Final

Facility-wide Groundwater Monitoring Program
RVAAP-66 Facility-wide Groundwater
Semi-Annual Report for Spring 2022 Sampling Event

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

Contract No. W912QR-21-D-0016
Delivery Order No. W912QR22F0186

Prepared for:

United States Army Corps of Engineers
Louisville District

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May 11, 2023

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This Semi-annual Report summarizes activities conducted in spring 2022 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 2022.

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Notice is hereby given that an independent technical review, 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: assumptions; methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level obtained; and reasonableness of the result, including whether the product meets the customer's needs consistent with law and existing Corps policy. All concerns and comments resulting from these independent technical reviews have been resolved.

Jed Thomas, PE, PMP Project Manager	May 11, 2023 Date
Ryan Laurich Independent Technical Review Team Leader	May 11, 2023 Date

Significant concerns and explanation of the resolutions are documented within the project file.

As noted above, all concerns resulting from the independent technical review of the document have been fully resolved.

Lisa Jones-Bateman Program Manager	May 11, 2023 Date

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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
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-21-D-0016, Delivery Order No. W912QR22F0186.

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 2022* (Leidos 2022b) (herein referred to as the 2022 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 2022 sampling performed in accordance with the 2022 Addendum.

1.2 OBJECTIVES

The primary objectives of the 2022 Addendum and subsequent sampling in spring and fall 2022 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 2022 Addendum supplements the FWGWMP Plan and discusses the subset of wells at the former RVAAP that will be monitored in 2022, the frequency of samples to be collected, and the chemicals that will be evaluated at each selected well. Contaminant trend analysis of the 2021 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 2021* (Leidos 2022c) (herein referred to as the 2021 Annual Report). In addition, the recommendations of the *Final Remedial Investigation Report for RVAAP-66 Facility-wide Groundwater* (Leidos 2022a) (herein referred to as the Final RI Report) were considered, and data collected to support the FS have been incorporated into the 2022 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 2022 FWGWMP based on the following criteria:

- **FWGWMP Criterion 1:** Wells representing critical exit pathway monitoring points (i.e., located along the CJAG boundary or downgradient from AOC concentration areas).
  - *Unconsolidated Aquifer*: LL1mw-064, LL1mw-086, LL1mw-087, LL1mw-089, FWGmw-004, FWGmw-007, FWGmw-011, FWGmw-015
  - *Upper Sharon Aquifer*: LL2mw-059, FWGmw-012, FWGmw-016, FWGmw-020, FWGmw-021, FWGmw-024
  - *Basal Sharon Conglomerate Aquifer*: SCFmw-004, FWGmw-018.
- **FWGWMP Criterion 2:** Wells representing primary AOC-specific contaminant source area conditions routinely monitored or indicated to be potentially increasing or otherwise potentially unstable plume conditions.
  - *Unconsolidated Aquifer:* DETmw-003, DETmw-004, LL1mw-063, LL1mw-089, LL12mw-185, LL12mw-187, WBGmw-006, WBGmw-009
  - *Homewood Aquifer:* FBQmw-174, FBQmw-175, LL10mw-003
  - *Upper Sharon Aquifer:* LL1mw-080, LL1mw-081, LL1mw-083, LL1mw-084, LL3mw-237, LL3mw-238, LL3mw-239, LL3mw-241
  - *Basal Sharon Conglomerate Aquifer:* None currently proposed.
- **FWGWMP Criterion 3:** Co-located wells used to establish the vertical distribution of contaminants within the stratigraphic sequence (includes all wells to date).
  - *East of Ramsdell Quarry Landfill:* FWGmw-011 (Unconsolidated Aquifer), FWGmw-012 (Upper Sharon Aquifer)
  - *Southeast of Load Line 1:* LL1mw-087 (Unconsolidated Aquifer), SCFmw-004 (Basal Sharon Conglomerate Aquifer)
  - *Post Boundary at Load Line 12:* FWGmw-020 (Upper Sharon Aquifer), FWGmw-018 (Basal Sharon Conglomerate Aquifer)
  - *Winklepeck Burning Grounds:* WBGmw-009 (Unconsolidated Aquifer), WBGmw-020 (Upper Sharon Aquifer)
  - *Post Boundary South of the CJAG Main Cantonment Area:* FWGmw-015 (Unconsolidated Aquifer), FWGmw-016 (Upper Sharon Aquifer).
- **FWGWMP Criterion 4 (new in 2021):** Wells refining the CSM or contaminant distribution associated with the areas recommended for evaluation within the FS.

- *Winklepeck Burning Grounds:* WBGmw-014, WBGmw-016, WBGmw-017, WBGmw-018
- *Load Line 1:* LL1mw-080, LL1mw-082, LL1mw-083, LL1mw-084, LL1mw-086, FWGmw-010
- *Load Line 2:* LL2mw-059
- *Load Line 3:* LL3mw-245
- *Load Line 12:* LL12mw-244, LL12mw-245, LL12mw-246, FWGmw-018, FWGmw-020
- *Fuze and Booster Quarry*: FBQmw-173, FWGmw-023.

1.3 REPORT ORGANIZATION

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

- Section 2.0. Background,
- Section 3.0. Spring 2022 Monitoring Event,
- Section 4.0. Results,
- Section 5.0 Data Quality Assessment,
- Section 6.0 Well Redevelopment, and
- Section 7.0. References.

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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. The wells are currently being monitored as part of the CERCLA program at CJAG in accordance with the DFFO (Ohio EPA 2009) 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* (TEC-Weston 2016) (herein referred to as the Remedial Investigation Work Plan [RIWP]) was developed. This RIWP served as a supplement to the FWGWMP Plan and specified 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 Final RI Report (Leidos 2022a) was approved by Ohio EPA in April 2022.

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3.0 SPRING 2022 MONITORING EVENT

The 2022 Addendum presented information to support the continued monitoring of AOC-specific contaminant concentrations, as indicated by an analysis of results through 2021. This included using data and results from the 2021 FWGMWP sampling events and findings of the Final RI Report (Leidos 2022a). To this end, 48 wells were selected for sampling in 2022. 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 2022 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 2022 and be presented in the 2022 annual report.

3.1 SPRING 2022 MONITORING WELL SAMPLING EVENT

From June 14 to June 28, 2022, all 48 wells specified in the 2022 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 activities at one monitoring well, LL1mw-064, deviated from the specifications outlined in the RIWP. Under Section 4.9.1 of the RIWP, a full 2-hour purge is required in the event turbidity readings below10 nephelometric turbidity units (NTUs) cannot be achieved. The duration of the purge at LL1mw-064 fell short of this requirement by approximately 5 minutes.

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 Denver, Colorado, via FedEx.

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.

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 2022 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. Three 55-gallon drums were used to containerize the estimated 140 gallons of liquid IDW generated. On June 28, 2022, 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 November 14, 2022, 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. This plan was approved by the Army. 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	
4	RVAAP-05 Winklepeck Burning Grounds	WBGmw-009	Unconsolidated			X							X	
5	RVAAP-05 Winklepeck Burning Grounds	WBGmw-014	Unconsolidated			X								
6	RVAAP-05 Winklepeck Burning Grounds	WBGmw-016	Unconsolidated			X								
7	RVAAP-05 Winklepeck Burning Grounds	WBGmw-017	Unconsolidated			X								
8	RVAAP-05 Winklepeck Burning Grounds	WBGmw-018	Unconsolidated			X							X	
9	RVAAP-05 Winklepeck Burning Grounds	WBGmw-020	Upper Sharon			X								
10	RVAAP-05 Winklepeck Burning Grounds	WBGmw-021	Upper Sharon			X								
11	RVAAP-08 Load Line 1	LL1mw-063	Unconsolidated			X								
12	RVAAP-08 Load Line 1	LL1mw-064	Unconsolidated			X								
13	RVAAP-08 Load Line 1	LL1mw-080	Upper Sharon			X							X	
14	RVAAP-08 Load Line 1	LL1mw-081	Upper Sharon			X								
15	RVAAP-08 Load Line 1	LL1mw-082	Upper Sharon			X								
16	RVAAP-08 Load Line 1	LL1mw-083	Upper Sharon			X							X	
17	RVAAP-08 Load Line 1	LL1mw-084	Upper Sharon			X							X	
18	RVAAP-08 Load Line 1	LL1mw-086	Unconsolidated			X								
19	RVAAP-08 Load Line 1	LL1mw-087	Unconsolidated			X								
20	RVAAP-08 Load Line 1	LL1mw-089	Unconsolidated			X								
21	RVAAP-09 Load Line 2	LL2mw-059	Upper Sharon			X							X	
22	RVAAP-10 Load Line 3	LL3mw-237	Upper Sharon			X								
23	RVAAP-10 Load Line 3	LL3mw-238	Upper Sharon			X							X	
24	RVAAP-10 Load Line 3	LL3mw-239	Upper Sharon			X							X	
25	RVAAP-10 Load Line 3	LL3mw-241	Upper Sharon			X								
26	RVAAP-10 Load Line 3	LL3mw-245	Upper Sharon			X								
27	RVAAP-12 Load Line 12	LL12mw-185	Unconsolidated									X		Ammonia
28	RVAAP-12 Load Line 12	LL12mw-187	Unconsolidated									X		Ammonia
29	RVAAP-12 Load Line 12	LL12mw-244	Unconsolidated									X		Ammonia
30	RVAAP-12 Load Line 12	LL12mw-245	Unconsolidated									X		Ammonia
31	RVAAP-12 Load Line 12	LL12mw-246	Unconsolidated									X		Ammonia
32	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-173	Homewood			X							X	
33	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-174	Homewood			X							X	
34	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-175	Homewood			X								
35	RVAAP-43 Load Line 10	LL10mw-003	Homewood				X							
36	RVAAP-66 Facility-wide Groundwater	FWGmw-004	Unconsolidated		X									
37	RVAAP-66 Facility-wide Groundwater	FWGmw-007	Unconsolidated		X									
38	RVAAP-66 Facility-wide Groundwater	FWGmw-010	Unconsolidated			X								
39	RVAAP-66 Facility-wide Groundwater	FWGmw-011	Unconsolidated		X									
40	RVAAP-66 Facility-wide Groundwater	FWGmw-012	Upper Sharon		X									
41	RVAAP-66 Facility-wide Groundwater	FWGmw-015	Unconsolidated		X									
42	RVAAP-66 Facility-wide Groundwater	FWGmw-016	Upper Sharon		X									
43	RVAAP-66 Facility-wide Groundwater	FWGmw-018	Basal Sharon									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
44	RVAAP-66 Facility-wide Groundwater	FWGmw-020	Upper Sharon									X		
45	RVAAP-66 Facility-wide Groundwater	FWGmw-021	Upper Sharon		X									
46	RVAAP-66 Facility-wide Groundwater	FWGmw-023	Upper Sharon		X									
47	RVAAP-66 Facility-wide Groundwater	FWGmw-024	Upper Sharon		X									
48	RVAAP-66 Facility-wide Groundwater	SCFmw-004	Unconsolidated		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
MNA = Monitored Natural Attenuation
PCB = Polychlorinated Biphenyl
SVOC = Semivolatile Organic Compound
VOC = Volatile Organic Compound

