmw-172-210401-GW	0.12	0.15	U Q	UJ	Lcs
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148219-1	FBQmw-175-210401-GW	0.13	0.17	U J1	UJ	Ms
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148291-1	FWGmw-023-210401-GW	0.13	0.16	U Q	UJ	Lcs
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148291-1	LL1mw-079-210401-GW	0.84	0.15	Q	J	Lcs
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-147883-1	LL1mw-083-210401-GW	13	0.15	Q	J	Surr
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148007-1	LL2mw-059-210401-GW	0.48	0.16	J1	J	M08
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148007-1	LL3mw-241-210401-GW	1.2	0.16	J1	J	M08
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-148291-1	LL3mw-245-210401-GW	0.12	0.15	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148385-1	FBQmw-170-210401-GW	0.1	0.42	U *-	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148291-1	FBQmw-171-210401-GW	0.41	0.42	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148291-1	FBQmw-172-210401-GW	0.39	0.4	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148071-1	FWGmw-004-210401-GW	0.4	0.41	U M Q J	UJ	Ms, Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148071-1	FWGmw-004-210402-GW	0.4	0.41	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148071-1	FWGmw-015-210401-GW	0.4	0.41	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148071-1	FWGmw-016-210401-GW	0.41	0.42	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148071-1	FWGmw-021-210401-GW	0.4	0.41	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148291-1	FWGmw-023-210401-GW	0.42	0.43	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148071-1	FWGmw-024-210401-GW	0.39	0.4	U Q	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-148291-1	LL1mw-079-210401-GW	0.4	0.41	U Q M	UJ	Lcs
Explosives	Groundwater	4-NITROTOLUENE	280-147883-1	LL1mw-083-210401-GW	0.39	0.4	U Q	UJ	Surr
Explosives	Groundwater	4-NITROTOLUENE	280-148291-1	LL3mw-245-210401-GW	0.4	0.41	U Q	UJ	Lcs
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-148071-1	FWGmw-021-210401-GW	0.33	0.21	J1	J	M08

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-148291-1	LL1mw-079-210401-GW	0.11	0.21	J M	J	Rl
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-148505-1	LL1mw-082-210401-GW	1.2	0.21	J1	J	M08
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-147883-1	LL1mw-083-210401-GW	0.2	0.2	U Q M	UJ	Surr
Explosives	Groundwater	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	280-148007-1	LL3mw-241-210401-GW	0.65	0.22	M J1	J	M08
Explosives	Groundwater	MNX	280-148505-1	LL1mw-082-210401-GW	0.2	0.51	J M J1	J	M08
Explosives	Groundwater	NITROBENZENE	280-148071-1	FWGmw-004-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	NITROBENZENE	280-148071-1	FWGmw-004-210402-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	NITROBENZENE	280-148071-1	FWGmw-015-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	NITROBENZENE	280-148071-1	FWGmw-016-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	NITROBENZENE	280-148071-1	FWGmw-021-210401-GW	0.2	0.21	U Q	UJ	Lcs
Explosives	Groundwater	NITROBENZENE	280-148071-1	FWGmw-024-210401-GW	0.19	0.2	U Q	UJ	Lcs
Explosives	Groundwater	NITROBENZENE	280-147883-1	LL1mw-083-210401-GW	0.2	0.2	U Q	UJ	Surr
Explosives	Groundwater	NITROGLYCERINE	280-147883-1	LL1mw-083-210401-GW	2	2	U Q	UJ	Surr
Explosives	Groundwater	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-148291-1	LL1mw-079-210401-GW	0.17	0.21	J M	J	Rl
Explosives	Groundwater	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	280-148007-1	LL3mw-238-210401-GW	3.5	0.22	M J1	J	M08
Explosives	Groundwater	PETN	280-147883-1	LL1mw-083-210401-GW	0.98	1.1	U Q	UJ	Surr
Explosives	Groundwater	Tetryl	280-147883-1	LL1mw-083-210401-GW	0.098	0.11	U Q	UJ	Surr
VOCs	Groundwater	1,1,1-TRICHLOROETHANE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	1,1,2,2-TETRACHLOROETHANE	280-148071-1	FWGmw-020-210401-GW	0.8	1	U	UJ	A05
VOCs	Groundwater	1,1,2-TRICHLOROETHANE	280-148071-1	FWGmw-020-210401-GW	0.8	1	U	UJ	A05
VOCs	Groundwater	1,1-DICHLOROETHANE	280-148071-1	FWGmw-020-210401-GW	0.8	1	U	UJ	A05
VOCs	Groundwater	1,1-DICHLOROETHENE	280-148071-1	FWGmw-020-210401-GW	0.8	1	U	UJ	A05
VOCs	Groundwater	1,2-DIBROMOETHANE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
VOCs	Groundwater	1,2-DICHLOROETHANE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	1,2-DICHLOROETHENE (TOTAL)	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	1,2-DICHLOROPROPANE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	2-BUTANONE	280-148071-1	FWGmw-020-210401-GW	4	6	U	UJ	A05
VOCs	Groundwater	2-HEXANONE	280-148071-1	FWGmw-020-210401-GW	4	5	U	UJ	A05
VOCs	Groundwater	4-METHYL-2-PENTANONE	280-148071-1	FWGmw-020-210401-GW	3.2	5	U	UJ	A05
VOCs	Groundwater	ACETONE	280-148071-1	FWGmw-020-210401-GW	6.4	10	U	UJ	A05
VOCs	Groundwater	BENZENE	280-148219-1	DET-003-210401-GW	0.54	1	J	J	Rl
VOCs	Groundwater	BENZENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	BROMOCHLOROMETHANE	280-148071-1	FWGmw-020-210401-GW	0.2	1	U	UJ	A05
VOCs	Groundwater	BROMODICHLOROMETHANE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	BROMOFORM	280-148071-1	FWGmw-020-210401-GW	1	1	U	UJ	A05
VOCs	Groundwater	BROMOMETHANE	280-148219-1	DET-003-210401-GW	0.8	2	U Q	UJ	C05
VOCs	Groundwater	BROMOMETHANE	280-148219-1	DET-003-210402-GW	0.8	2	U M Q	UJ	C05
VOCs	Groundwater	BROMOMETHANE	280-148219-1	DET-004-210401-GW	0.8	2	U M Q	UJ	C05
VOCs	Groundwater	BROMOMETHANE	280-148071-1	FWGmw-020-210401-GW	0.8	2	U	UJ	A05
VOCs	Groundwater	Bromobenzene	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	CARBON DISULFIDE	280-148071-1	FWGmw-020-210401-GW	0.8	2	U	UJ	A05
VOCs	Groundwater	CARBON TETRACHLORIDE	280-148071-1	FWGmw-020-210401-GW	0.4	2	U	UJ	A05
VOCs	Groundwater	CHLOROBENZENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	CHLOROETHANE	280-148071-1	FWGmw-020-210401-GW	1.6	2	U	UJ	A05
VOCs	Groundwater	CHLOROFORM	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	CHLOROMETHANE	280-148071-1	FWGmw-020-210401-GW	0.8	2	U	UJ	A05
VOCs	Groundwater	CIS-1,3-DICHLOROPROPENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	DIBROMOCHLOROMETHANE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	ETHYLBENZENE	280-148219-1	DET-003-210401-GW	0.16	1	J	J	Rl
VOCs	Groundwater	ETHYLBENZENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	METHYLENE CHLORIDE	280-148071-1	FWGmw-020-210401-GW	2	5	U	UJ	A05
VOCs	Groundwater	STYRENE	280-148071-1	FWGmw-020-210401-GW	0.8	1	U	UJ	A05

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
VOCs	Groundwater	TETRACHLOROETHENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	TOLUENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	TRANS-1,3-DICHLOROPROPENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	TRICHLOROETHENE	280-148071-1	FWGmw-020-210401-GW	0.4	1	U	UJ	A05
VOCs	Groundwater	VINYL CHLORIDE	280-148071-1	FWGmw-020-210401-GW	0.2	1.5	U	UJ	A05
VOCs	Groundwater	XYLENES (TOTAL)	280-148071-1	FWGmw-020-210401-GW	0.8	1	U	UJ	A05
Cyanide	Groundwater	Cyanide, Total	280-148219-1	DET-003-210401-GW	0.009	0.01	U H	UJ	A01
Cyanide	Groundwater	Cyanide, Total	280-148219-1	DET-003-210402-GW	0.009	0.01	U H	UJ	A01
Cyanide	Groundwater	Cyanide, Total	280-148219-1	DET-004-210401-GW	0.009	0.01	U H	UJ	A01
Nitrate	Groundwater	Nitrate as N	280-148151-1	LL12mw-185-210401-GW	64	0.5	J1	J	N03
Nitrate	Groundwater	Nitrate as N	280-148151-1	LL12mw-185-210402-GW	63	0.5	J1	J	N03
Nitrate	Groundwater	Nitrate as N	280-148151-1	LL12mw-187-210401-GW	1500	2.5	D M J1	J	N03
Nitrate	Groundwater	Nitrate as N	280-148291-1	LL12mw-245-210401-GW	0.11	0.5	J	J	Rl
Nitrate	Groundwater	Nitrate as N	280-148291-1	LL1mw-079-210401-GW	0.11	0.5	J	J	Rl
Nitrate	Groundwater	Nitrate as N	280-147883-1	LL1mw-084-210401-GW	0.44	0.5	J M	J	Rl
Nitrate	Groundwater	Nitrate as N	280-147883-1	LL1mw-084-210402-GW	0.46	0.5	J M	J	Rl
Nitrate	Groundwater	Nitrate as N	280-148007-1	LL3mw-238-210401-GW	0.46	0.5	J	J	Ms, Rl
Nitrate	Groundwater	Nitrate as N	280-148007-1	LL3mw-239-210401-GW	0.74	0.5		J	Ms
Nitrate	Groundwater	Nitrate as N	280-148007-1	WBGmw-018-210401-GW	0.3	0.5	J M J1	J	Ms, Rl
MNA	Groundwater	Nitrite as N	280-148219-1	FBQmw-174-210401-GW	0.049	0.5	J	J	Rl
MNA	Groundwater	Sulfate	280-148007-1	LL3mw-238-210401-GW	45	5		J	Ms
MNA	Groundwater	Sulfate	280-148007-1	LL3mw-239-210401-GW	40	5		J	Ms
MNA	Groundwater	Sulfate	280-148007-1	WBGmw-006-210401-GW	27	5		J	Ms
MNA	Groundwater	Sulfate	280-148007-1	WBGmw-018-210401-GW	8.9	5	J1	J	Ms
Alkalinity	Groundwater	Alkalinity	280-148219-1	FBQmw-174-210401-GW	8.3	10	J	J	Rl
Ammonia	Groundwater	Ammonia	280-148151-1	LL12mw-244-210401-GW	0.023	0.1	J	J	Rl,A06
Ammonia	Groundwater	Ammonia	280-148151-1	LL12mw-246-210401-GW	0.088	0.1	J	J	Rl,A06
Sulfide	Groundwater	Sulfide	280-148219-1	FBQmw-173-210401-GW	1.9	4	J H	UJ	Mb,A01
Sulfide	Groundwater	Sulfide	280-148219-1	FBQmw-174-210401-GW	1.9	4	J H	UJ	Mb,A01

Table F-4. Detailed Listing of Qualified Results – Spring 2021 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Sulfide	Groundwater	Sulfide	280-148291-1	LL1mw-079-210401-GW	1.9	4	J	U	Mb
Sulfide	Groundwater	Sulfide	280-147883-1	LL1mw-084-210401-GW	1.6	4	J	J	Rl
Sulfide	Groundwater	Sulfide	280-147883-1	LL1mw-084-210402-GW	0.8	4	J	J	Rl
Sulfide	Groundwater	Sulfide	280-148007-1	WBGmw-006-210401-GW	0.8	4	J	J	Rl
Sulfide	Groundwater	Sulfide	280-148007-1	WBGmw-018-210401-GW	0.8	4	J	J	Rl

[a] Validation Qualifiers: J = estimated, U = not detected, UJ = not detected and associated value estimated

[b] ADR Validation Reason Codes: ADR LCS = laboratory control sample, MB = method blank, MS = matrix spike, RL = reporting limit, Surr = surrogate recovery, Manual Validation Reason Codes: A01 = holding time, A05 = sample condition - headspace, A06 – professional judgment due to sample pH, C05 = calibration nonconformance, F12 = calibration blank, M08 = column comparison difference, N03 = professional judgment – calibration range exceeded, P05 = missing LCS

ID = Identifier
LOQ = Limit of Quantitation
PAH = Polycyclic Aromatic Hydrocarbon
PETN = Pentaerythritol tetranitrate
SVOC = Semivolatile Organic Compound
VOC = Volatile Organic Compound

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Table F-5. Results for Analytes Detected in Field Blanks or Trip Blanks – Spring 2021 Sampling Event

Sample ID	Analysis Type	Analyte Name	Result
FWGTB-210401-TB	VOCs	ACETONE	2.5 J
FWGTB-210403-TB	VOCs	ACETONE	2.3 J

Sample Type: TB = Trip Blank
Data Qualifiers: J = estimated
ID = Identifier
VOC = Volatile Organic Compound.