4.0 RESULTS

Table 4-1 presents the 2022 FWGWMP sampling recommendations for each well, as originally presented in the 2022 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 among the aquifer-specific background concentration for metals, maximum contaminant level (MCL), Resident facility-wide cleanup goal (FWCUG), or U.S. Environmental Protection Agency (USEPA) Residential tap water regional screening level (RSL).

Appendix D.1 contains a table with all analytical results from the wells sampled in spring 2022, 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 2022 FWGWMP Wells, Sampling Recommendations, and Results

No	RVAAP-66 Area	Well Name	Aquifer	2022 FWGWMP Sampling Recommendations	Spring 2022 Sampling Results
1	RVAAP-04 Open Demolition Area #2	DETmw-003	Unconsolidated	• In accordance with the DFFO, analytical parameters for this well in 2022 include VOCs, phthalates, PAHs, phenols, PCBs, explosives, pesticides, cyanide, and metals.	• Phthalates, phenol, cyanide, nitroaromatics, VOCs, SVOCs, PCBs, or pesticides were not detected in the primary or duplicate samples. • Explosives were not detected in the primary sample; no duplicate was collected. • All metal concentrations were below the screening level or background concentration, with the exceptions of arsenic, barium, and manganese. Arsenic was detected in the primary and duplicate samples at 0.0095 and 0.0092 mg/L, respectively, exceeding the background concentration of 0.003 mg/L. Barium was detected at 0.045 mg/L in both the primary and duplicate samples, exceeding the background concentration of 0.034 mg/L. Manganese was detected at a concentration of 0.23 mg/L in both the primary and duplicate samples, exceeding the background concentration of 0.075 mg/L. • pH was 6.64 S.U.
2	RVAAP-04 Open Demolition Area #2	DETmw-004	Unconsolidated	• In accordance with the DFFO, analytical parameters for this well in 2022 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 with the exceptions of barium and calcium. Barium was detected at 0.057 mg/L, which exceeds the background concentration of 0.034 mg/L. Calcium was detected at 130 mg/L, which exceeds the background concentration of 107 mg/L. • pH was 6.87 S.U.
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 exceptions of HMX, MNX, and RDX. The RDX concentration of 0.0069 mg/L exceeded the RSL of 0.00097 mg/L. • Sulfide, nitrate, and nitrite were not detected. • Sulfate was detected at a concentration of 28 mg/L. • Alkalinity was detected at a concentration of 270 mg/L. • TOC was detected at a concentration of 1.4 mg/L. • pH was 6.87 S.U.
4	RVAAP-05 Winklepeck Burning Grounds	WBGmw-009	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 exceptions of HMX and RDX. The RDX concentration of 0.0013 mg/L exceeded the RSL of 0.00097 mg/L. • Nitrate, nitrite, and sulfide were not detected. Sulfate was detected at 16 mg/L. • Alkalinity was detected at 110 mg/L. • TOC was detected at a concentration of 1.2 mg/L. • pH was 5.61 S.U.
5	RVAAP-05 Winklepeck Burning Grounds	WBGmw-014	Unconsolidated	• Monitor for explosives to support the FS.	• Explosives were not detected. • pH was 7.24 S.U.
6	RVAAP-05 Winklepeck Burning Grounds	WBGmw-016	Unconsolidated	• Monitor for explosives to support the FS.	• Explosives were not detected. • pH was 6.96 S.U.
7	RVAAP-05 Winklepeck Burning Grounds	WBGmw-017	Unconsolidated	• Monitor for explosives to support the FS.	• Explosives were not detected. • pH was 7.27 S.U.
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 were not detected with the exception of RDX. No detection exceeded screening criteria. • Nitrite and sulfide were not detected. • Nitrate with detected at an estimated concentration of 0.23J mg/L. • Sulfate was detected at the concentration of 9.9 mg/L. • Alkalinity was detected at a concentration of 46 mg/L. • TOC was detected at a concentration of 1.8 mg/L. • pH was 5.50 S.U.
9	RVAAP-05 Winklepeck Burning Grounds	WBGmw-020	Upper Sharon	• Continue to monitor for explosives.	• Explosives were not detected. • pH was 6.28 S.U.
10	RVAAP-05 Winklepeck Burning Grounds	WBGmw-021	Upper Sharon	• Continue to monitor for explosives.	• Explosives were not detected. • pH was 6.73 S.U.
11	RVAAP-08 Load Line 1	LL1mw-063	Unconsolidated	• Continue to monitor for explosives.	• No explosives were detected with the exception of HMX. No detection exceeded screening criteria. • pH was 4.67 S.U.
12	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. • pH was 7.71 S.U.

Table 4-1. Summary of 2022 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2022 FWGWMP Sampling Recommendations	Spring 2022 Sampling Results
13	RVAAP-08 Load Line 1	LL1mw-080	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, 3,5-dinitroaniline, 4-amino-2,6-DNT, HMX, MNX, and RDX were detected; however, only 4-amino-2,6-DNT and RDX exceeded screening criteria. RDX exceeded the RSL of 0.00097 mg/L at a concentration of 0.026 mg/L, and 4-amino-2,6-DNT exceeded the RSL of 0.0039 mg/L at a concentration of 0.0049 mg/L. • Nitrite and sulfide were not detected. • Nitrate was detected at an estimated concentration of 0.098J mg/L. • Sulfate was detected at a concentration of 35 mg/L. • Alkalinity was detected at a concentration of 100 mg/L. • TOC was detected at a concentration of 1.2 mg/L. • pH was 6.61 S.U.
14	RVAAP-08 Load Line 1	LL1mw-081	Upper Sharon	• Continue to monitor for explosives.	• No explosives were detected with the exception of RDX, which exceeded the RSL of 0.00097 mg/L at an estimated concentration of 0.001 mg/L. • pH was 5.99 S.U.
15	RVAAP-08 Load Line 1	LL1mw-082	Upper Sharon	• Monitor for explosives to support the FS.	• No explosives were detected with the exceptions of TNT, 2-amino-4,6-DNT, 3,5-dinitroaniline, and 4-amino-2,6-DNT. No concentration exceeded screening criteria. • pH was 6.15 S.U.
16	RVAAP-08 Load Line 1	LL1mw-083	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, 2,6-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 a concentration of 0.0019 mg/L. 2,4-DNT exceeded the RSL of 0.00024 mg/L at a concentration of 0.0025 mg/L. 2,6-DNT exceeded the resident clean-up goal of 0.000122 mg/L at a concentration of 0.001 mg/L. 2 Amino-4,6-DNT exceeded the RSL of 0.0039 mg/L at a concentration of 0.0085 mg/L. 4-Amino-2,6-DNT exceeded the RSL of 0.0039 mg/L a concentration of 0.016 mg/L. All other explosives were detected at concentrations below screening criteria. • Alkalinity, nitrite, and sulfide were not detected. • Nitrate was detected at an estimated concentration of 0.25J mg/L. • Sulfate was detected at a concentration of 120 mg/L. • TOC was detected at a concentration of 1.2 mg/L. • pH was 4.17 S.U.
17	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 TNT, 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 in the primary and duplicate samples at concentrations of 0.0027 and 0.0029 mg/L, respectively. 2-Amino-4,6-DNT exceeded the RSL of 0.0039 mg/L in the primary and duplicate samples at concentrations of 0.0077 and 0.0078 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 0.023 and 0.024 mg/L, respectively. All other explosives were detected at concentrations below screening criteria. • Nitrite and sulfide were not detected in the primary or duplicate sample. • Nitrate was detected at concentrations of 0.59 and 0.61 mg/L in the primary and duplicate samples, respectively. • Sulfate was detected at a concentration of 110 mg/L in the primary and duplicate samples. • Alkalinity was detected at concentrations of 63 and 69 mg/L in the primary and duplicate samples, respectively. • TOC was detected at a concentration of 1.8 mg/L. • pH was 5.58 S.U.
18	RVAAP-08 Load Line 1	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.	• 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 screening criteria. TNT exceeded the RSL of 0.00098 mg/L at a concentration of 0.0013 mg/L. • pH was 7.15 S.U.
19	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 in the primary or duplicate samples. • pH was 6.68 S.U.
20	RVAAP-08 Load Line 1 (southeast of Load Line 1 fence)	LL1mw-089	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• Explosives were not detected. • pH was 4.55 S.U.