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Table F-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – Spring 2021 Sampling Event

Sample No.	Analysis Type	Chemical	Parent Result (mg/L)	Duplicate Result (mg/L)	RPD % or (Absolute Difference)[a]	Test[b]
DET-003-210401-GW/ DET-003-210402-GW	Metals	ALUMINUM	0.02 J	0.018 J	(0.01)	D
DET-003-210401-GW/ DET-003-210402-GW	Metals	ANTIMONY	0.00088 J	0.0019 J	(0.17)	D
DET-003-210401-GW/ DET-003-210402-GW	Metals	ARSENIC	0.0087	0.0087	(0.00)	D
DET-003-210401-GW/ DET-003-210402-GW	Metals	BARIUM	0.043	0.045	5%	RPD
DET-003-210401-GW/ DET-003-210402-GW	Metals	CALCIUM	88	88	0%	RPD
DET-003-210401-GW/ DET-003-210402-GW	Metals	COBALT	0.00031 J	0.00035 J	(0.04)	D
DET-003-210401-GW/ DET-003-210402-GW	Metals	IRON	1.8	1.9	5%	RPD
DET-003-210401-GW/ DET-003-210402-GW	Metals	MAGNESIUM	32	32	0%	RPD
DET-003-210401-GW/ DET-003-210402-GW	Metals	MANGANESE	0.23	0.23	0%	RPD
DET-003-210401-GW/ DET-003-210402-GW	Metals	POTASSIUM	1.9 J	1.9 J	(0.00)	D
DET-003-210401-GW/ DET-003-210402-GW	Metals	SODIUM	11	11	(0.00)	D
DET-003-210401-GW/ DET-003-210402-GW	VOCs	BENZENE	0.00054 J	0.0004 U	(0.14)	D
DET-003-210401-GW/ DET-003-210402-GW	VOCs	ETHYLBENZENE	0.00016 J	0.0004 U	(0.24)	D
LL12mw-185-210401-GW/ LL12mw-185-210402-GW	Nitrate	Nitrate as N	64 J	63 J	2%	RPD
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	1,3,5-TRINITROBENZENE	0.00081	0.0011	(1.30)	D *
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	1,3-DINITROBENZENE	0.00064	0.00076	17%	RPD
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	2,4,6-TRINITROTOLUENE	0.0023	0.003	26%	RPD
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	2,4-DINITROTOLUENE	0.00077	0.000083 U	(6.90)	D *
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	2-AMINO-4,6-DINITROTOLUENE	0.0058	0.0076	27%	RPD
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	3,5-Dinitroaniline	0.0014	0.0016	(0.49)	D
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	4-AMINO-2,6-DINITROTOLUENE	0.017	0.019	11%	RPD
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine (RDX)	0.00043	0.0004	(0.14)	D

Table F-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – Spring 2021 Sampling Event (Continued)

Sample No.	Analysis Type	Chemical	Parent Result (mg/L)	Duplicate Result (mg/L)	RPD % or (Absolute Difference)[a]	Test[b]
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	MNX	0.0021	0.0003 U	(3.50)	D *
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.0052	0.0043	19%	RPD
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Explosives	TNX	0.00027 J	0.00023 J	(0.08)	D
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Nitrate	Nitrate as N	0.44 J	0.46 J	(0.04)	D
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	MNA	Sulfate	130	130	0%	RPD
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Alkalinity	Alkalinity	39	38	(0.10)	D
LL1mw-084-210401-GW/ LL1mw-084-210402-GW	Sulfide	Sulfide	1.6 J	0.8 J	(0.20)	D

[a] 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.

[b] 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.

D = Absolute Difference
ID = Identifier
RDX = Hexahydro-1,3,5-Trinitro-1,3,5-Triazine
RPD = Relative Percent Difference

Table F-7. Container Requirements for Groundwater Samples

Analyte Group	Container	Minimum Sample Size	Preservative	Holding Time
Volatile Organic Compounds	Three 40-mL glass vial	40 mL	HCl to pH <2 Cool $\leq$ 6°C	14 days
Semivolatile Organic Compounds	Two 1-L amber glass	1 L	Cool $\leq$6°C	7 days (extraction) 40 days (analysis)
Polycyclic Aromatic Hydrocarbon Compounds	Two 1-L amber glass	1 L	Cool $\leq$6°C	7 days (extraction) 40 days (analysis)
Pesticide Compounds	Two 1-L amber glass	1 L	Cool $\leq$6°C	7 days (extraction) 40 days (analysis)
Polychlorinated Biphenyls	Two 1-L amber glass	1 L	Cool $\leq$6°C	1 year (extraction) 40 days (analysis)
Explosive Compounds	Two 500-mL amber glass	500 mL	Cool $\leq$6°C	7 days (extraction) 40 days (analysis)
Metals (TAL)+Phosphorus+Mercury	500-mL HDPE poly	100 mL	HNO_3 to pH <2 Cool $\leq$ 6°C	180 days; Hg at 28 days
Sulfide	500-mL HDPE	250 mL	NaOH/Zn Acetate, pH >9; Cool $\leq$ 6°C	7 days
Anions	50-mL HDPE	15 mL	Cool $\leq$ 6°C	48 hours (nitrate, nitrite) 28 days (sulfate)
Alkalinity	250-mL HDPE	250 mL	Cool $\leq$ 6°C	14 days
Total Cyanide	250-mL HDPE	100 mL	NaOH, Cool $\leq$ 6°C	14 days

HCl = Hydrochloric Acid
HDPE = High-Density Polyethylene
Hg = Mercury
HNO_3 = Nitric Acid
hr = Hour
L = Liter
mL = Milliliter
NaOH = Sodium Hydroxide
TAL = Target Analyte List
Zn = Zinc

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APPENDIX G

Well Redevelopment Forms

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Task Activity Logs

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/19/2021

Page 1 of 1

Task Team Members:

RYAN LANTHCY

RICH SPROWL

DANIELLE ANDERSON

RL 4/19/2021

Narrative (include time and location):

0715 - LEIDOS ONSITE

0730 - KEVIN SEDLAK ONSITE

0745 - KEVIN OFF-SITE, GIVES 1036 KEY TO RYAN, BEGIN TO MOBILIZE FOR WELL DEVELOPMENT.

0900 - RYAN HEADS OVER TO RANGE CONTROL.

0904 - H+S BRIEFING.

0930 - PIKE DROPS OFF EQUIPMENT + DRUMS. DANIELLE + RICH TO WBG.

1030 - RYAN DEPARTS 1036 FOR WBG.

1038 - RYAN ARRIVES AT WBG, RICH + DANIELLE ONSITE.

1105 - SET UP ON WBGmw-019.

1212 - WBGmw-019 REDEVELOPED, RESET PUMP (DEDICATED)(3A)

1215 - HELP DANIELLE REDEVELOP AT WBGmw-018.

1400 - DEPART FOR 1036.

1420 - ARRIVE AT 1036 TRANSFER PURGE WATER TO IDW ACCUMULATION AREA.

1515 - DANIELLE OFFSITE.

1550 - RICH + RYAN OFFSITE.

RL

4/19/2021

Daily Weather Condition: A.M. 41°F, P. CLOUDY

P.M. 62°F, P. CLOUDY

Recorded By: RL 4/19/2021 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

ate: (mm/dd/yy): 04/19/21

Page 1 of 1

Task Team Members:

Rich Sprinzl

Danielle Anderson

Ryan Lawrich (FM)

JB 4/27/21

Narrative (include time and location):

0710 Arrived @ CJAG, check in with security then arrived at B1036 with Leidos team.
0730 Prep for well development, setup/Decon new pumps, setup go-Boxes. Setup IDW drums and transfer pump.
0920 H&S Briefing by FM / Well Development Briefing (Start at WBG MWs).
0940 Depart B1036 for WBG with Danielle A.
0945 Enter WBG gate ('open').
0950 Arrived @ WBGmw-007. Begin setup to redevelop for sampling.
1005 WL = 17.34 ft BTOC. Removed dedicated pump/tubing. TD = 26.3 ft BTOC
1024 Well volume = 7.0 gal. Start purging to redevelop WBGmw-007 (prior to, surged well with pump off.)
1054 Well stabilized except DO (>8X well volumes removed). Continue purging.
1140 Stabilized readings over 3 readings. Development concluded. Re-installed bladder pump/tubing.
1200 Manage purge water (Danielle returned with empty drum from B1036).
1222 Rich departed WBG for B1036 to transfer 2 full drums. Danielle heads to next WBG MW.
1230 Arrived at B1036, setup transfer pump/hose – Not pumping. Informed FM. Dissambled to clear pump.
1305 Begin using Dev. pump to transfer to drums on spill pallets (transfer pump out of service)
1415 All waste containers transferred into B1036 drums, then assist FM with setting up his IDW transfer.
1425 Depart for WBG to pickup supplies left at WBGmw-007 and assist Danielle (Note pump deconed)
1430 Enter WBG gate (open) then arrived @ WBGmw-007 – load up supplies. (Brief Shower)
1435 Danielle postponing next well so head back to 1036.
1440 Depart WBG gate (left open).
1445 Arrived at B1036. Unload empty drums/equipment/go-box/Decon Tote and decon tubing/water level.
1530 Updated IDW Container Logs (for Drums #45→53)
1545 Depart B1036/Main Gate for Leidos office.

Daily Weather Condition: A.M. 40-55 mostly sunny

P.M. 55-65 partly sunny; scattered brief shower

ecorded By: RSprinzl 04/19/21 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 04/19/21

Page 1 of 1

Task Team Members:

Danielle Anderson

Ryan Laurich

Rich Sprinzl

DA 04/19/21

Narrative (include time and location):

0600 Arrive at Twinsburg office to load equipment.
0630 Depart from Twinsburg office for RVAAP/CJAG.
0700 Arrive at CJAG and enter gate. Wait at 1036 for Kevin.
0715 1036 Open; begin mobilizing for field event.
0830 Calibrate Horiba Water Quality Meters.
0915 H&S Tailgate hosted by Ryan.
0930 Depart from 1036 for WBGmw-007 to help Rich.
1000 Begin Redevelopment.
1200 Run back to 1036 for more drums.
1205 Arrive back at 1036.
1207 Depart from 1036 and head for WBG.
1215 Arrive back at WBGmw-007.
1230 Arrive at WBGmw-018 and set up.
1248 Begin developing well. Dedicated pump (23 inches) and tubing.
1412 Development complete, heading for WBGmw-~~00~~ DA 04/19/21 014.
1420 Realize that I do not have decon equipment. Call Ryan. He said to return
to 1036 and demob. for the day.
1430 Arrive at 1036 and unload/decon equipment.
1530 Depart from CJAG for the day.

DA 04/19/21

Daily Weather Condition: A.M. 43°F, light wind, partly sunny.

P.M. 62°F, partly cloudy, light wind.