Table 4-1. Summary of 2022 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2022 FWGWMP Sampling Recommendations	Spring 2022 Sampling Results
21	RVAAP-09 Load Line 2 South	LL2mw-059	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 exceptions of 1,3,5-TNB, 2,4-DNT, 3,5-dinitroaniline, and 4-amino-2,6-DNT; however, no concentrations exceeded screening criteria. • Nitrite and sulfide were not detected. • Nitrate was detected at a concentration of 0.81 mg/L. • Sulfate was detected at a concentration of 320 mg/L. • Alkalinity was detected at a concentration of 160 mg/L. • TOC was detected at a concentration of 2.9 mg/L. • pH was 6.42 S.U.
22	RVAAP-10 Load Line 3	LL3mw-237	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 TNT, 2-amino-4,6-DNT, 4-amino-2,6-DNT, and RDX exceeded screening criteria. TNT exceeded the RSL of 0.00098 mg/L at an estimated concentration of 0.042J mg/L. 2-Amino-4,6-DNT exceeded the RSL of 0.0039 mg/L at a concentration of 0.0069. 4-Amino-2,6-DNT exceeded the RSL of 0.0039 mg/L at an estimated concentration of 0.027. RDX exceeded screening criteria. RDX exceeded the RSL of 0.00097 mg/L at a concentration of 0.0067 mg/L. • pH was 7.02 S.U.
23	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.	• Explosives were not detected. • Nitrite and sulfide were not detected. • Nitrate was detected at a concentration of 0.51 mg/L. • Sulfate was detected at a concentration of 60 mg/L. • Alkalinity was detected at a concentration of 160 mg/L. • TOC was detected at a concentration of 2.9 mg/L. • pH was 6.10 S.U.
24	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.	• Explosives were not detected. • Nitrite and sulfide were not detected. • Nitrate was detected at a concentration of 0.65 mg/L. • Sulfate was detected at a concentration of 39 mg/L. • Alkalinity was detected at a concentration of 59 mg/L. • TOC was detected at a concentration of 1 mg/L.
25	RVAAP-10 Load Line 3	LL3mw-241	Upper Sharon	• Continue to monitor for explosives.	• Explosives were not detected. • pH was 5.76 S.U.
26	RVAAP-10 Load Line 3	LL3mw-245	Upper Sharon	• Monitor for explosives to support the FS.	• Explosives were not detected. • pH was 7.02 S.U.
27	RVAAP-12 Load Line 12	LL12mw-185	Unconsolidated	• Continue to monitor for nitrate and ammonia.	• Nitrate was detected at concentrations of 71 and 74 mg/L in the primary and duplicate samples, exceeding the MCL of 10 mg/L. • Ammonia was not detected in the primary sample; however, it was detected at an estimated concentration of 0.039 mg/L in the duplicate sample. • pH was 6.61 S.U.
28	RVAAP-12 Load Line 12	LL12mw-187	Unconsolidated	• Continue to monitor for nitrate and ammonia.	• Nitrate was not detected. • Ammonia has no screening level but was detected at a concentration of 660 mg/L. • pH was 6.20 S.U.
29	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 a concentration of 0.026 mg/L. • pH was 7.38 S.U.
30	RVAAP-12 Load Line 12	LL12mw-245	Unconsolidated	• Monitor for nitrate and ammonia to support the FS.	• Nitrate was not detected. • Ammonia was not detected above the screening level but was detected at an estimated concentration of 0.049J mg/L. • pH was 6.93 S.U.
31	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 a concentration of 0.15 mg/L. • pH was 6.80 S.U.

Table 4-1. Summary of 2022 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2022 FWGWMP Sampling Recommendations	Spring 2022 Sampling Results
32	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.	• Explosives were not detected. • Nitrate, nitrite, and sulfide were not detected. • Sulfate was detected at a concentration of 36 mg/L in the parent sample and 35 mg/L in the duplicate sample. • Alkalinity was detected at a concentration of 22 mg/L in the parent sample and 23 mg/L in the duplicate sample. • TOC was detected at an estimated concentration of 0.86J mg/L. • pH was 5.02 S.U.
33	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 and 2-amino-4,6-DNT were detected at concentrations above screening criteria. TNT exceeded the RSL of 0.00098 mg/L at a concentration of 0.0056 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 0.0087 mg/L. All other concentrations were below screening criteria. • Sulfide was not detected. • Nitrate was detected at a concentration of 0.94 mg/L. • Nitrite was detected at an estimated concentration of 0.007J mg/L. • Sulfate was detected at a concentration of 55 mg/L. • Alkalinity was detected at a concentration of 10 mg/L. • TOC was detected at a concentration of 1.7 mg/L. • pH was 4.88 S.U.
34	RVAAP-16 Fuze and Booster Quarry Landfill/Ponds	FBQmw-175	Homewood	• Continue to monitor for explosives.	• Explosives were not detected. • pH was 5.68 S.U.
35	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 4 µg/L, below the MCL of 5 µg/L.
36	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 in the primary or duplicate sample. • pH was 6.83 S.U.
37	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. • pH was 7.25 S.U.
38	RVAAP-66 Facility-wide Groundwater (in DLA Main Ore Storage Area)	FWGmw-010	Unconsolidated	• Monitor for explosives to support the FS.	• No explosive were detected with the exception of 3-nitrotoluene, which was below screening criteria. • pH was 4.50 S.U.
39	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. • pH was 7.13 S.U.
40	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. • pH was 5.22 S.U.
41	RVAAP-66 Facility-wide Groundwater (southeast of Administration Area)	FWGmw-015	Unconsolidated	• Continue to monitor for explosives in this exit pathway well.	• No explosives were detected with the exception of 3-nitrotoluene, which was below screening criteria. • pH was 6.71 S.U.
42	RVAAP-66 Facility-wide Groundwater (southeast of Administration Area)	FWGmw-016	Upper Sharon	• Continue to monitor for explosives in this exit pathway well.	• No explosives were detected with the exception of 3-nitrotoluene, which was below screening criteria. • pH was 6.65 S.U.
43	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 were not detected. • pH was 6.76 S.U.

Table 4-1. Summary of 2022 FWGWMP Wells, Sampling Recommendations, and Results (Continued)

No	RVAAP-66 Area	Well Name	Aquifer	2022 FWGWMP Sampling Recommendations	Spring 2022 Sampling Results
44	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 was detected at an estimated concentration of 0.011J mg/L. • pH was 6.79 S.U.
45	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 exceptions of 2-nitrotoluene and 3-nitrotoluene. Concentrations were below screening criteria. • pH was 5.86 S.U.
46	RVAAP-66 Facility-wide Groundwater (downgradient from Fuze and Booster Quarry Landfill/Ponds)	FWGmw-023	Upper Sharon	• Monitor for explosives to support the FS.	• Explosives were not detected. • pH was 6.94 S.U.
47	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.	• No explosives were detected with the exception of 3-nitrotoluene, which was below screening criteria. • pH was 6.78 S.U.
48	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. • pH was 7.63 S.U.

Note: Background concentrations for metals vary by aquifer.

DFFO = Director's Final Findings and Orders
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
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
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
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 2022 sampling event. The purpose of this DQA report, which is presented in Appendix F, is to document the following:

- The QC procedures followed to ensure data generated by Leidos, during the implementation of the spring 2022 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 assessment and their solutions.

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6.0 WELL REDEVELOPMENT

During the spring 2022 sampling event, no permanent monitoring wells were redeveloped. However, a list of recommended monitoring wells to be redeveloped is presented in the 2021 Annual Report (Leidos 2022c).

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7.0 REFERENCES

Leidos 2022a. *Final Remedial Investigation Report for RVAAP-66 Facility-wide Groundwater*. Final. February.

Leidos 2022b. *Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Addendum for 2022*. April.

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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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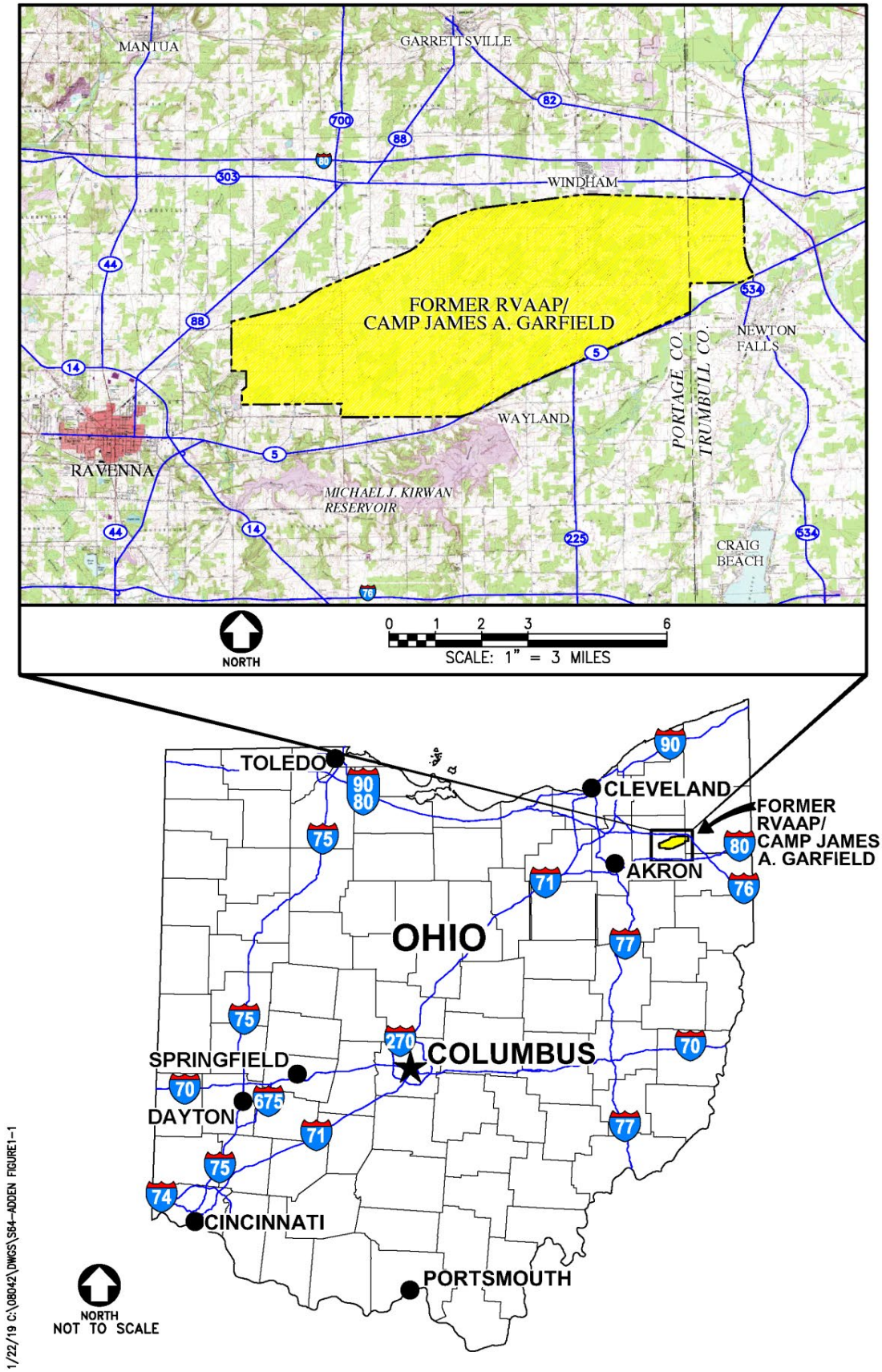