Recorded By: 04/19/21 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/20/2021 Page 1 of 2

Task Team Members:

RYAN LARICK

DANIELLE ANDERSON

DA 4/20/2021

RL/ 4/20/2021

Narrative (include time and location):

0705 - RYAN + DANIELLE ONSITE. BEGIN TO MOBILIZE FOR WELL DEVELOPMENT.

0735 - RYAN TO RANGE CONTROL

0800 - COMPLETE H+S BRIEFING

0847 - START DEVELOPMENT AT WBGmw-014.

1025 - RETURN TO 1036, DISPOSE OF IDW PURGE WATER.

1100 - DANIELLE RETURN TO 1036, DISPOSE OF IDW PURGE WATER

~~1109~~ + RYAN DEPARTS TO FINISH WBGmw-014 DEVELOPMENT.

1109 - RETURN TO WBG + DEVELOPMENT AT WBGmw-014.

1153 - WBGmw-014 DEVELOPED. WATER QUALITY PARAMETERS STABILIZED. TURBIDITY DID NOT DROP BELOW 10 NTU - TOOK PHOTO OF WATER TO SHOW CLARITY. COLLECTED IN POLY BOTTLE

1220 - COLLECT CLARITY SAMPLE AT WBGmw-007 VIA BAILER IN A POLY BOTTLE, TOOK PHOTO.

1234 - COLLECT CLARITY SAMPLE AT WBGmw-019 VIA BAILER IN CLEAR POLY BOTTLE, TOOK PHOTO.

1235 - COLLECT CLARITY SAMPLE AT WBGmw-018 VIA BAILER IN CLEAR POLY BOTTLE, TOOK PHOTO.

1244 - COLLECT CLARITY SAMPLE AT WBGmw-008 VIA BAILER IN CLEAR POLY BOTTLE, TOOK PHOTO.

1300 - RETURN TO 1036 TO DISPOSE OF PURGE WATER.

1331 - DEPART 1036

Daily Weather Condition: A.M. 46°F CLOUDY

P.M. 72°F CLOUDS

Recorded By: 4/20/2021 QC Checked by:

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/20/2021

Page 2 of 2

Task Team Members:

R. Lurich

D. ANDERSON

RL/4/20/2021

RL/4/20/2021

Narrative (include time and location):

1407- START DEVELOPMENT AT LL3mw-245

1440- RETURN TO 1036 + DISPOSE OF PURGE WATER.

DEMOB FOR DAY.

1535- DANIELLE OFFSITE.

1545- RYAN OFFSITE.

RL 4/20/2021

Daily Weather Condition: A.M. NA

P.M. 42°F CLOUDY

Recorded By: 4/20/2021 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/20/21 Page 1 of 1

Task Team Members:

Danielle Anderson

Ryan Laurich

DA 04/20/21

DA 04/20/21

Narrative (include time and location):

0700 Enter main gate of CJAG and arrive at 1036 to mobilize for the day.

0730 H+S Tailgate hosted by Ryan.

0750 Depart from 1036 for WBGmw-008.

0800 Arrive at well and set up equipment.

0852 Begin well development. There is a dedicated pump (23inches) and Tubing. Water begins orange and Turbid but becomes clear during first well volume. Well continuously went dry.

1014 Well is developed. Pack up equipment and decon pump.

1040 Depart from well for 1036 to dump purge water.

1050 Arrive back at 1036 to unload purge water.

1120 Depart from 1036 to drop off drum funnel to Ryan in WBG.

1130 Dropped off drum funnel to Ryan and headed towards FBQ.

~~1145~~ 1215 DA 04/20/21 Arrive at FBQmw-173 and set up equipment.

1235 Begin well development. Water starts out as pink, turbid and odorless and becomes clear and colorless throughout first two well volumes.

1404 Well is developed, pack and decon equipment.

1440 Depart from FBQmw-173 for 1036 to unload equipment and purge water.

1540 Demob. Complete, exit base for the day.

DA 04/20/21

Daily Weather Condition: A.M. 39°F clear, humid

P.M. 48°F cloudy, slight wind.

ecorded By: 04/20/21 QC Checked by:

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/21/2021

Page 1 of 1

Task Team Members:

RYAN LAWICH

DANIELLE ANDERSON

RICH SPRINZL

RL/4/21/2021

Narrative (include time and location):

0700 - DANIELLE ONSITE.

0730 - RYAN ONSITE.

0735 - RICH ONSITE.

0755 - COMPLETE H+S TAILGATE.

0815 - RYAN OVER TO RANGE CONTROL TO DISCUSS ACTIVITIES TODAY.

- RICH + DANIELLE DEPART TO DEVELOP WELLS AT LL12

0923 - RICH OFFSITE.

0936 - RYAN DEPARTS FOR LL3mw-245 TO CONTINUE DEVELOPMENT

1041 - DEVELOPMENT COMPLETE AT LL3mw-245, RETURN TO 1036.

~~1125 - ARRIVE AT 1036 TO DISPOSE OF PURGE WATER.~~ RL 4/21/2021

TOOK SAMPLE IN POLY BOTTLE FOR CLARITY PHOTO.

1120 - RETURN TO 1036 AND DISPOSE OF PURGE WATER.

1243 - ARRIVE AT LL12 SET UP ON LL12mw-246 FOR DEVELOPMENT

LL12mw-246 GOING DRY, PULLED 8.5 GALLONS INITIALLY + SINCE IT CAN HANDLE 2-2.5 GALLONS BEFORE GOING DRY, WATER IS CLEANING UP, BUT RETURNS TO DARK GRAY PRIOR TO GOING DRY

TRACE SAND PULLED UP DURING DEVELOPMENT.

1440 - DEPART LL12. WILL NEED TO RETURN TO LL12mw-246 TO COMPLETE DEVELOPMENT.

1449 - RETURN TO 1036, BEGIN DEMOB FOR DAY

1526 - DANIELLE BACK AT 1036.

1600 - OFFSITE FOR DAY.

Daily Weather Condition: A.M. 30° F, LIGHT SNOW

P.M. 36°F, P. CLOUDY

ecorded By: RL 4/21/2021 QC Checked by:

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**
PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/21/21

Page 1 of 1

Task Team Members:

Danielle Anderson

Ryan Laurich

DA 04/21/21

DA 04/21/21

Narrative (include time and location):

0700 Arrive at CJAG and 1036. Ryan informs me that he is running late
0730 Ryan arrives, begin mobilization for the day.
0830 H&S Tailgate hosted by Ryan.
0900 Depart from 1036 for LL12mw-244 and set up equipment
1006 Start well development. 34 inch dedicated pump and tubing.
Water is gray, turbid and odorless throughout purge for five well volumes.
DA 04/21/21 ~~1550~~ 1455 five well volumes purged. Pack up equipment.
1515 Depart from LL12mw-244 for 1036.
1527 Arrive back at 1036 to unload and pump purge water into drums.
1555 Demob Complete. Exit main gate for the day.

DA 04/21/21

Daily Weather Condition: A.M. 32°F Cloudy and snowing.

P.M. 37°F sunny, occational snow

ecorded By: 04/21/21 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66** **PROJECT NO:** **April 2021 Sampling Event**

Date: (mm/dd/yy): 4/22/2021 Page 1 of 1

Task Team Members:

RYAN LAURICH

DANIELLE ANDERSON

RL / 4/22/2021

RL / 4/22/2021

Narrative (include time and location):

0700 - DANIELLE ONSITE

0715 - RYAN ONSITE. BEGIN TO MOB FOR DAY, COMPLETE H&S TAILGATE.

0735 - RYAN TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES.

0823 - DANIELLE DEPARTS FOR LL 12 FOR DEVELOPMENT. RYAN AT 1036 TO PREP FOR GWS NEXT WEEK.

1030 - EUROFINS DROPS BOTTLE ORDER

1050 - RYAN STARTS PREPPING BOTTLEWARE FOR GWS EVENT NEXT WEEK.

1430 - DANIELLE RETURNS TO 1036, BEGINS TO DEMOBILIZE.

1549 - DANIELLE DEPARTS

1600 - RYAN DEPARTS

RL

4/22/2021

Daily Weather Condition: A.M. 30°F, P. CLOUDY

P.M. 42°F, P. CLOUDY

Recorded By: 4/22/2021 QC Checked by:

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO: April 2021 Sampling Event**

Date: (mm/dd/yy): 04/22/21 Page 1 of 1

Task Team Members:

Danielle Anderson

Ryan Laurich

DA 04/22/21

DA 04/22/21

Narrative (include time and location):

0700 Arrive at CJAG and building 1036 for the day, to mobilize.

0715 Ryan arrives and begin to mobilize.

0750 H+S meeting hosted by Ryan.

0815 Depart from 1036 for LL12mw-246.

0840 Arrive at LL12mw-246 and set up equipment.

0916 Begin well development, starting off where Ryan left off yesterday. Ryan purged 22 gallons yesterday. Water level: 16.16 ft. Water is clear, grayish, odorless, and silty/sandy. It remains this way throughout the remaining well volumes.

1353 Five well volumes purged, well developed. Pack up equipment and replace dedicated tubing.

1420 Depart from LL12mw-246 for 1036 to drain purge water and help Ryan prep. for GW sampling next week.

1545 Depart from 1036 and go offsite for the day.

DA 04/22/21

Daily Weather Condition: A.M. 28° F mostly sunny

P.M. 33°F, mostly Cloudy, breezy

Recorded By: 04/22/21 (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66

PROJECT NO: April 2021 Sampling Event

Date: (mm/dd/yy): 04/26/21

Page 1 of 2

Task Team Members:

Rich Sprinzl

Ryan Launch (FM)

DA 05/07/21

DA 05/07/21

Narrative (include time and location):

0700 Arrived @ CJAG Main Gate. Checked in with security, then B1036.

0715 Begin loading well development equipment.

0755 H&S Briefing by FM/SSHO. Plan ReDevelop LL1mw-085/-079; check WLs + pump lengths @ FWGmw010/023, FBQ-172, LL12mw-245; Reset DETmw-004 pump.

0820 Depart B1036

0835 Arrived @ LL1mw-085. WL=36.31 ft BTOC

0900 Pump (Mini Monsoon) set with 3/8" ID tubing. Begin purge/surge with mini monsoon pump

0915 Well went dry at 2 well volumes. Let recharge 15-20 min (Informed FM).

0938 Resurged well then continue purging.

0940 Well went dry. (3 well volumes removed)

0955 Depart LL1mw-085 (Let recharge)

1005 Arrived @ LL1mw-079. WL = 33.32 ft BTOC. Dual tubing (1/4"x1/4") in well (Inform FM).

1015 Danielle Anderson onsite. Swaps water level (New Hebron Little Dipper 75' (#10055) → Not working/troubleshoot

1049 Surged well with mini monsoon pump then Begin purging to Re-develop.

1051 Well went dry at 1 well volume removed. Let it recharge for 15-20 min.

1112 Resurged well w/ pump then restart purge.

1114 Well went dry (~1.5 of 1.7 gal well volume).

1125 picked up & return to LL1mw-085 (Inform FM)

1132 Arrived @ LL1mw-085. Set back up to continue development after recharge for ~~[illegible]~~ ~2 hours.

1140 Resurged well then continue purge

1142 Well went dry (4x well volumes removed). Informed FM.

1210 Recharged LL1mw-085 for ~30min Resurged then purge.

Daily Weather Condition: A.M. 32→55° sunny, dry

P.M. 55-63° Sunny, dry

Recorded By: RSprinzl 04/26/21 (Signature)

QC Checked by: Dani A 05/07/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** April 2021 Sampling Event

ate: (mm/dd/yy): 04/26/21 Page 2 of 2

Task Team Members:

Rick Spond Ryan Laurich (FM)

~~DA 05/07/21~~ ~~DA 05/07/21~~

Narrative (include time and location):

1212 LLmw-085 went dry again, 5X well volumes removed & not able to get stable readings, turbidity <100 NTU (92) so well clearing up with no fines in bucket. Inform FM.

1230 Demob from LLmw-085, FM requested to head to 4 MWs.

1245 Arrived @ FWGmw-010, Measure WL/pump length, WL = 12.0 ft Pump: 24"; dual tubing (3/8" x 1/4") top pump ~15.3' BTOC, TD ~19.3 ft BTOC

1330 @LL12mw-245. WL = 10.20 ftBTOC, existing QED pump ~42" long w/ Dual 3/8" x 1/4" tubing.

1342 Exit LL12 south gate. Locked gate.

1352 Arrived at FWGmw-023. Measured WL = NM (too deep for water level on hand, TD ~215') However, WL is ~20' ~~Below bottom~~ above top of pump based on water 'splash' and tubing left out of well. Pump was 36" (No screen, 3/8" x 1/4" dual tubing) then 3/8" tubing x ~50' to a ~7/8" OD SS pump (?) (~24" + ~6" screen). Informed FM.

1430 Depart FWGmw-023

1440 Arrived @ FBQmw-172 WL ~15.0', Pump: ~24" (1/4" x 1/4" dual tubing)

1455 Depart FBQ. Head back to LL1

1510 Returned to LL1mw-079. Resurge well then pump to dry again

1516 Continue purge.

1519 Well went dry. (2nd + 3rd well volumes removed). Pack up equipment (end of day)

1530 Demob LL1. Locked gate.

1540 Arrived @ B1036. Unload equipment + transfer ~14 gal to IDW Drum #62.

1600 Offsite. End of Day

RS 4/26/21

Daily Weather Condition: A.M. 32-55° Sunny, dry

P.M. 55°-63° Sunny, dry

ecorded By: RSp 04/26/21 QC Checked by: 05/07/21

(Signature) (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**
PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/27/21
Page 1 of 2

Task Team Members:
Rich Sprinzl
Ryan Launch (FM)
DA 05/07/21
DA 05/07/21

Narrative (include time and location):

0700 Arrived @ CJAG Main Gate. Checked in with Security then arrived @ B1036.
0710 Calibrate Horiba U-52 (#0B340C28).
0720 Begin loading equipment to finish redevelopment of LL1mw-079.
0745 H&S Briefing by FM. Plan: Finish Redevelopment at LL1mw-079 then set portable QED pumps into MWs without dedicated pumps.
0805 Depart B1036 for LL1
0825 Arrived @ LL1mw-079. Reset mini monsoon/tubing (well recharged overnight)
0840 Resurge well w/ pump.
0844 Continue purging well.
0846 Well went dry. (4th Well volume removed). Turbidity appears to be clearing more.
0910 Recharged for ~25 minutes. Resurged well.
0911 Continue purging well.
0913 Well went dry. 5X well volumes removed. Water mostly clear to clear (No color) so turbidity greatly improved. Redevelopment concluded. Informed FM.
0940 Demob from LL1. Locked gate.
0953 Returned to B1036. Manage IDW (~3.5 gal) and start pump decon.
1030 Briefing w/ FM for setting portable pumps at 5 MWs.
1055 Loaded up pumps/tubing and depart B1036.
1105 Arrived @ WBG. Obtained WL meter from Jasmine S. (Solinst 100')
1120 Arrived @ FBQmw-170. WL = 19.95' BTOC (Existing 1/4" X 1/4")
1130 Start setting pump (QED bladder pump) (~12" long)
1150 QED pump set @ 5' above bottom of casing (mid-screen)

Daily Weather Condition: A.M. 50-75° sunny, dry
P.M. 84° sunny dry

ecorded By: RSp 04/27/21 (Signature)
QC Checked by: 05/07/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

Date: (mm/dd/yy): 04/27/21

Page 2 of 2

Task Team Members:

Rich Spanz

Ryan Lawrich (FM

DA 05/07/21

DA 05/07/21

Narrative (include time and location):

1155 Demob from FBQ.

1210 Arrived @ LL3mw-245. Measured DTW=12.76 ft BTOC. 1/4"x1/4" dual tubing downhole.

1225 QED 12" Bladder/SS Pump set @~5' above bottom casing (middle of screen).

1230 Demob from LL3mw-245.

1245 Arrived @ LL12mw-246. DTW=14.95 ft BTOC, existing 1/4"x1/4 dual tubing.

* will need to change to 3/8x1/4" dual tubing due to QED pump configuration.

1330 LL12mw-246 pump set @~5' above bottom ('mid-screen').

1335 Demob LL12, Locked gate.

1348 Arrived @ LL1mw-085, DTW=36.00 ft BTOC (No tubing/pump).

1358 Arrived @ LL1mw-079. DTW=33.02 ft BTOC (1/4"x1/4" dual tubing)

1415 Switched to 3/8"x1/4" nonbonded tubing and set QED bladder (12") pump @~5 from bottom (midscreen)

1425 Returned to LL1mw-085, Set QED pump (12" Bladder) @5' from Bottom *Correction→obstruction at 6-7' BTOC (due to pump diameter). Informed FM.

1450 Demob from LL1. Locked gate.

1505 Returned to ~~B~~1036, Unload truck, manage decon IDW, then start pump decon

1555 2 pumps deconed (+3rd in progress)

1600 Depart B1036/CJAG. Return to Twinsburg.

RS 4/27/21

Daily Weather Condition: A.M. 50-75° sunny dry.

P.M. 84° sunny dry

Recorded By: RSp 04/27/21 (Signature)

QC Checked by: 05/07/21 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

ate: (mm/dd/yy): 04/28/21

Page 1 of 1

Task Team Members:

Rich Sprinzl

Ryan Laurich (FM)

DA 05/07/21

DA 05/07/21

Narrative (include time and location):

0815 Arrived @ CJAG Main Gate. Checked in with Security then arrived at B1036

0820 H+S Briefing w/ FM/SSHO. Plan: Finish pump decon, IDW management + Demob.

0830 Depart B1036 for WBG.

0840 Arrived @ WBG for equipment dropoff to Jasmine S.

0850 Depart WBG.

0900 Returned to ~~WBG~~ RS 4/28/21 B1036. Begin pump decon.

1000 Pump decon / IDW management completed. Consolidate tubing & pumps.

1110 Depart B1036/CJAG. Head back to Twinsburg office/storage.

1200 Arrived @ Twinsburg office/storage. Unload development equipment + trash.

1210 End of Day

RS 4/28/21

Daily Weather Condition: A.M. 70s sunny

P.M. NA

ecorded By: RS 4/28/21
(Signature)

QC Checked by: 05/07/21
(Signature)

07-162(NE)/102507

FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: **FWGWMP RVAAP-66**

PROJECT NO: **April 2021 Sampling Event**

ate: (mm/dd/yy): 05/07/21

Page 1 of 1

Task Team Members:

Danielle Anderson

Ryan Laurich DA 05/07/21

DA 05/07/21

Narrative (include time and location):

0700 Arrive at CJAG @ 1036 to mobilize for well development.

0745 H+S tailgate hosted by Ryan.

0755 Depart for LL1.

0810 Arrive at LL1mw-082 and set up equipment.

0832 Begin development. Well goes dry frequently. Purge every 20-30mins and pull 2-3 gals. per purge.

1440 Development completed, only 2.5 volumes pulled. Talked to Ryan about it. He says that's fine.

~~0~~ DA 05/07/21 1450 Set pump at LL1mw-082.

1455 Depart LL1 for 1036.

1510 Arrive back at 1036 and demob.

1555 Offsite for the day.

DA 05/07/21

Daily Weather Condition: A.M. 41°F cloudy, Rain

P.M. 46°F partly sunny

ecorded By: 05/07/21 QC Checked by:

(Signature)

Well Redevelopment Forms

WELL DEVELOPMENT FORM

Page: 1 of 4

Project Name: RVAAP FWGWMP Well Redevelopment Well ID: WBGmw-007

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: Rich Sprinzl, Danielle Anderson

Date and Time: Start: 04/19/21 1024 Complete: 04/19/21 1140

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☐ Other: mini monsoon

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 105

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	DB300C28	4/19/21
Water Level Tape: Solinst 101 (100')	39350	NA
Other:		
Other: RS 4/19/21		
Other:		
Other:		
Other:		

Recorded By: Rich Sprinzl 04/19/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 4

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **WBGmw-007**

Depths (btoc): **15.82** Top of Screen **25.82** Bottom of Screen **12.42** Top of Filter Pack 17.34 Depth to Water **26.3** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ______

2" (0.163) Casing diam (vol. of c

8" (2.61) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume
Vc = Riser Casing Volume
Vf = Filter Pack Volume

Vt (Total Well Volume) = 7.01 gallons

5x VT = 35.05 gallons

Vc = (Height of water column) x (Volume of casing per foot)
Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per
Vc = (26.3 - DTW 17.34) * 0.163 = 1.46
Vf = [(26.3 - DTW 17.34) * 2.61 7.01 * 0.3] - [(26.3 - DTW 17.34) 1.46 * 0.163] = 5.55
Vt = Vc 1.46 + Vf 5.55 = 7.01

Site Conditions: Grassy area along road. Appears to be construction ongoing at WBG (orange fencing around wetlands/ditches, + soil stockpiles)

Field Observations: 24" dedicated QED pump (bladder) 1/4" x 1/4" tubing. tubing had dark brown coating; Hard Bottom of well.
Initial water was orange-brown and very turbid.
Dedicated pump reset into MW.

Deviations from Approved SAP: None.

JS 4/27/21

Recorded By: 04/19/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 4

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-007

Date	Time	Gallons Removed	±0.5°C Temp (oC)	±3% Specific Cond. (mS/cm)	±0.2 pH (std. unit)	±10% Turbidity (NTU)	±10% or 0.2 mg/L (whichever is greater) Dissolved Oxygen (mg/L)	±20 mV eH (mV)	Total Gallons Removed	Flow Rate (gal/min)	Water Level (ft btoc)	Comments
4/19/21	1024	0	10.88	0.409	6.18	*0.0*	8.85	214	0	3	17.34	Initial, orange/Brown + Turbid
4/19/21	1028	10	10.13	0.367	6.96	328	8.88	185	10	3	20.50	Clearing to light brown/less turbid, >1x W.V.
4/19/21	1031	~~14~~ 9 4/19/21	9.59	0.360	7.20	271	3.77	178	19	3	20.70	>2x W.V. Removed
4/19/21	1035	12	9.65	0.370	7.35	800	8.35	176	31	3	20.81	Resurged, turbid↑; >3+4x W.V. removed
4/19/21	1041	10	9.41	0.372	7.42	107	8.44	150	41	3	20.81	Clearing/turbid↓; >5x WV Removed
4/19/21	1045	5	9.39	0.373	7.42	23.4	3.80	183	46	2	20.81	mostly clear, >6x WV removed
4/19/21	1048	5	9.26	0.371	7.47	8.1	2.62	183	51	2	20.81	clear, Turbidity<10 >7X WV removed
4/19/21	1051	5	9.28	0.374	7.50	1.8	3.20	184	56	2	20.42	8x WV removed
4/19/21	1054	3	9.28	0.374	7.53	8.0	3.76	183	59	1	20.46	*Stable except DO
4/19/21	1057	3	9.24	0.374	7.55	2.0	2.53	152	62	1	20.42	
4/19/21	1100	3	9.33	0.376	7.58	0.0	2.40	177	65	1	20.42	>9X WV removed
4/19/21	1103	3	9.26	0.377	7.58	0.0	3.90	174	68	1	20.40	
4/19/21	1106	3	9.28	0.376	7.68	0.0	2.27	169	71	1	20.40	>10x WV removed
4/19/21	1109	3	9.20	0.377	7.63	0.0	2.16	167	74	1	20.50	
4/19/21	1112	3	9.38	0.377	7.63	0.0	2.69	166	77	1	20.50	11X WV removed
4/19/21	1120	8	9.28	0.377	7.63	0.0	2.24	164	85	1	20.50	>12X WV removed

*out of Range (>1000)

Recorded By: Rich Spring 4/19/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 4 of 4