Figure 1-1. General Location and Orientation of the Former RVAAP/CJAG

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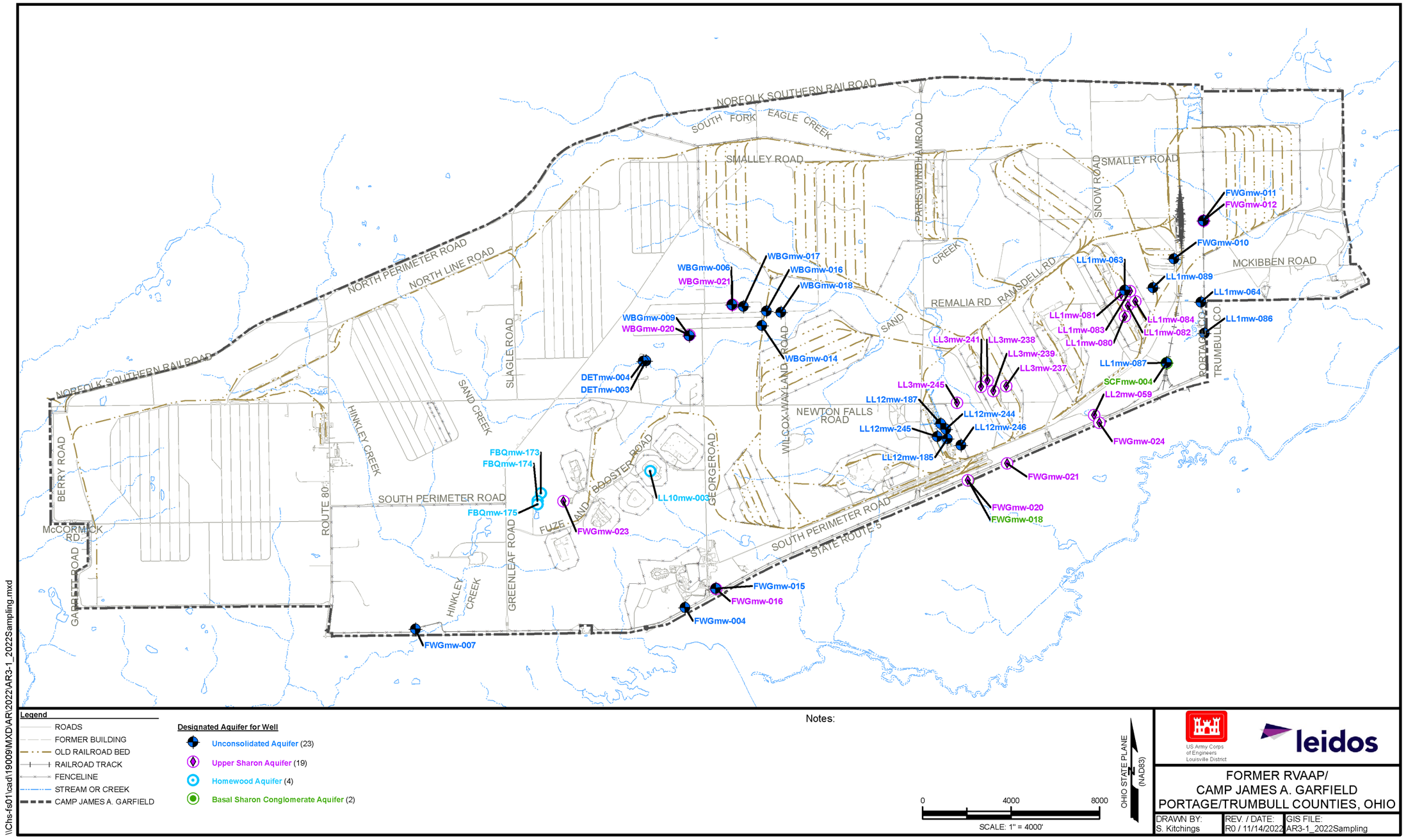

Figure 3-1. 2022 FWGWMP Wells

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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 10/4/18 DATE

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

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

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

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

IMPACT OF NOT IMPLEMENTING REQUEST:
See justification.

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:
Leidos field teams.

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

Estimator Signature: Not applicable DATE

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

APPROVAL SIGNATURES:

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

Ohio EPA Project Coordinator 11-7-18 DATE

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

FIELD CHANGE REQUEST

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

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

SIGNATURE 10/4/18 DATE

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

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

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

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

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

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

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

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

FIELD CHANGE REQUEST

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

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

Estimator Signature:	Not applicable	DATE

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

APPROVAL SIGNATURES:

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

FIELD CHANGE REQUEST

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

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

SIGNATURE 10/26/18
DATE

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

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

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

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

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

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

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'

USACE Representative 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 10/2/19 DATE

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	[signature]	10-8-19 DATE
Leidos H&S Manager (if applicable)	Not applicable	DATE

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APPENDIX B

Field Forms

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B.1 Daily Log Sheets

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TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

ate: (mm/dd/yy): 06/08/22 Page 1 of 1

Task Team Members:
Rich Sprinkel

RS 6/8/22

Narrative (include time and location):

0915 RS picked up rental truck @ Northfield Enterprise.
0940 RS @ office. Load up GWS equipment + logbooks.
1030 Arrived @ Camp Garfield East Gate then met Kevin Sedlak (ARNG PM) at B1036. Kevin unlocked doors and provided access key.
1050 Kevin departed B1036. Note he indicated WBG MWs were currently being converted to flush mounts this week, so delay to end of schedule. Also there is annual training next 2 weeks so coordinate with Range Control daily/weekly.
Unload GWS equipment and begin setting up Team Go Boxes and checking supplies (tubing, etc); testing compressors; charging batteries, etc.
1115 Compressors all worked (3x)
1400 Inventory completed and Go Boxes gathered.
1405 Locked up B1036 and exit East Gate. Head to store for supply run then Tumsburg office/storage shed.

NFGP
RS 6/8/22

Daily Weather Condition: A.M. 65-70 overcast, humid
P.M. 70-75 overcast, humid, brief drizzle

Recorded By: RS 6/8/22 (Signature) QC Checked by: [illegible] 6/12/22 (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: 6/14/2021	**Temperature:** 67°F	**Wind:** 3 MPH EAST
Weather:		
Safety Moment Topic: HEAT STRESS		

Task Descriptions:	**Associated Hazards:**
Low Flow GWS	Slips, Trips, Falls
	Biological – Ticks, Poison Ivy
	Lifting / Ergonomics
RC / 6/14/21	Repetitive Motion.
	RC / 6/14/21

Subcontractors Onsite: NA **Equipment Onsite:** NA

RC 6/14/21

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 Aqua Troll (multiparameter)	☒ 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
HEAT STRESS	- CALL WORK CANE - RADIO CONTROL IF EMERGENCY
	6/14/22

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Chris McFarland / Leidos		6/14/22
Danielle Anderson / Leidos		6/14/22
Carter James / Leidos		6/14/22
Rich Sprinzl		6/14/22

Site Safety and Health Officer Ryan Lawson **(Printed Name)** **(Signature)** 6/14/22 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: Rump Fairbump

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

DAILY SAFETY INSPECTION

PROJECT: Rumap Fulump

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

Name	Signature	Date
Ryan Lawson	[signature]	8/14/21

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/14/2021

Page 1 of 1

Task Team Members:

RYAN LAURICH
CARTER JAMES
DANIELLE ANDERSON
RICH SPANGLE
CHRIS MCFARLAND

RL 6/14/2022

Narrative (include time and location):

0700 - RYAN, DANIELLE, CHRIS, + CARTER ARRIVE AT 1036. KEVIN JESSLAK ARRIVES AT 1036.

0705 - RYAN CONTINUES BOTTLE PREP, DANIELLE TRAINING CHRIS + CARTER ON SAMPLING PREP + MOBILIZATION.

0800 - KEVIN OFFSITE.

0803 - RICH ONSITE.

0835 - RYAN TO RANGE CONTROL TO DISCUSS TODAY'S ACTIVITIES.

0840 - COMPLETE H+S TAILGATE.

0930 - CHRIS + DANIELLE TO LL1 AREA TO SAMPLE / GWS.

1115 - RICH + RYAN TO LL1 TO DROP COMPRESSOR TO DANIELLE

1140 - RICH + CARTER TO WBG TO INSTALL NON-DEDICATED SS QED PUMPS. RYAN RETURNS TO 1036, CONTINUES BOTTLE PREP

1550 - RICH + CARTER BACK AT 1036.

1557 - DANIELLE + CHRIS RETURN TO 1036. CARTER OFFSITE.

1555 - LEADS OFFSITE.

RL 6/14/2022

Daily Weather Condition: A.M. 67°F, CLOUDY

P.M. 82°F, P. CLOUDY

Recorded By: RL 6/14/21 (Signature)

QC Checked by: [signature] 6/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/14/22

Page 1 of 2

Task Team Members:
Chris McFarland
Danielle Anderson

Narrative (include time and location):
0700 - arrive onsite and mob for day
0900 - H&S tailgate hosted by Ryan (Leidos EM)
0930 - Depart for loadline 1 (LL1) w/ Danielle Anderson
0945 - Arrive at LL1mw-089 & setup equipment
CM 6/14/22 ~~10~~ 1045 - Begin Pre-Purge
DTW: 22.52ft
CPM: CPM2 26-4 35 PSI
Pre-Purge volume 1536.88 mL
1053 - begin Purge
DTW: 22.52ft
CPM: CPM2 26-4 35 PSI
Total volume Purged: ~~10.5252~~ DA 6/14/22 12.5252
1108 - emptied flow cell due to high turbidity
1112 - air compressor overheated, Danielle contacted Ryan (Leidos EM) and met to set ~~AC~~ CM 6/14/22 replacement air compressor
1135 - Danielle Returns with replacement air compressor
1137 - Resume Purge
1144 - Empty flow cell due to high turbidity
1202 - Purge Complete - collect samples LL1mw-089-220601-GW & Duplicate for explosives
1315 - Arrive at FUGmw-010
1337 - begin Pre-Purge
DTW: 10.35 ft

Daily Weather Condition: A.M. 73°F partly cloudy, humid
P.M. 73°F partly cloudy, humid

Recorded By: [signature] (Signature)
Danielle

QC Checked by: RS 6/14/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/14/22

Page 2 of 2

Task Team Members:
Chris McFarland
Danielle Anderson

DA 6/14/22

Narrative (include time and location):

CMP: 2/28/2 PSI: 25 psi
Pre Purge volume: 1371.71 mL
1352 - begin purge
DTW: 10.85 ft
CMP: 2/28/2 PSI: 23 psi
Total volume Purged: 8,471.71 mL
Flow Rate: 100 mL/min
1415 - empty flowcell due to high turbidity
1453 - Purge complete collect sample FWGMW-010-220601-GW for explosives

DA 6/14/22

15:15 - left FWGMW-614 to return to 1036 bldg
15:45 - left site

CM 6/14/22

Daily Weather Condition: A.M. See page 1
P.M. See page 1

Recorded By: (Signature)
Dani

QC Checked by: (Signature) 6/14/22

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/14/22

Page 1 of 2

Task Team Members:

Rich Sprinzl
Carter James
Ryan Laurich (FM)

RS 6/14/22

Narrative (include time and location):

0800 Rich arrived @ RVAAP Main Gate & met up w/ FM + Field crew, Ryan + Danielle provided Agcatroll training (calibration)
0830 H&S Briefing + discuss plan Rich/Carter will decon + install QED pumps @ WBG (and other sites if pump(s) available)
0900 loadup Equipment
~~0915~~ Pump Decon started (full chemical decon) on 5 QED pumps (3 ready to go).
1145 Depart B1036 for WBG.
1210 Arrival @ WBG. Check in @ construction entrance.
1215 Arrival @ WBG mw 009 (+ adjacent -020). Both converted to Flushmounts.
- opened up both wells. No tubing present.
1230 WBG mw-009 DTW = 9.18 ft BTOC (TOC is ~0.45' Below Surface (flushmount lid))
TD = 21.11 ft BTOC, Semisoft ↳ Recently cut for flushmount.
Height of water: 11.93 ft
1335 Pump installed mid point of screen: 16.11' BTOC. Tested pump - ok.
1340 Pump tied off + lid closed off so pump doesn't move. Decon WL meter + setup @ WBG mw-020
1345 WBG mw-020. DTW = 10.25 ft BTOC
TD = 41.65' BTOC (Soft, lots of sediment) * recently cut TOC ~ 0.45' bgs
Height of water = 31.45'
- Set Pump @ mid point of screen (25' up from bottom). Intake at ~36.65
1450 Tried to get pump to discharge, pulled pump to check tubing - Not working still
1500 Packed up from WBG mw-020. Called Ryan (FM). He said to head back after checking other wells.
1510 WBG mw-016/018 → Vault lids not in place → replaced lids (flushmounts)

Daily Weather Condition: A.M. 65-80° sunny, humid

P.M. ~~80s~~ partly sunny hot warm, cloudier.

Recorded By: RS 06/14/22 (Signature)

QC Checked by: 06/17/22 Carter James (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/14/22

Page 2 of 2

Task Team Members:

Rich Sprinzl
Carter James
Ryan Lauricks (PM)

RS 6/14/22

Narrative (include time and location):

1520 Head back to B1036.
1530 Returned to B1036. Unload truck + manage IDW.
1540 Carter departed RVAAP/Main Gate.
1545 Rich departed RVAAP/Main Gate.

RS 6/14/22

Daily Weather Condition: A.M. see pg 1

P.M. see pg. 1

Recorded By: RS 6/14/22 (Signature)

QC Checked by: Carter [illegible] 06/17/22 (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: 6/15/2022	**Temperature:** 75°F	**Wind:** CALM
Weather: P. Cloudy Humid		
Safety Moment Topic:		
Task Descriptions:	**Associated Hazards:**	
Ground Water Sampling	Slips / Trips / Falls	
	Biological	
	Defensive Driving	
	Heat Stress	

Subcontractors Onsite: N/A

Equipment Onsite: N/A

	6/15/2022

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 AQ-Trolle 6/16/2022	☒ 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
MEDICAL EMERGENCY	- CALL RANGE CONTROL NOTIFY ETP # - CALL PM - NOTIFY H+S + PM UP CHAIN OF COMMAND

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Rich Sprinzl	RSprinzl	6/15/22
Carter Jones	[illegible]	6/15/22
Chris Merrillant	[illegible]	6/15/22

Site Safety and Health Officer Tyler Lacken (Printed Name) [illegible] (Signature) 6/15/2022 (Date)

DAILY SAFETY INSPECTION

PROJECT: Ruan Fulbright

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

DAILY SAFETY INSPECTION

PROJECT: RWMP FWGMP

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	X	Site hazard controls appropriate and sufficient in 6/15/2000

Actions taken to correct or control any "N" responses

Name	Signature	Date
Ron Kruger	[signature]	6/15/2000

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

ate: (mm/dd/yy): 06/15/2022 Page 1 of 1

Task Team Members:

Ryan Laubach — Rich Sprunzl
Chris McFarland — m/6/15/2022
Carter James

Narrative (include time and location):

0700 - Ryan, Chris, Carter onsite at 1036, begin to mobilize.
0756 - Rich onsite at 1036. Complete H&S Tailgate
0833 - Ryan to Range Control to notify of today's activities.
Avoidance DAZ due to onsite activities.
0845 - Kevin Sedlak onsite at 1036.
0852 - Chris departs for LL/MW-086. Rich & Carter depart to WBG to
Install QED SS non-dedicated pumps.
0857 - Kevin offsite.
0938 - Chris noted LL/MW-086 was not accessible from the south + that
it was accessible from the north but not in vehicle. Instructed
Chris to move to next well + that 2 person crew would be
required to haul equipment to LL/MW-086
1400 - Chris returns to 1036 to drop samples + departs to
sample FW/GMW-~~016~~ m 6/15/2022 -015.
1515 - Rich & Carter return, all wells at WBG have non-dedicated
pumps installed.
1540 - Chris returns to 1036.
1600 - Ryan notified ~~Range~~ m 6/15/2022 Range Control Leidos is offsite.
Ryan, Rich, Carter, & Chris offsite.

m
6/15/2022

Daily Weather Condition: A.M. 73°F Cloudy
P.M. 88°F Sunny + Humid.

Recorded By: 6/15/2022 (Signature) QC Checked by: 6/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/15/22 Page 1 of 3

Task Team Members:
Chris McFarland

Narrative (include time and location):

0700 arrive onsite and prep for field work
0800 HSS tailgate hosted by Ryan (Leidos FM)
0900 Depart for field (LLmw-086)
0910 encounter fallen tree blocking road while approaching well from south. cleared tree from road
0940 encounter ~~tree~~ fallen tree blocking road. unable to clear CM 6/15/22
and contact Ryan (Leidos FM) and instructed to approach well from north
1005 while approaching LLmw-086 from north, encounter high water, unable to safely pass and contact Ryan (Leidos FM) instructed to move to LLmw-064
1010 arrive at LLmw-064 and begin sample prep/set up equipment
1050 begin pre purge
DTW: 6.97 ft
CPM: 2/28/2 2023
Pre-purge volume: 1038 mL
1055 begin purge DTW: 1.42 ft
CPM: 2/28/2 1720
Total volume purged: 47,058
1200 emptied flow cell due to high turbidity.
~~1100~~ CM, 6/15/22

Daily Weather Condition: A.M. Partly cloudy hot 75°F humid
P.M. Clear to partly cloudy 95F humid

Recorded By: Chris McFarland (Signature) QC Checked by: Carter Conn (Signature) 6/17/22

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/15/22

Page 2 of 3

Task Team Members:
Chris Mercadante

CM 6/15/22

Narrative (include time and location):

11:35 air compressor overheated and shut off. replaced w/ another air compressor
11:40 resume purge.
~~1040~~ CM 6/15/22
1155 emptied flow cell due to high turbidity.
1250 purge complete & sample collected LL1mw-064-220601-GW for explosives
1334 left LL1mw-064 to travel back to field office
1350 arrive at field office and place samples in refrigerator
1410 Depart field office for FWGmw-015
1412 arrive at FWGmw-015 and set up equipment
1420 begin Pre-Purge
DTW: 5.78
Cond: 2/28/2 20 psi
Pre-Purge volume: 1793mL
~~25~~ CM 6/15/22
~~1425~~ CM 6/15/22 begin purge
DTW:
1435 Cond: 1/57/3 20 psi
Total volume Purge: ~300mL
1530 well removed unstabilized for turbidity and conductivity. Purge ended due to time restrictions on site. ~300mL purge water produced.