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-007

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
04/19/21	1123	3	9.35	0.377	7.68	0.0	2.23	159	88	1	20.50	Clear
04/19/21	1126	3	9.54	0.380	7.73	0.0	2.65	154	91	1	20.48	13X WV removed
	1129	3	9.48	0.380	7.76	0.0	5.23	147	94	1	20.50	
	1132	3	9.37	0.378	7.77	0.0	1.92	144	97	1	20.50	
	1135	3	9.26	0.378	7.77	0.0	1.99	141	100	1	20.49	>14X WV removed.
	1138	3	9.16	0.379	7.77	0.0	2.00	136	103	1	20.49	Stabilized for 3 readings.
	1140	2							105	1	20.50	Development concluded. (15X Well volume removed)
											RS 4/19/21	Bladder Pump Reinstalled
				4/19/21	RS							

Recorded By: 4/19/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-008

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: Danielle Anderson

Date and Time: Start: 0852 4/20/21 Complete: 1014 4/20/21

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☐ Other: whaler pump

Monitoring Method(s): ☐ PID ☐ LEL ☒ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 26 gallons

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	8P2356 AF	4/20/21
Water Level Tape:	41832	N/A
Other:		
Other:		
Other:		
Other:		
Other:		

DA 04/20/21

Recorded By: 04/20/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **WBGmw-008**

Depths (btoc): **10.14** Top of Screen **20.17** Bottom of Screen **8.01** Top of Filter Pack 14.65 Depth to Water 20.7 ~~21~~ Total Depth DA 04/20/21

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ______

2" (0.163) Casing diam (vol. of c
8" (2.61) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume
Vc = Riser Casing Volume
Vf = Filter Pack Volume

Vt (Total Well Volume) = 4.737 gallons
5x VT = 23.686 gallons

Vc = (Height of water column) x (Volume of casing per foot)
Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per
Vc = (~~21.0~~ 20.7 - DTW 14.65) * 0.163 = 0.986
Vf = [(~~21.0~~ 20.7 - DTW 14.65) * 2.61 * 0.3] - [(~~21.0~~ - DTW 14.65) * 0.163] = 3.751
Vt = Vc 0.986 + Vf 3.751 = 4.737 20.7

Site Conditions: 36°F mostly cloudy, breezy
JS 4/27/21

Field Observations: Water starts out as brownish orange, turbid and odorless but clears up by first well volume. The well runs dry quickly and recharges quickly
JS 4/27/21

Deviations from Approved SAP: None
JS 4/27/21

Recorded By: 04/20/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-008

Date	Time	Gallons Removed	±0.5°C Temp (oC)	±3% Specific Cond. (mS/cm)	±0.2 pH (std. unit)	±10% Turbidity (NTU)	±10% or 0.2 mg/L (whichever is greater) Dissolved Oxygen (mg/L)	±20 mV eH (mV)	Total Gallons Removed	Flow Rate (gal/min)	Water Level (ft btoc)	Comments
04/20/21	0852	0	9.85	0.523	6.69	1000	5.92	278	0	N/A	N/A	Initial
04/20/21	0904	5	9.44	0.491	7.12	156	10.27	248	5	N/A	N/A	first well volume
04/20/21	0923	5	8.95	0.485	7.20	51.8	3.16	241	10	N/A	N/A	Second well volume
04/20/21	0940	5	8.67	0.482	7.19	50.7	3.12	237	15	N/A	N/A	Third well volume
04/20/21	0955	5	8.85	0.479	7.28	31.7	3.28	232	20	N/A	N/A	Fourth well volume
04/20/21	1009	5	9.00	0.475	7.20	31.5	3.15	238	25	N/A	N/A	fifth well volume
04/20/21	1014	~~5~~ 1 DA 04/20/21	9.04	0.470	7.22	31.2	3.20	236	26	N/A	N/A	Stable

DA 04/20/21

Recorded By: Daniel A 04/20/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment Well ID: WBGmw-014

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: R. LAURICH

Date and Time: Start: 4/20/2021 0847 Complete: 1153 4/20/21

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☐ Other: mini monsoon

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 100.5

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	34027	4/20/2021
Water Level Tape:	39082	NA
Other:		
Other:	RL 4/20/2021	
Other:		
Other:		
Other:		

Recorded By: RL 4/20/2021

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **WBGmw-014**

Depths (btoc): **14.68** Top of Screen | **24.68** Bottom of Screen | **11.18** Top of Filter Pack | 16.12 Depth to Water | **25** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ______

2" (0.163) Casing diam (vol. of c

8" (2.61) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume

Vc = Riser Casing Volume

Vf = Filter Pack Volume

Vt (Total Well Volume) = 6.95 gallons

5x VT = 34.7 gallons

Vc = (Height of water column) x (Volume of casing per foot)

Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per

Vc = (25.0 - DTW 16.12) * 0.163 = ~~8.88~~ 4/20/21 2.63

Vf = [(25.0 - DTW 16.12) * 2.61 * 0.3] - [(25.0 - DTW 16.12) * 0.163] = 4.32

Vt = Vc 2.63 + Vf 4.32 = 6.95

Site Conditions: CALM, NO ACTIVITIES IN AREA

~~2" DEDICATED PUMP IN WELL~~ 4/20/2021

Field Observations: WATER STARTED OFF GRAY + TURBID CLEARED UP, HAD TO RETURN TO 1036 @ 0940 TO DISPOSE OF PURGE WATER, RETURNED AT 1117 AND WATER HAD RETURNED TO GRAY + TURBID DID CLEAR UP BUT TURBIDITY WOULD NOT DROP BELOW 10 NTU, ALL PARAMETERS STABALIZED

Deviations from Approved SAP: NONE

4/20/2021

Recorded By: 4/20/2021

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-014

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
4/20/2021	0851	7	9.53	0.482	6.52	318	5.00	167	7	N/A	N/A	VERY TURBID
	0857	7	9.09	0.421	7.15	244	5.47	126	14			
	0903	7	9.03	0.418	7.25	150	4.69	115	21			
	0909	7	8.89	0.417	7.35	69.7	4.72	108	28			CLEARING
	0915	7	8.80	0.417	7.42	63.7	4.76	104	35			
	0921	7	8.68	0.418	7.43	56.0	4.78	98	42			
	0927	7	8.70	0.421	7.52	106	4.80	93	49			
	0933	7	8.48	0.426	7.54	65.3	4.75	80	55			
	0940	7	8.47	0.426	7.55	47.3	4.63	77	62			RETURN TO 1036 DISPOSE OF IDW
	1117	7	8.54	0.425	7.65	288	4.48	146	69			
	1135	7	8.32	0.422	7.76	>1000	4.53	127	76			
	1140	7	8.28	0.427	7.75	74.7	4.07	105	83			
	1145	7	8.34	0.426	7.75	40.3	4.03	101	90			
	1150	7	7.93	0.431	7.73	37.4	4.08	94	97			
	1153	3.5	8.39	0.430	7.70	41.5	3.99	93	100.5			DEVELOPMENT COMPLETE
							RL 4/20/2021					WATER QUALITY PARAMETERS

STABLE, TURBIDITY DID NOT DROP < 10 NTU

Recorded By: 2L 4/20/2021

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment Well ID: WBGmw-018

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: 04/19/21 NA

Personnel: Danielle Andersen

Date and Time: Start: 1248 4/19/21 Complete: 1325 4/19/21

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

Monitoring Method(s): ☐ PID ☐ LEL ☒ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 40 gallons.

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	8P235CAF	4/19/21
Water Level Tape:	41832	N/A
Other:		
Other:		
Other: DA 04/19/21		
Other:		
Other:		

Recorded By: 04/19/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **WBGmw-018**

Depths (btoc): **14.45** Top of Screen **24.45** Bottom of Screen **11.95** Top of Filter Pack 16.25 Depth to Water **24.7** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ________

2" (0.163) Casing diam (vol. of c
6" (1.469) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume
Vc = Riser Casing Volume
Vf = Filter Pack Volume

Vt (Total Well Volume) = 3.724 gallons
5x VT = 18.6196 gallons

Vc = (Height of water column) x (Volume of casing per foot)
Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per
Vc = (24.7 - DTW 16.25) * 0.163 = 1.377
Vf = [(24.7 - DTW 16.25) * 1.469 * 0.3] - [(24.7 - DTW 16.25) * 0.163] = 2.347
Vt = Vc 1.377 + Vf 2.347 = 3.724

Site Conditions: Partly sunny, 62°F slight breeze
JS 4/27/21

Field Observations: Well located off of road in the brush.
10 well volumes removed for stability. Flowing at about ≈1.25 gal/min.
JS 4/27/21

Deviations from Approved SAP: None
JS 4/27/21

Recorded By: 04/19/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-018

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
4/19/21	1248	0	12.17	0.167	5.91	25.4	12.53	244	0	N/A	N/A	Initial, clear, colorless (Brown tint), odorless
4/19/21	1253	4	10.47	0.090	5.76	0.0	9.67	243	4			Clear, colorless, odor less
4/19/21	1256	4	9.94	0.860	5.80	0.0	6.46	246	8			
4/19/21	1259	4	9.59	0.087	5.93	0.0	12.57	243	12			
4/19/21	1302	4	9.56	0.087	5.81	0.0	8.05	252	16			
4/19/21	1307	4	9.34	0.090	6.43	0.0	8.67	222	20			
4/19/21	1310	4	9.36	0.087	6.00	0.0	7.62	247	24			
4/19/21	1314	4	9.03	0.089	6.51	0.0	11.95	224	28			
4/19/21	1317	4	9.03	0.089	6.06	0.0	5.47	247	32			
4/19/21	1322	4	8.90	0.087	6.05	0.0	5.38	250	36			
4/19/21	1325	4	8.88	0.088	6.05	0.0	5.69	247.	40			Final, Stable

DA 04/19/21

Recorded By: 04/19/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-019

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: R LAURICH

Date and Time: Start: ~~4/19/2020~~ 4/19/2021 1130 Complete: 1212 4/19/20

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☐ Other: PROACTIVE MINI MONSOON

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 73

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	34027	4/19/2021
Water Level Tape:	39082	NA
Other:		
Other:		
Other:		
Other:		
Other:		

Re 4/19/2021

Recorded By: 4/19/2021

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **WBGmw-019**

Depths (btoc): **40.5** Top of Screen | **50.5** Bottom of Screen | **37.95** Top of Filter Pack | 17.64 Depth to Water | **50.8** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ______

2" (0.163) Casing diam (vol. of c
6" (1.469) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume

Vc = Riser Casing Volume

Vf = Filter Pack Volume

Vt (Total Well Volume) = 14.6 gallons

5x VT = 73 gallons

Vc = (Height of water column) x (Volume of casing per foot)

Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per

Vc = (50.8 - DTW 17.64) * 0.163 = 5.4

Vf = [(50.8 - DTW 17.64) * 1.469 * 0.3] - [(50.8 - DTW 17.64) * 0.163] = 9.2

Vt = Vc 5.4 + Vf 9.2 = 14.6

Site Conditions: NO ACTIVITIES IN AREA. 4/19/2021

Field Observations: WATER CLEAR / COLORLESS / ODORLESS

WELL REDEVELOPED AFTER 5X WELL VOLUME REMOVED

DETICATED 3FT. SUBMERSIBLE PUMP 4/19/2021

Deviations from Approved SAP: NONE. 4/19/2021

Recorded By: 4/19/2021

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: WBGmw-019

Date	Time	Gallons Removed	Temp (oC)	Specific Cond. (mS/cm)	pH (std. unit)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	eH (mV)	Total Gallons Removed	Flow Rate (gal/min)	Water Level (ft btoc)	Comments
			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
4/19/2021	1139	14.6	11.00	~~6.51~~ 0.531 4/19/2021	6.51	0.0	2.60	112	14.6	N/A	N/A	1 WELL VOL.
	1150	14.6	10.65	0.477	7.27	0.0	2.35	51	29.2			2 WELL VOL.
	1157	14.6	10.38	0.465	7.42	0.0	2.44	35	43.8			3 WELL VOL.
	1205	14.6	10.27	0.465	7.42	0.0	2.48	26	58.4			4 WELL VOL.
	1212	14.6	10.19	0.465	7.46	0.0	2.37	23	73.0			5 WELL VOL.
												* DEVELOPMENT COMPLETE