Daily Weather Condition: A.M. Partly cloudy, hot. 75°F humid
P.M. Clear to Partly cloudy 95°F humid

Recorded By: [signature] (Signature)
QC Checked by: [signature] 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/15/22 Page 3 of 3

Task Team Members:
Chris McFarland
CM 6/15/22

Narrative (include time and location):
1540 Return to field office and unload equipment
1555 Left site for day

CM 6/15/22

Daily Weather Condition: A.M. Partly cloudy hot. 75°F humid
P.M. Clear to Partly cloudy 95°F humid

Recorded By: [signature] (Signature) QC Checked by: [signature] 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/15/22

Page 1 of 3

Task Team Members:

Rich Sprinzl
Carter James
Ryan Lawrich (FM)

6/15/22

Narrative (include time and location):

0800 RS arrived @ RVAAP Main Gate then B1036 (picked up ice on the way).
Met w/ Ryan + crew for H&S Briefing and load up equipment for installing QED pumps. * Heat Stress/Advisory today (mid 90s/HI > 100-105°
0825 Calibrate Aquatroll
0900 Depart B1036 (RS/CJ)
0915 Arrived @ WBG. Check in w/ Construction Supervisor.
0920 Arrived @ WBGmw-006 (and adjacent WBGmw-021) - Both converted to flushmounts. (*tubing removed).
0925 Gauge WBGmw-006. DTW: 3.90' BTOC (TOC cut to ~0.37' BGS)
TD: 17.14' BTOC (semi-soft bottom)
Height of WC: ~~17~~ 13.24' RS 6/15/22
0935 Begin setting pump, at 5' above bottom/mud screen ~12.14' BTOC (Pump Intake Depth)
0955 Tested + worked. Tie up pump and secure MW vault lid. (1/4" x 1/4" dual tubing)
1005 Setup @ WBGmw-021. Gauge MW. DTW: 7.79' BTOC (TOC cut flush to ~0.42' bgs.
TD: 41.60' BTOC (very soft bottom RS 6/15/22
Height of WC = 33.81'
1015 Set QED Bladder Pump into MW. (Pump Intake Depth = 36.60' BTOC, ~5' above bottom/mud screen)
1030 Pump/tubing tied up + tested OK. Secured MW Lid. Cooling Break. (1/4 x 1/4" dual tubing)
1040 Arrived @ WBGmw-017. New flushmount pad/conversion
1045 Gauge MW - DTW = 4.80' BTOC (cut flush to ~0.40' BGS)
TD = 19.87' BTOC (very soft bottom, est 1-2" sediment) RS 6/15/22
Height of WC = 15.07 ft

Daily Weather Condition: A.M. 75-85° sunny, humid

P.M. 85-92° sunny, humid (HI > 100°)

Recorded By: RS 06/15/22 (Signature)

QC Checked by: Carter James 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/15/22

Page 2 of 3

Task Team Members:

Rich Sprinel
Carter James
Ryan Laurich

RS 6/15/22

Narrative (include time and location):

1052 Begin installing QED Bladder pump (3/8"x1/4" Dual tubing setup). Intake Depth=14.87' BTOC
1115 Tested pump-ok. Secure twine + Lid. Cooling Break / Loaded up truck.
1138 Arrived @ WBGmw-018. Recent conversion to flushmount pad/vault.
Weedwhack pathway offroad.
1145 Gauge WBGmw-018 - DTW=14.52' BTOC (TOC cut to ~0.40' BTOC)
TD=23.58' BTOC (semi-soft bottom).
Height of WC=9.06'
1155 Begin setting QED Bladder pump into MW-018. 3/8"x1/4" tubing.
pump intake ≈ 19.0' BTOC.
1215 Pump tested ok. Secure twine + MW lid.
1225 Cooling Break.
1235 Arrived @ WBGmw-016. New/converted Flushmount pad/vault
Gauge MW. DTW=14.11 ft BTOC (TOC ~0.35' BGS after cut for flushmount)
TD=22.54 ft BTOC (soft Bottom)
Height of WC=8.43'
1248 Begin setting QED Bladder Pump (3/8"x1/4") into MW-016. ~4.2' above bottom since WL below top of 10' screen (midpoint). Intake depth ~18.34' BTOC
1310 Test pump-ok. Secured twine + MW Cap/lid.
1320 Arrived @ WBGmw-014. Converted to flushmount pad/vault
1325 Gauge MW-014. DTW=12.39' BTOC (cut TOC to ~0.35 ft BGS
TD=21.44' BTOC (Hard Bottom/No Sediment)
Height of WC=9.05'

Daily Weather Condition: A.M. See page 1

P.M. see page 1

Recorded By: RSprinel 6/15/22 (Signature)

QC Checked by: 6/17/22 Carter James (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/15/22

Task Team Members:

Rich Sprinzl
Carter James
Ryan Lawrich (PM)

RS 6/15/22

Narrative (include time and location):

1335 Set pump @ Intake Depth ~16.96' BTOC (midpoint of W.C. Since DTW below top of screen) RS 6/15/22
1340 Tested pump - ok, Secured twine/MW cap + lid.
RS 6/15/22
1400 Returned to WBGMW-020. Setup MP-50 + reattempt to pump water before rechecking tubing connections.
1410 Did not pump water.
1430 Pulling pump/tubing from well
1500 Replaced o-Rings + reset tubing. Tested pump + worked.
1505 Depart WBG.
1515 Arrive @ B1036. Unload + Manage IDW (<0.25 gal).
1555 Depart 1036/Site.

RS 6/15/22

Daily Weather Condition: A.M. see pg. 1

P.M. See pg. 1

Recorded By: RS 6/15/22 (Signature) QC Checked by: Carter James 06/17/22 (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: 6/16/2022	**Temperature:** 77°F	**Wind:** Calm
Weather: Sunny + Humid		

Safety Moment Topic:	
Task Descriptions:	**Associated Hazards:**
Ground Water Sampling	Slips / Trips / Falls
	Rt. 5 Safety / Defensive Driving
	Heat Stress
	Biological
	possible T-Storms

Subcontractors Onsite:	**Equipment Onsite:**
AWP - Rt. 5 Traffic Control	Field Support Trucks

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 6/10/22	☒ Fire Extinguisher
☒ Safety Glasses	☒ Site Hazards	☒ Horiba Aquatic	☒ 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
SEVERE TRAFFIC ACCIDENT AT RT. 5 WELL	- IF MEDICAL ATTENTION IS REQUIRED FOR EMERGENCY MUST CALL 911 - NOTIFY PM + H+S MANAGER
	JK 6/16/2022

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Chris McFarland / Leidos	[illegible]	6/16/2022
Danielle Anderson / Leidos	[illegible]	6/16/22
Carter Jones / Leidos	[illegible]	6/16/22
Rich Sprinkel	[illegible]	6/16/22

Site Safety and Health Officer Ryan Laurella **(Printed Name)** [illegible] **(Signature)** 6/16/2022 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: Ruahr Fulcrum

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

DAILY SAFETY INSPECTION

PROJECT: Tuwap Floodplain

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 Larson 6/16/2022

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

ate: (mm/dd/yy): 6/16/2022 Page 1 of 1

Task Team Members:

Ryan Laurell — Chris McFarland
Jed Thomas — Carter Tamez
Danielle Anderson — Rich Sprunzl

Narrative (include time and location):

0700 - Ryan, Danielle, Chris, Carter, + Jed onsite. Ryan to Range Control to notify of today's activities. Teams begin to mobilize for sampling.
0720 - Complete H+S tailgate.
0745 - Escort Danielle, Chris, + Carter to meet AMP for sampling of Rt. 5 wells.
0800 - Rich onsite, starts to mobilize for Groundwater Sampling
0808 - Jed departs 1036 to complete site inspections for proposed monitoring well locations.
0816 - Kelly onsite at 1036. Ryan + Rich prep to sample in Adam Area.
1102 - Ryan back at 1036, Chris already present (completed Rt. 5 sampling).
1125 - Jed returns to 1036, Chris departs to CLIAN-087 + SCFAN-004
1200 - Rich notifies Ryan that his aquitrol is having sensor connection issues will return to 1036 + call tech support. Jed offsite.
1215 - Rich returns to 1036
1340 - Carter returns to 1036, Rt. 5 wells almost completed, Danielle is just wrapping up last well.
1400 - Danielle returns to 1036 Rt. 5 well sampling complete
1450 - Rich returns to 1036.
1500 - Chris returns to 1036, Leidos begins to demobilize
- Leidos offsite, Ryan notifies ~~Range~~ Range Control Leidos is offsite, 6/16/2022

Daily Weather Condition: A.M. 77°F Sunny Humid

P.M. 90°F Overcast Humid

Recorded By: [signature] 6/16/2022 (Signature) QC Checked by: [signature] 6/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/16/22 Page 1 of 3

Task Team Members:
Chris McFarland cm 6/16/22

Narrative (include time and location):