RC
4/19/2021

Recorded By: 4/19/2021

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: FBQmw-173

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: Danielle Anderson

Date and Time: Start: 1235 4/20/21 Complete: 1404 4/20/21

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☐ Other: mini monsoon

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 28.5 Gallons

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	8P2356AF	04/20/21
Water Level Tape:	41832	N/A
Other:		
Other:		
Other:	DA 04/20/21	
Other:		
Other:		

Recorded By: 04/20/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **FQBmw-173**

Depths (btoc): **33.01** Top of Screen **53.01** Bottom of Screen **30.01** Top of Filter Pack 45.57 Depth to Water **53.51** Total Depth

Well Construction: [✓ PVC] Stainless Steel Other: ______ **2" (0.163)** Casing diam (vol. of c **6" (1.469)** Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume

Vc = Riser Casing Volume

Vf = Filter Pack Volume

Vt (Total Well Volume) = 3.499 gallons

5x VT = 17.496 gallons

Vc = (Height of water column) x (Volume of casing per foot)

Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per

Vc = (53.51 - DTW 45.57) * 0.163 = 1.294

Vf = [(53.51 - DTW 45.57) * 1.469 * 0.3] - [(53.51 - DTW 45.57) * 0.163] = 2.205

Vt = Vc 1.294 + Vf 2.205 = 3.499

Site Conditions: 46°F Cloudy Slight breeze

JS 4/27/21

Field Observations: Water intially is pink, turbid and odorless, pink due to algae. Water quickly becomes clear, before first well volume, with slight pink tint. Becomes clear and colorless during second well volume

Deviations from Approved SAP: None

JS 4/27/21

Recorded By: 04/20/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: FBQmw-173

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
04/20/21	1235	0	10.57	0.138	7.20	747	12.03	56	0	N/A	N/A	Initial
04/20/21	1238	3.5	10.77	0.104	6.00	159	11.37	53	3.5	N/A	N/A	first well volume
04/20/21	1245	3.5	10.90	0.108	5.91	36.2	2.09	53	7	N/A	N/A	Second well volume
04/20/21	1250	3.5	10.95	0.105	5.67	34.7	2.26	83	10.5	N/A	N/A	Third well volume
04/20/21	1304	3.5	10.81	0.108	5.85	12.0	2.28	72	14.0	N/A	N/A	Fourth well volume
04/20/21	1312	3.5	10.76	0.108	5.67	11.2	2.30	86	17.5	N/A	N/A	Fifth well volume
04/20/21	1319	1.25	10.77	0.103	5.67	30.4	3.89	90	18.75	N/A	N/A	
04/20/21	1345	2.25	10.88	0.102	5.52	19.3	3.83	70	21.0	N/A	N/A	
04/20/21	1354	2.50	10.93	0.104	5.76	2.3	2.25	86	23.5	N/A	N/A	
04/20/21	1359	2.50	10.83	0.105	5.82	10.3	2.20	84	26.0	N/A	N/A	
04/20/21	1404	2.50	10.93	0.108	5.95	8.6	2.35	78	28.5	N/A	N/A	Stable

DA 04/20/21

Recorded By: 04/20/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment **Well ID:** LL3mw-245

Activity: ☐ Purge ☑ Development Sample ID NA Date/Time: NA

Personnel: K. LAURICH

Date and Time: Start: 4/20/2021 1407 Complete: 4/21/2021 1041

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☐ Other: MMI monsoon

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 88

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	34027	4/20/2021
Water Level Tape:	39082	NA
Other:	Rc	
Other:		
Other:	4/20/2021	
Other:		
Other:		

Recorded By: 4/20/2021

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **LL3mw-245**

Depths (btoc): **39.04** Top of Screen **49.04** Bottom of Screen **35.54** Top of Filter Pack 12.75 Depth to Water **49.24** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ______

2" (0.163) Casing diam (vol. of c

5" (1.02) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume

Vc = Riser Casing Volume

Vf = Filter Pack Volume

Vt (Total Well Volume) = 11.17 gallons

5x VT = 55.85 gallons

Vc = (Height of water column) x (Volume of casing per foot)

Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per

Vc = (49.24 - DTW 12.75) * 0.163 = 5.95

Vf = [(49.24 - DTW 12.75) * 1.02 * 0.3] - [(49.24 - DTW 12.75) * 0.163] = 5.22

Vt = Vc 5.95 + Vf 5.22 = 11.17

Site Conditions: CALM, NO ACTIVITIES.

JS 4/27/21

Field Observations: NO DEDICATED WELL PUMP, TUBING PRESENT.

WATER IS CLEAR + COLORLESS, SLIGHT SULFUR LIKE ODOR.

DEAD ANTS + DEAD ANT BODY PARTS IN WATER.

Deviations from Approved SAP: NONE

TL / 4/21/2021

Recorded By: 4/20/2021

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LL3mw-245

Date	Time	Gallons Removed	Temp (oC) ±0.5°C	Specific Cond. (mS/cm) ±3%	pH (std. unit) ±0.2	Turbidity (NTU) ±10%	Dissolved Oxygen (mg/L) ±10% or 0.2 mg/L (whichever is greater)	eH (mV) ±20 mV	Total Gallons Removed	Flow Rate (gal/min)	Water Level (ft btoc)	Comments
4/20/24	1413	11	12.15	0.725	7.32	5.7	3.57	-43	11	NA	NA	CLEAR / COLORLESS / ANT + ANT
↓	1420	11	11.92	0.719	7.53	0.4	3.28	-34	22	↓	↓	BODY PARTS PRESENT
	1427	11	11.74	0.723	7.59	0.0	2.91	-30	33			SULFUR LIKE ODOR
4/21/24	1013	11	9.29	0.790	6.32	0.3	2.89	77	44			↓
↓	1020	11	9.23	0.758	6.87	0.1	3.65	5	55			
	1027	11	9.40	0.753	6.96	0.0	2.10	-13	66			
	1034	11	9.46	0.754	7.03	0.0	1.95	-25	77			
	1041	11	9.53	0.749	7.07	0.5	2.08	-28	88			DEVELOPMENT COMPLETE
												AT 4/21/24 7+ WELL VOLUMES

RL
4/21/2024

Recorded By: RL 4/20/2024

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LL12mw-244

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: Danielle Anderson

Date and Time: Start: 1006 ~~4/21/20~~ 4/21/21 Complete: 1455 4/21/21

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

Monitoring Method(s): ☐ PID ☐ LEL ☒ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 27.5 Gallons

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	8P2356AF	04/21/21
Water Level Tape:	41832	N/A
Other:		
Other:		
Other:		
Other:		
Other:		

DA 04/21/21

Recorded By: 04/21/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **LL12mw-244**

Depths (btoc): **22.05** Top of Screen | **32.05** Bottom of Screen | **18.55** Top of Filter Pack | 11.26 Depth to Water | **32.05** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ____

2" (0.163) Casing diam (vol. of c

8" (2.78) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume

Vc = Riser Casing Volume

Vf = Filter Pack Volume

Vt (Total Well Volume) = 5.4 gallons

5x VT = 27.01 gallons

Vc = (Height of water column) x (Volume of casing per foot)

Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per

Vc = (32.05 - DTW 11.26) * 0.163 = 3.3888

Vf = [(32.05 - DTW 11.26) * 2.78 * 0.3] - [(32.05 - DTW 11.26) * 0.163] = 2.014

Vt = Vc ____ + Vf ____ = 5.4

Site Conditions: 32°F, cloudy, snowing. ~~JS 4/27/21~~

Field Observations: Water is initially gray, turbid, and odorless and remains that way through 5 well volumes ~~JS 4/27/21~~

Deviations from Approved SAP: None ~~JS 4/27/21~~

Recorded By: 04/21/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LL12mw-244

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
04/21/21	1006	0	8.33	0.291	9.73	167	6.60	165	0	N/A	N/A	Initial
04/21/21	1038	5.5	8.03	0.499	7.37	649	3.59	68	5.5	N/A	N/A	first well volume
04/21/21	1040											well dry
04/21/21	1138	5.5	5.25	0.000	8.14	351	15.16	148	11	N/A	N/A	second well volume
04/21/21	1139											well dry
04/21/21	1245	5.5	8.25	0.520	7.55	1000	9.50	72	16.5	N/A	N/A	Third well volume
04/21/21	1246											well dry
04/21/21	1345	5.5	10.23	0.503	7.60	1000	6.26	73	22	N/A	N/A	Fourth well volume
04/21/21	1346									27.5	N/A	N/A	well dry
04/21/21	1455	5.5	10.69	0.517	7.47	1000	3.28	32	27.5	N/A	N/A	Fifth well volume
												well dry
												* Turbidity over 1,000 NTU,
												maximum horiba can read.

JS 4/27/21

Recorded By: Daniel

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 4

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LL12mw-246

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: R. Larich Danielle Anderson (04/22/21)

Date and Time: Start: 4/21/2021 1315 Complete: 4/22/21 1353

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

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 76.25

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	34027	4/21/2021
Water Level Tape:	39082	NA
Other:		
Other:		
Other:	4/21/2021	
Other:		
Other:		

Recorded By: 4/21/2021

04/22/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 4

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **LL12mw-246**

Depths (btoc): **24.33** Top of Screen **34.33** Bottom of Screen **19.83** Top of Filter Pack 16.10 Depth to Water **34.33** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ______

2" (0.163) Casing diam (vol. of c
8" (2.78) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume
Vc = Riser Casing Volume
Vf = Filter Pack Volume

Vt (Total Well Volume) = 15.20 gallons
5x VT = 76 gallons

Vc = (Height of water column) x (Volume of casing per foot)
Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per
Vc = (34.33 - DTW 16.10) * 0.163 = 2.97
Vf = [(34.33 - DTW 16.10) * 2.78 * 0.3] - [(34.33 - DTW 16.10) * 0.163] = 12.23
Vt = Vc 2.97 + Vf 12.23 = 15.2

Site Conditions: No ACTIVITIES.
JB 4/27/21

Field Observations: 28°F mostly sunny. Ground saturated, walked buckets.

Deviations from Approved SAP: None
JB 4/27/21

Recorded By: 4/21/2021
Dark And 04/22/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 4

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LL12mw-246

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
4/21/2021	1315	8.5	—	—	—	—	—	—	8.5	NA	NA	DRY AT 8.5 GAL.
	1326	2.5	—	—	—	—	—	—	11.0			DRY AT 2.5 ~~11.0~~ GAL. TRACE SAND
	1331	2.5	—	—	—	—	—	—	13.5			DRY AT ~~13.5~~ 4/21/2021 2.5 GAL
	1343	2.0	9.18	0.846	7.72	355	4.74	-13	15.5			DRY AT 2.0 GAL. 1+ WELL VOLUME.
	1357	3.0	—	—	—	—	—	—	18.5			DRY AT 3.0 GAL.
	1420	3.5	—	—	—	—	—	—	22.0			DRY AT 3.5 GAL
4/22/21	0916	8.5	8.11	0.915	6.73	1000	9.61	47	30.5	N/A	N/A	WL 16.16 ft at start of day 2
	0917									N/A	N/A	Well dry after second well volume
	0938	4.25		~~0~~ DA 04/22/21			~~8.61~~ DA 04/22/21	~~112~~ DA 04/22/21	34.75	N/A	N/A	well dry
	0957	3.5							38.25	N/A	N/A	well dry
	1017	3.25							41.5	N/A	N/A	well dry
	1038	4.0	8.76	0.878	7.12	611	8.61	112	45.5	N/A	N/A	well dry after third well volume
	1055	3.0							48.5	N/A	N/A	well dry
	1115	3.0							51.5	N/A	N/A	well dry
	1134	3.0							54.5	N/A	N/A	well dry
	1155	3.5							58.0	N/A	N/A	well dry

Recorded By: 4/21/2021

4/22/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 4 of 4

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LL12mw-246

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
4/22/21	1214	3	9.72	0.862	7.24	468	11.56	90	61.0	N/A	N/A	fourth well volume and went dry.
	1235	3.25							64.25	N/A	N/A	well dry
	1255	3.25							67.5	N/A	N/A	well dry
	1315	3.00							70.5	N/A	N/A	well dry
	1335	3.00							73.5	N/A	N/A	well dry
	1353	2.75	8.54	0.874	7.38	319	6.80	80	76.25	N/A	N/A	fifth well volume, went dry

DA 04/22/21

Recorded By: Daniel 04/22/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LLmw-079

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: RichSprinzl, Leidos

Date and Time: Start: 04/26/21 1049 Complete: 04/27/21

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☒ Other: Mini Monsoon pump

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: NA

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 8.75

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	DB340C28	4/26/21 - 4/27/21
Water Level Tape: Solinst 100'	39306	NA
Other:		
Other:		
Other: DA 05/07/21		
Other:		
Other:		

Recorded By: 04/26/21 04/27/21

QA Checked By: 05/07/21

WELL DEVELOPMENT FORM

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **LL1mw-079**

Depths (btoc): **32.07** Top of Screen | **41.47** Bottom of Screen | **26.53** Top of Filter Pack | 33.32 Depth to Water | **42.03** Total Depth

Well Construction: [✓ PVC] Stainless Steel Other: NA

2" (0.163) Casing diam (vol. of c
4" (0.653) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume
Vc = Riser Casing Volume
Vf = Filter Pack Volume

Vt (Total Well Volume) = 1.70 gallons
5x VT = 8.5 gallons

Vc = (Height of water column) x (Volume of casing per foot)
Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per
Vc = (42.03 - DTW 33.32) * 0.163 = 1.42
Vf = [(42.03 - DTW 33.32) * 0.653 * 0.3] - [(42.03 - DTW 33.32) * 0.163] = 0.28
Vt = Vc 1.42 + Vf 0.28 1.20 = 1.70

Site Conditions: grissy mowed area along treeline

Field Observations: Existing 1/4"x 1/4" dual tubing. Use Mini Monsoon pump to surge + redevelop well.
Well went dry after each well volume/recharge.
Initially water very turbid/dark brown; turbidity decreased between well volume/recharge cycles.
*5 well volumes removed with improved turbidity/clearing/Not able to obtain stable readings ⇒ Redevelopment concluded.

Deviations from Approved SAP: None.

Recorded By: 04/26/21 + 04/27/21

QA Checked By: 05/07/21

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LLmw-079

Date	Time	Gallons Removed	Temp (oC) ±0.5°C	Specific Cond. (mS/cm) ±3%	pH (std. unit) ±0.2	Turbidity (NTU) ±10%	Dissolved Oxygen (mg/L) ±10% or 0.2 mg/L (whichever is greater)	eH (mV) ±20 mV	Total Gallons Removed	Flow Rate (gal/min)	Water Level (ft btoc)	Comments
04/26/21	1049	0	9.78	0.216	7.79	>800	7.94	189	0	1	33.32	Surged w/pump Initial water is very dark brown/turbid
	1051	1.75	NM	NM	NM	NM	NM	NM	1.75	1	ND	Turbidity ↓, but WL dropping, then well went dry (1X VT Removed)
	1112	0	11.01	0.240	7.33	390	8.21	192	1.75	1	35.20	Recharged for 20min. Resurged. Moderate turbidity/brown
	1114	1.5	NM	NM	NM	NM	NM	NM	3.25	1	ND	well went dry
	1516	0	12.33	0.286	7.74	106	16.02	171	3.25	1	33.50	Recharged for ~4 hours. Resurged moderate turbidity
	1519	2	13.33	0.246	7.58	33.9	7.40	176	5.25	1	ND	Turbidity ↓, then WL dropping until well went dry. (2X+3X VT Removed)
04/27/21	0844	0	10.56	0.273	6.77	81.3	7.07	245	5.25	1	33.33	Recharged overnight, Resurged moderate turbidity
	0846	1.75	NM	NM	NM	NM	NM	NM	7.0	1	ND	Turbidity ↓ (some suspended solids Went Dry. 4X VT Removed.
	0911	0	10.64	0.289	7.13	49.8	12.60	235	7.0	1	34.00	Recharged for 25min. Slightly turbid/light orange brown
	0913	1.75	10.56	0.291	7.06	22.5	5.38	232	8.75	1	ND	Clearing/turbidity ↓ → mostly clear to clear/No color. 5x VT removed.
	NA										RS 4/27/21	well went dry. No fines ~~R~~ Redevelopment Concluded
				RS 4/27/21								

Recorded By: 04/26/21 + 04/27/21

QA Checked By: 05/07/21

WELL DEVELOPMENT FORM

Page: 1 of 3

Project Name: RVAAP FWGWMP Well Redevelopment Well ID: LL1mw-082

Activity: ☐ Purge ☑ Development Sample ID: NA Date/Time: NA

Personnel: Danielle Anderson

Date and Time: Start: 0832 Complete: 1440

Purge Method(s): ☐ Bailer ☐ Bladder Pump ☐ Other: Whaler pump

Monitoring Method(s): ☐ PID ☐ LEL ☐ H2S ☐ CO ☐ Other: N/A

	PID	LEL	H2S	CO	Other
ID:	NA	NA	NA	NA	NA
Initial Reading	NA	NA	NA	NA	NA

Total Volume of Water Removed (Gallons): 26.5

FIELD INSTRUMENT	SERIAL NUMBER	DATE OF LAST CALIBRATION
Water Quality: Horiba U-52	34026	05/07/21
Water Level Tape: Solinst	41832	N/A
Other:		
Other:		
Other: DA 05/07/21		
Other:		
Other:		

Recorded By: Dan 05/07/21

QA Checked By:

WELL DEVELOPMENT FORM

Page: 2 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: **LL1mw-082**

Depths (btoc): **28.9** Top of Screen **38.45** Bottom of Screen **24.15** Top of Filter Pack **29.45** Depth to Water **41.39** Total Depth

Well Construction: ☑ PVC ☐ Stainless Steel ☐ Other: ______

2" (0.163) Casing diam (vol. of c
4" (2.61) Borehole (vol. of bore

Well Volume: Vt = Vc + Vf Where Vt = Total Well Volume
Vc = Riser Casing Volume
Vf = Filter Pack Volume

Vt (Total Well Volume) = 9.34 gallons
5x Vt = 46.7 gallons

Vc = (Height of water column) x (Volume of casing per foot)
Vf = (((Saturated thickness of filter pack) x (Volume of bore hole per foot)) x (0.3) - ((Satuated thickness of filter pack) x (Volume of casing per
Vc = (41.39 - 29.45) * 0.163 = 1.94
Vf = [(41.39 - 29.45) * 2.61 * 0.3] - [(41.39 - 29.45) * 0.163] =7.40
Vt = Vc 1.94 + Vf 7.40 = 9.34

Site Conditions: 41°F cloudy, rain
----------------------------------JS 7/21/2021--

Field Observations: Orange, turbid, odorless initially and slowly becomes clearer throughout first well volume. Well continuously goes dry. Hard bottom.
--------------------------JS 7/21/20201

Deviations from Approved SAP: N/A
-------------------JS 7/21/2021-------------------------

Recorded By: 05/07/21

QA Checked By:

WELL DEVELOPMENT LOG

Page: 3 of 3

Project Name: RVAAP FWGWMP Well Redevelopment

Well ID: LL1 mw-082

			±0.5°C	±3%	±0.2	±10%	±10% or 0.2 mg/L (whichever is greater)	±20 mV				
Date	**Time**	**Gallons Removed**	**Temp (oC)**	**Specific Cond. (mS/cm)**	**pH (std. unit)**	**Turbidity (NTU)**	**Dissolved Oxygen (mg/L)**	**eH (mV)**	**Total Gallons Removed**	**Flow Rate (gal/min)**	**Water Level (ft btoc)**	**Comments**
05/07/21	0832	0.0	8.51	0.310	5.92	1,000	103.6	127	0.0	N/A	N/A	initial reading
	0835	3							3			went dry
	0935	4							7			went dry, clear, colorless, odorless
	1002	2.5	8.48	0.290	6.02	140	20.77	127	9.5			first well volume, went dry
	1115	3.5							13.0			went dry, resurged well before purge
	1152	3							16.0			went dry, orange & turbid after resurge
	1244	3	8.82	0.216	7.15	120	7.36	51	19.0			2nd well volume, well dry
	1336	3							22.0			went dry, still a light orange tint
	1426	3.5	11.19	0.213	7.33	61.9	9.53	15	25.5			went dry very slight orange tint
	1439	1	11.37	0.207	7.40	59.8	5.17	-1	26.5			well went dry
	1440											Development concluded

DA 05/07/21

Recorded By: 05/07/21

QA Checked By:

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APPENDIX H

Ohio EPA Comments

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Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

January 4, 2022

TRANSMITTED ELECTRONICALLY

Mr. Kevin Sedlak
Restoration Program Manager
ARNG-ILE Clean Up
Camp James A Garfield JTC
1438 State Route 534 SW
Newton Falls, OH 44444

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

Subject: Response to Ohio EPA Comments on the "Draft RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 Sampling Event" dated December 7, 2021

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Response to Ohio EPA Comments on the "Draft RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 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) via email on December 7, 2021. The response 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.

Based on our review of the Army National Guard's Response to Ohio EPA comments provided in your letter dated December 7, 2021, we find the responses generally acceptable, and the document can be finalized. Please be sure that all agreed-upon changes, additions and clarifications are provided in the final document.

RECEIVED
JAN 04 2022

At this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record. If you have questions, you can reach me at kevin.palombo@epa.ohio.gov, or by email at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/ams

ec. Rebecca Shreffler, Chenega Tri-Services
Katie Tait, OHARNG RTLS
Bob Princic, Ohio EPA, NEDO, DERR
Natalie Oryshkewych, Ohio EPA, NEDO, DERR
Thomas Schneider, Ohio EPA, SWDO, DERR
Liam McEvoy, Ohio EPA, NEDO, DERR
Carrie Rasik, Ohio EPA, Central Office, DERR
Steven Kvaal, USACE Louisville
Nat Peters, USACE Louisville

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

December 7, 2021

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 RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 Sampling Event (Work Activity No. 267-000-859-036)

Dear Mr. Palombo:

The Army appreciates your comments on the Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 Sampling Event. Enclosed for your review are responses to your comments. Upon final resolution of the comments, the Army will provide a Final version of the report for Ohio EPA concurrence.

These comment responses were prepared for the Army National Guard in support of the RVAAP Restoration Program. Please contact the undersigned at 614-336-6000, ext 2053 or kevin.m.sedlak.ctr@army.mil if there are issues or concerns with this submission.

Sincerely,

Kevin M. Sedlak
RVAAP Restoration Program Manager
Army National Guard Directorate

ec: Natalie Oryshkewych, 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
Megan Oravec, Ohio EPA, NEDO, DERR
Katie Tait, OHARNG, Camp James A. Garfield
Mark Leeper, ARNG
Steve Kvaal, USACE Louisville
Jay Trumble, USACE Louisville
Vasu Peterson, Leidos
Jed Thomas, Leidos
Rebecca Shreffler, Chenega Tri-Services

Subject: Former Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 Sampling Event (Work Activity No. 267-000-859-036)

COMMENTS

Ohio EPA Comment 1: Data Summary Completeness: Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2021 indicated that all 53 wells were analyzed for the proper analytical parameters in accordance with the Draft FWGWMP Addendum for 2021 (well-specific combinations of VOCs, SVOCs, PAHs, phenols, PCBs, perchlorate, explosives, phthalates, pesticides, cyanide, phosphorus, anions, pH, alkalinity, nitrate, ammonia, carbon tetrachloride and metals). Table 4-1 generally presented summaries of all the available well-specific data results, but (when compared to Appendix D.1 and Appendix D.3 tables) did not appear to list the calcium results of 130 mg/L from DET-004 (exceeding background concentration of 107 mg/L). Also, while HMX was detected in WBGmw-006 but was not shown on table Appendix D.3 (while it did not exceed the Tap water RSL 0.1 mg/L criteria, other explosives were listed on Appendix D.3 that also did not exceed screening criteria/did not have screening criteria). Numerous explosives concentrations were shown on the Appendix D.3 exceedance table when no screening level criteria have been identified for those compounds.