0700 arrive on site and prep equipment
0730 H&S tailgate hosted by Lyon (Leidos FM)
~~0755 Begin Pre-Purge~~ cm 6/16/22
0745 Depart for field and meet AWP (to FWGMW-03)
0815 Arrive at FWGMW-03 and set up equipment
0855 Begin Pre-Purge
DTW: 20.36ft
CPM: 2/25/5 120psi
Pre Purge volume: 2070mL
0918 Begin Purge
DTW: 21.12ft
CPM: 2/25/5 120psi
Total Purge volume: 6570mL
~~Lost connection~~ cm 6/16/22
0955 Lost connection with AquaTroll at 37:45 into purge. Reconnected at 39:57
0450 Purge complete. Sampled FWGMW-03 for Nitrate
1010 Depart FWGMW-03 for field office
1020 Arrive at field office and speak to Lyon (Leidos FM)
~~Depart~~ cm 6/16/22
11:10 Depart field office for LLGMW-07
11:40 Arrive at LLGMW-07 and set up equipment

Daily Weather Condition: A.M. Clear, humid. 75°F
P.M. Partly cloudy to cloudy 90°F humid

Recorded By: [signature] (Signature) QC Checked by: [signature] 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** June 2022 Sampling Event

Date: (mm/dd/yy): 6/16/22 Page 2 of 3

Task Team Members:
Chris McFeeland
CM 6/16/22

Narrative (include time and location):
1200 begin Pre-Purge
DTW 5.23'
CPM 1157/3 20 psi
Pre-Purge volume: 1536.1 mL
1225 begin Purge
DTW: 7.32
CPM: 1157/3 20 psi
CM 6/16/22 ~~Pre-Purge vol~~
Total Purge volume: 10,286.1 mL

~~1235~~ CM 6/16/22
1245 empied flow cell due to high turbidity
1258 well stable and sampled for explosives (at LLmw-087)
samples: LLmw-087-20220616-GW
LLmw-087-20220616-GW/MSD
LLmw-087-20220616-GW
1401 Complete Sampling at LLmw-087 and set up equipment at adjacent well SCFmw-004. Remove Pump and insert Pump
1415 well is artesian and therefore not pre-purged. well purged for 1000 mL
~~1415~~ CM 6/16/22 CM 6/16/22
1420 well sampled for explosives (SCFmw-004-20220616-GW, ~~SCFmw-004-20220616~~ SCFmw-004-20220616-GW)

Daily Weather Condition: A.M. Clear, humid 75°F
P.M. Partly cloudy to Cloudy 90°F humid

Recorded By: [signature] (Signature) QC Checked by: [signature] CM 6/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/16/22

Task Team Members:
Chris McFarland
CM 6/16/22

Narrative (include time and location):
1430 sampling complete, Pass equipment and ~~remove~~ remove Pump and inset Packer. CM 6/16/22
1440 Depart SCFW-004 and return to field office
1500 Arrive at field office and unload equipment.
~~1[illegible]~~ CM 6/16/22
1600 Depart from site

CM 6/16/22

Daily Weather Condition: A.M. Clear, 75F humid
P.M. Partly Cloudy to Cloudy, 90F humid

Recorded By: [signature] (Signature)
QC Checked by: Carter Conn 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/16/22 Page 1 of 2

Task Team Members:

Rich Sprmzl
Ryan Laurich (FM)

RS 6/16/22

Narrative (include time and location):

0800 RS onsite, Loadup equipment. H+S Briefing w/Ryan
0830 Calibrate Aquatroll. Issue w/sensors connected. Ryan called. In situ - resolved + calibrated.
0845 Kevin Seelbuk (AMC) @ B1036. Discuss plan + schedule
0900 Depart B1036 w/Ryan (FM)
0912 Arrive at FWGMW-016. Setup to prepurge.
DTW = 17.20' BTOC
0938 Begin prepurge. CPM1 (52/8). Flowrate 150 mL/min. (~26 min). 40PSI
0943 Adjust to CPM1 (53/7) → Flowrate: ~125 mL/min
1005 Begin purge. (End prepurge)
1022 Begin sample collection (End Purge Parameters stable over 3 readings/Turbidity slowing) RS 6/16/22
FWGMW-016-220601-GW for Explosives. Water clear/colorless/no odor.
Note 1.75 gal purged total.
1105 RS setup on FWGMW-015. Setup to pre-purge. DTW = 5.85' BTOC (Ryan back at 1036).
*added teflon tape to flowcell fitting.
1121 Begin prepurge. CPM1/55/5/20PSI. → Flowrate: 100 mL/min (estimate ~28 min)
1123 Adjust to CPM1/56/4 → still 100 mL/min (Initial water clear/colorless)
1127 Adjust to CPM1/58/2 → ~75 mL/min. WL ~7.40' BTOC
1135 Check flow, closer to 50 mL/min + WL continues to drop ~7.60' BTOC.
1140 Handheld indicated sensor(s) disconnected. Informed Ryan - restart and only do ~8 min
1150 Sensors 'changed'/disconnected again. ~28 min prepurge. Note WL decreased → WL ~8.50' BTOC.
1153 Called Ryan - stop prepurge. Remove all equipment + bring back to 1036.
RS 6/16/22

Daily Weather Condition: A.M. 75-85° sunny, humid, breezy

P.M. 85-90° partly sunny, clouds increasing, wind increasing.

Recorded By: RS 06/16/22 (Signature) QC Checked by: (Signature) 6/17/22

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/16/22

Task Team Members:

Same as pg 1

RS 6/16/22

Narrative (include time and location):

Cont.> ~0.75 gal purged so far. (Purge halted) remove equipment/pack up.
1210 Depart FWGMW-015 then arrive @ 1036.
1220 Call Insitu Tech Support to resolve Aquatroll connection issue.
1255 Tech support had RS pull all 4 sensors, check for water in ports + switch port locations. Checked Live Readings + all connected. Tech Rep said to call back if necessary.
1310 Returned to FWGMW-015. Setup Equipment back up + re-do prepurge per FM.
1314 DTW=6.32' BTOC (after >1hr recharge)
1329 Start Prepurge (est 28:30). CPM 1/57/3/20 psi (as previously used earlier). Flowrate ~75 mL/min (will keep this setting).
1352 WL=8.20' BTOC.
1358 End Prepurge/Begin purge. CPM 1/57/3/20 psi. WL=8.55' BTOC
1406 Changed to CPM 1/58/2 due to WL=8.90' BTOC (>0.3') (Flowrate 50 mL/min)
1410 Called Ryan (FM). Turbidity reading 68/85/90 but clear/colorless/No sediment in bucket.
1413 Disconnected flow cell to dump water/check sensor (disregard reading @ 1415)
1415 Turbidity now 4-5 NTU. WL remains at 8.90' BTOC.
1426 End purge. Stable parameters + Turbidity <10 NTU. ~1.25 gal total purged.
1427 Begin Collecting GW sample FWGMW-015-220601-GW for Explosives. Water clear/colorless.
1455 Depart for 1036.
1500 Arrived @ 1036. Unload + finish well log entries. Carter assists w/ IDW to Drums.
1555 RS depart 1036 for office.

RS 6/16/22

Daily Weather Condition: A.M. see pg 1

P.M. ↓

Recorded By: RS 6/16/22 (Signature)

QC Checked by: [signature] 6/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/16/22

Task Team Members:

Danielle Anderson
Ryan Laurich
Chris McFarland
Carter James
AWP (Traffic Control)
Jed Thomas

Narrative (include time and location):

0700 Arrive onsite and mob for the day.
0730 AWP at bullpen
0745 H&S Tailgate hosted by Ryan.
0800 Meet with AWP and talk over Rt. 5 well sampling / traffic plan.
0810 Depart for FWGmw-020 + FWGmw-018 with Carter, Chris, & AWP
0820 Arrive at well ~~+~~ DAG 6/16/22 location and walk path to wells. Determined too wet to drive. Begin to haul equipment to wells.
0843 Begin Pre-purge on FWGmw-018 with Carter
Depth to water: 19.97
CPM 4 13/2 85psi 600 mL/min
Pre-purge volume: 6,466.68 mL
0855 Begin Purge: CPM 4 ~~13/2~~ DAG 6/16/22 80 psi 12.5/1.5 450 mL/min
Total Volume Purged: 10,700 mL
* water is clear, colorless, with sulfur odor.
0904 Collect sample FWGMW-018-220601-GW for Nitrate.
0920 Equipment packed, help Chris stabilize well and complete paperwork.
1015 Depart from first well location. Chris back to CJAG main gate.
1025 Arrive at FWGmw-021 and set up.

Daily Weather Condition: A.M. 80°F mostly sunny, humid
P.M. 93°F partly cloudy, humid

Recorded By: [signature] 06/16/22 (Signature)
QC Checked by: [signature] 6/16/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/16/22 Page 2 of 3

Task Team Members:

See page 1

DA 06/16/22

Narrative (include time and location):

1033 Begin Pre-purge: DTW: 19.87 ft
CPM4 12/3 35psi 475 mL/min
Pre-purge volume: 2,112.65 mL
1038 Begin Purge: DTW 20.71 ft
CPM4 12.5/2.5 35 psi 400 mL/min
Total volume purged: 34,000 mL
*water is turbid, orange & odorless, becomes clear and colorless throughout purge.
1202 Collect sample FWGmw-021-220601-GW for explosives
Pack up equipment and coordinate with AWP.
1220 Depart from FWGmw-021 for FWGmw-024.
1230 Arrive at well and set up equipment.
1241 Begin Pre-purge: DTW 12.89 ft
CPM4 12.5/2.5 ~~30~~ 35 psi: 600 mL/min
DA 6/16/22
Pre-purge Volume: 2025.48 mL
1247 Begin Purge: DTW 13.04 ft
CPM4 12.5/2.5 30psi 450 mL/min
Total volume purged: 20,000 mL
1319 Well stable Collect sample FWGmw-024-220601-GW for explosives and pack up equipment
1330 Carter departs for 1036, Daniell coordinates with AWP.
1340 Daniell departs for Bull pen with AWP.