Please verify that all applicable results are summarized on Table 4-1 and included in Appendix D.1 and Appendix D.3 tables as appropriate. As a suggestion, it may be clearer to have an Appendix D.3 table that denotes all laboratory detections, and then presents just the exceedances in bold font, that way both detections and exceedances are clearly denoted and comparing two or three tables is not necessary.

> *Army Response*: Clarification and agree. Since calcium is considered an essential nutrient, the calcium result was not discussed. The following text has been added to Section 4.0: "Chemicals that are considered essential nutrients (e.g., calcium, chloride, iodine, iron, magnesium, potassium, phosphorus, and sodium) are an integral part of the human food supply and often are added to food as supplements. These essential nutrients are not discussed in Table 4-1 to streamline the narrative."
>
> Appendix D.3 has been revised to present "Spring 2021 Detected Concentrations". In this revised table, all detected concentrations are presented and sorted by well. A column is added to the right of the table that presents the following for each detection "Result Exceed Screening and Background Criteria (Y/N)?" This new column would be added instead of bolding the exceedances.

Ohio EPA Comment 2: Well Redevelopment – Elevated Turbidity Results: Section 6.0 Well Redevelopment of the Draft FWGWMP Semi-Annual Report for Spring 2021 indicated that 11 permanent monitoring wells (FBQmw-173, LL1mw-079, LL1mw-082, LL3mw-245, LL12mw-244, LL12mw-246, WBGmw-007, WBGmw-008, WBGmw-014, WBGmw-018, and WBGmw-019) were redeveloped following Section 3.5.2 of the approved Revised Final Remedial Investigation Work Plan (RIWP) produced by TEC-Weston dated December 21, 2016, and in accordance with Ohio EPA's Technical Guidance Manual for Ground Water Investigations – Chapter 8: Monitoring Well Development, Maintenance, and Redevelopment (Ohio EPA 2009). According to the Turbidity Value Table 6-1, five of these wells achieved post-redevelopment readings of <10 NTUs, while six of the wells exceeded 10 NTUs. During sampling of these 11 wells (one to two weeks later), 10 wells were found to have <10 NTUs, while only one exceeded 10 NTUs, with reading of 7,537.2 NTUs from well LL12mw-244.

Please explain any future plans using methods other than surging and pumping until dry (such as purging with a Waterra pump or equivalent) to further redevelop/improve well LL12mw-244, or other wells that may have similar turbidity issues in the future.

> *Army Response*: Clarification. At this time, there are not specified different methods to redevelop/improve well LL12mw-244. This well will continue to be analyzed for COCs identified in the RI Report (nitrate and ammonia). While the Army took proactive measures to redevelop this well in Spring 2021, nitrate and ammonia are not influenced by elevated turbidity. The high turbidity associated with this well does not appear to create issues with the dataset and risk management decisions. Any future methods to develop this well (if different) or replacement of LL12mw-244 (or any other well) will be communicated to Ohio EPA.

Ohio EPA Comment 3: Chemical Specific Screening Criteria: Appendix D.2: Chemical Specific Screening Criteria does not contain screening criteria for cis-1,2-dichloroethene (CAS 156-59-2) or trans-1,2-dichloroethene (CAS 156-60-5). Both chemicals have MCL values available. Please explain why these two chemicals are not listed in Appendix D.2.

> *Army Response*: Clarification. Cis-1,2-dichloroethene (CAS 156-59-2) and trans-1,2-dichloroethene (CAS 156-60-5) were not analyzed in Spring 2021; therefore, these chemicals are not listed in Appendix D.2. 1,2-Dichloroethene was analyzed, and the respective MCL (0.07 mg/L) is presented in Appendix D.2.

Ohio Environmental
Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

November 19, 2021

TRANSMITTED ELECTRONICALLY

Mr. Kevin Sedlak
Restoration Program Manager
ARNG-ILE Clean Up
Camp James A Garfield JTC
1438 State Route 534 SW
Newton Falls, OH 44444

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

Subject: Ohio EPA Comments on the "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 Sampling Event" dated August 31, 2021

Dear Mr. Sedlak:

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 2021 Sampling Event"** (Draft FWGWMP Semi-Annual Report for Spring 2021) at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio (Camp Garfield). This document was received at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on August 31, 2021. The report 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. Comments on the document based on Ohio EPA review are provided below. Please provide responses to the comments in accordance with the Director's Findings and Orders.

DRAFT FWGWMP SEMI-ANNUAL REPORT FOR SPRING 2021

The Draft FWGWMP Semi-Annual Report for Spring 2021 summarizes ground water monitoring activities conducted during the Spring 2021 sampling event, and provides descriptions of field activities performed, presents field and analytical results, and evaluates chemical data collected per the approved ground water sampling scheme specified in the Draft FWGWMP Addendum for 2021 dated February 17, 2021.

According to the Draft FWGWMP Addendum for 2021, a total of 53 wells, including five Resource Conservation and Recovery Act (RCRA) wells, were slated for resampling in 2021.

47 wells (including RCRA wells) were sampled 2020 under the FWGWMP. Based on those results, nine of these wells were discontinued from sampling, while a new set of 15 wells (not sampled in 2020) were added to the list to achieve the total of 53 wells.

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NOV 19 2021

According to Section 3.1, Table 3-1, and Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2021, all 53 wells specified in the Draft FWGWMP Addendum for 2021 were sampled. Summary of findings is presented below:

- From April 26, 2021, through May 12, 2021 (Spring 2021 sampling event), a total of 53 of the facility's monitoring wells were sampled. This included sampling of the five semi-annual RCRA ground water wells.

- A review of Appendix B (Field Forms) included daily log sheets, well purge forms, chain of custody sheets, and calibration reports for field equipment.

- Section 3.2 (Page 3-2, line 156) documents the four previously approved field change requests submitted and applicable to the Spring 2021 sampling event, also included as Appendix A. No new field change requests were necessary for the Spring 2021 event. A total of four Ohio EPA approved field change request forms were included within Appendix C (LEIDOS_FWGW_001, LEIDOS_FWGW_004, and LEIDOS_FWGW_006 from 2018 and LEIDOS_FWGW_010 from 2019).

- Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2021 indicated that all 53 wells were analyzed for the proper analytical parameters in accordance with the Draft FWGWMP Addendum for 2021 (well-specific combinations of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), phenols, polychlorinated biphenyls (PCBs), perchlorate, explosives, phthalates, pesticides, cyanide, phosphorus, anions, pH, alkalinity, nitrate, ammonia, carbon tetrachloride and metals). Other than in Table 4-1, no other additional summary or evaluation of the data findings were presented in this report; further evaluation of the Spring 2021 data is expected to be presented along with the Fall 2021 data in the Draft FWGWMP Annual Report for 2021. Table 4-1 generally presented summaries of all the available well-specific data results, but (when compared to Appendix D.1 and Appendix D.3 tables) did not appear to list the calcium results of 130 mg/L from DET-004 (exceeding background concentration of 107 mg/L). Also, while HMX was detected in WBGmw-006 but was not shown on table Appendix D.3 (while it did not exceed the Tap water RSL 0.1 mg/L criteria, other explosives were listed on Appendix D.3 that also did not exceed screening criteria/did not have screening criteria). Numerous explosives concentrations were shown on the Appendix D.3 exceedance table when no screening level criteria have been identified for those compounds.

- Appendix D.3 presents Spring 2021 results that exceeded screening criteria; it appears 22 wells were found to contain one or more exceedances of screening criteria.

- A review of Appendix F (Data Quality Assessment Report) showed the data quality review of the analytical reports indicated that 100% of the data was qualified as usable, with some data qualified as estimated and no data points were rejected. Overall, the data quality assessment reported that the 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.

- Section 6.0 Well Redevelopment of the Draft FWGWMP Semi-Annual Report for Spring 2021 indicated that 11 permanent monitoring wells (FBQmw-173, LL1mw-079, LL1mw-082, LL3mw-245, LL12mw-244, LL12mw-246, WBGmw-007, WBGmw-008, WBGmw-014, WBGmw-018, and WBGmw-019) were redeveloped following Section 3.5.2 of the approved Revised Final Remedial Investigation Work Plan (RIWP) produced by TEC-Weston dated December 21, 2016, and in accordance with Ohio EPA's Technical Guidance Manual for Ground Water Investigations – Chapter 8: Monitoring Well Development, Maintenance, and Redevelopment (Ohio EPA 2009). According to the Turbidity Value Table 6-1, five of these wells achieved post-redevelopment readings of <10 Nephelometric Turbidity Units (NTUs), while six of the wells exceeded 10 NTUs. During sampling of these 11 wells (one to two weeks later), 10 wells were found to have <10 NTUs, while only one exceeded 10 NTUs, with reading of 7,537.2 NTUs from well LL12mw-244. Further discussion may be warranted to evaluate if additional potential well redevelopment activities using methods other than surging and pumping until dry (such as purging with a Waterra pump or equivalent) could help lower the elevated turbidity numbers in well LL12mw-244.

COMMENTS

1. Table 4-1 Data Summary Completeness:

Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2021 indicated that all 53 wells were analyzed for the proper analytical parameters in accordance with the Draft FWGWMP Addendum for 2021 (well-specific combinations of VOCs, SVOCs, PAHs, phenols, PCBs, perchlorate, explosives, phthalates, pesticides, cyanide, phosphorus, anions, pH, alkalinity, nitrate, ammonia, carbon tetrachloride and metals). Table 4-1 generally presented summaries of all the available well-specific data results, but (when compared to Appendix D.1 and Appendix D.3 tables) did not appear to list the calcium results of 130 mg/L from DET-004 (exceeding background concentration of 107 mg/L). Also, while HMX was detected in WBGmw-006 but was not shown on table Appendix D.3 (while it did not exceed the Tap water RSL 0.1 mg/L criteria, other explosives were listed on Appendix D.3 that also did not exceed screening criteria/did not have screening criteria). Numerous explosives concentrations were shown on the Appendix D.3 exceedance table when no screening level criteria have been identified for those compounds.

Please verify that all applicable results are summarized on Table 4-1 and included in Appendix D.1 and Appendix D.3 tables as appropriate. As a suggestion, it may be clearer to have an Appendix D.3 table that denotes all laboratory detections, and then presents just the exceedances in **bold** font, that way both detections and exceedances are clearly denoted and comparing two or three tables is not necessary.

2. Well Redevelopment – Elevated Turbidity Results:

Section 6.0 Well Redevelopment of the Draft FWGWMP Semi-Annual Report for Spring 2021 indicated that 11 permanent monitoring wells (FBQmw-173, LL1mw-079, LL1mw-082, LL3mw-245, LL12mw-244, LL12mw-246, WBGmw-007, WBGmw-008, WBGmw-014, WBGmw-018, and WBGmw-019) were redeveloped following Section 3.5.2 of the approved Revised Final Remedial Investigation Work Plan (RIWP) produced by TEC-Weston dated December 21, 2016, and in accordance with Ohio EPA's Technical Guidance Manual for Ground Water Investigations – Chapter 8: Monitoring Well Development, Maintenance, and Redevelopment (Ohio EPA 2009). According to the Turbidity Value Table 6-1, five of these wells achieved post-redevelopment readings of <10 NTUs, while six of the wells exceeded 10 NTUs. During sampling of these 11 wells (one to two weeks later), 10 wells were found to have <10 NTUs, while only one exceeded 10 NTUs, with reading of 7,537.2 NTUs from well LL12mw-244.

Please explain any future plans using methods other than surging and pumping until dry (such as purging with a Waterra pump or equivalent) to further redevelop/improve well LL12mw-244, or other wells that may have similar turbidity issues in the future.

This letter is an official response from Ohio EPA that will be maintained as a public record.

This **"Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2021 Sampling Event"** was reviewed by personnel from Ohio EPA. Additional information is necessary to approve the document. If you have questions or would like to set up a meeting to discuss these comments, you can contact me via email at kevin.palombo@epa.ohio.gov.

Sincerely,

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