Daily Weather Condition: A.M. See page 1

P.M. See page 1

Recorded By: [signature] 06/16/22 (Signature) QC Checked by: [signature] 6/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

ate: (mm/dd/yy): 06/16/22 Page 3 of 3

Task Team Members:

See page 1

DA 06/16/22

Narrative (include time and location):

DA 06/16/22
~~1400~~ 1350 Ryan arrives to sign documents for AWP.
1400 AWP offsite and Danielle re-enters CJAG.
1402 Demob and dump IDW for the day. Help pack and QA
- Samples for Shipping.
1555 Offsite for end of day.

DA 06/16/22

Daily Weather Condition: A.M. See page 1

P.M. See page 1

ecorded By: Dait Ard 06/16/22 QC Checked by:
(Signature) (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: 6/17/22	**Temperature:** 72-80	**Wind:** light
Weather: Sunny		
Safety Moment Topic:		

Task Descriptions:	**Associated Hazards:**
GW Sampling	Slips Trips Falls / Open Holes
IDW management	~~Air Stressors~~ Fatigue.
	Biological (Ticks) Wildlife
	Sun/UV COCs
	Heat Stress
	Defensive Driving

Subcontractors Onsite:	**Equipment Onsite:**
None	Field Support Trucks
	GW Sampling

MS 6/17/22

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 (Aquatroll)	☑ 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
Truck slides down ditch/ embankment + collides with tree (or fence)	-If medical attention is required for emergency, must call Range Control -Notify FM, PM + HS Manager

LS 6/17/22

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Danielle Anderson/Leidos	[signature]	6/17/22
Carter James / Leidos	[signature]	6/17/22
Chris McFarland/Leidos	[signature]	6/17/22

Site Safety and Health: Officer Rich Sprowl **(Printed Name)** [signature] **(Signature)** 6/17/22 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP-66 AVGW 6/17/22 Page 1 of 2

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

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWGW.

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 each go Box + B1036
	✓		All vehicles equipped with ~~two-way~~ RS 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

Name	Signature	Date
RichSprinzl	RSm	6/17/22

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/17/22

Page 1 of 1

Task Team Members:

Rich Sprinkel (EM)
Danielle Anderson
Carter James
Chris McFarland
RS 6/17/22

Narrative (include time and location):

0700 Danielle/Chris/Carter arrived @ RVAAP West Gate/B1036. Will prep + calibrate Aquatrolls prior to Rich's arrival.
0720 Danielle at Range Control to discuss today's plan > Range activity west of NB64 so we cannot sample there today. Redirect to East side FWL + LL1 wells plus Admin Area. - Approved.
0745 Rich arrived @ B1036. Discuss plan for today. QC paperwork by crew.
0800 H&S Briefing by Rich.
0830 2 teams depart for LL1 + FWGMW-11/12 (perimeter fenceline).
0950 Chris called Rich and said the well lid (casing) broke when he tried to cut off lock
1248 Danielle informed Rich that her team done w/ FWGMW-11/12 + moving to LL1; however they will need more purge containers. Rich heads to LL1 with carboys
1305 Meetup w/ Danielle's team. Exchanged carboys + completed samples.
1510 Both teams returned to B1036.
1600 All depart B1036/site. Danielle called Range Control. B1036 secured.

RS 6/17/22

Daily Weather Condition: A.M. 72° Sunny humid
P.M. 80° Sunny, humid

Recorded By: RS 6/17/22 (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/17/22

Task Team Members:

Danielle Anderson
Rich Sprinzl
Chris McFarland
Carter James
~~DA 6/17/22~~

Narrative (include time and location):

0700 Danielle, Chris, & Carter arrive onsite and mobilize for the day.
0720 Danielle departs for range Control
~~0720~~ 0725 Rich calls to update on eta.
DA 6/17/22 0730 Rich arrives onsite.
0745 Rich conducts H&S tailgate. and team talks over plan.
0830 Danielle & Carter depart for eastern facility wide wells.
0930 Set up on FWGmw-011
0939 Begin Pre-purge: DTW: 2.54 ft
CPM 4 13/2 20psi 300mL/min
Pre-purge volume: 1,78.52 mL
0944 Begin Purge: DTW: 3.81 ft
CPM 4 13/2 20psi 300mL/min
Total volume Purged: 50,000mL
* water is turbid, orange, and odorless but cleared through purge.
1144 Collect Sample FWGmw-011-22060101GW for explosives and set up on FWGmw-012 ~~DA 6/17/22~~, 2 hour purge due
~~1144~~ to turbidity reading
DA 6/17/22 1204 Begin Pre-purge at FWGmw-012:
DTW: 0.93 ft
CPM 4 12.5/2.5 30psi 400mL/min
Prepurge volume: 2,800.49mL

Daily Weather Condition: A.M. 76°F Sunny, humid
P.M. 80°F sunny, humid

Recorded By: Danielle Anderson 06/17/22 (Signature) QC Checked by: Carter James 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/17/22 Page 2 of 2

Task Team Members:

See page 1

DA 6/17/22

Narrative (include time and location):

1211 Begin purge: DTW: 1.57
CPM 4 12.5/2.5 30psi 400 mL/min
Total volume purged: 7,250mL
* water is orange, turbid, odorless at beginning of purge
1217 Collect sample FWGmw-012-220601-GW for explosives.
Pack up and complete reports.
1236 Depart from eastern Facility wide wells for LL1 and update Rich on progress.
1250 Meet up with Rich and get new purge containers
1310 Meet up with Chris and check progress.
1320 Arrive at LL1mw-063 and set up
1338 Begin pre-purge: DTW 22.58ft
CPM 2 28/2 25psi 100 mL/min
Pre-purge volume: 1,370.20mL
-purge took longer than pre-calculated
1355 Begin purge: DTW 22.84 ft
CPM 2 28/2 20psi 75mL/min
Total Volume purged: 5,475mL
1440 Collect Sample LL1mw-063-220601-GW for explosives
1458 Pack up equipment and depart for 1036. Lock gate on way out.
1513 Arrive at 1036 demob and help pack samples.
1558 Offsite for end of day. & Call Range Control

Daily Weather Condition: A.M. See page 1

P.M. See page 1

Recorded By: [signature] (Signature) QC Checked by: Carter Yoma 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/17/22 Page 1 of 2

Task Team Members:
Chris McFarland

CM 6/17/22

Narrative (include time and location):

0700 arrive onsite and prep equipment for mob.
0800 H&S meeting hosted by Rich (Leidos FM)
0845 Depart field office for LLmw-082 and SCFmw-004
0900 Arrive at SCFmw-004 to replace lock. When breaking lock, well cap cracked and broke off. Reported to Rich (Leidos FM)
0905 Depart for LLmw-082 from SCFmw-004
0930 Arrive at LLmw-082. Upon opening well it was observed the pump was missing. Contacted Rich (Leidos FM). Depart for LLmw-084 from LLmw-082.
0945 Arrived at LLmw-084 and prep field equipment
1014 Begin Pre-purge

CM 6/17/22

DTW: 26.97'
CPM: 1/58/2 at 30psi 50 mL/min
Pre-Purge volume: 1676.8 mL * low flow rate estimated is 100 mL

1030 Begin Purge Well Stable
DTW: 28.10 ft
CPM: 1/57/3 @ 25 psi 75 mL/min
Total Purge volume: 9426.1 mL

1146 Purge Complete ~~Well Stable~~ CM 6/17/22 collect samples
LLmw-084-220601-GW, LLmw-084-220601-GW MSD, LLmw-084-220601-GW

Daily Weather Condition: A.M. 70°F, clear, humid
P.M. 80°F clear, humid

Recorded By: Chris McFarland (Signature) QC Checked by: Carter Lynn 06/17/22 (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** June 2022 Sampling Event

Date: (mm/dd/yy): 06/17/22 Page 2 of 2

Task Team Members:
Chris McFarland

CM 6/17/22

Narrative (include time and location):
1010 Test for Explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, & TOC
1041 Sample Complete at LLmw-084
1105 Depart LLmw-0064 for LLmw-083
1118 Arrive at LLmw-083. Set up equipment
1133 Begin Pre-Purge
DTW 30.82 ft
CPM 2/26/4 30psi 200mL/min
Pre-Purge volume 1640mL
1345 Begin Purge ~~-~~ CM 6/17/22
DTW 31.38'
CPM 2/26/4 30psi 200mL/min
Total Purge volume: 8240mL
1405 Purge Complete, well Stable, ~~Sample~~ CM 6/17/22 Sample LLmw-083-20601-GW collected and tested for Explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC
1415 Sample collected and equipment packed.
1435 Departed LLmw-083 for Field office (1036)
1500 Arrive at Field office (1036) and CM 6/17/22 unpack equipment

CM 6/17/22

Daily Weather Condition: A.M. See Page 1 CM 6/17/22
P.M.

Recorded By: (Signature) QC Checked by: Carter Jones (Signature) 06/17/22

leidos

Daily Tailgate Safety Briefing

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

Date: 6/21/22	**Temperature:** Mid 90s	**Wind:** light
Weather: Sunny		
Safety Moment Topic: Spotter for Backup + pulling up to well location		

Task Descriptions:	**Associated Hazards:**
GW Sampling	High Heat / Humidity / Heat Stress
IDW Management	Slips Trips / Falls / Open Mts / Holes
	Defensive Driving / Off Road
	Biological (Ticks / Bees)
	Sun / UV
	COCs

Subcontractors Onsite:	**Equipment Onsite:**
	GW Sampling Equipment

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 / Aquatrolls	☑ HASP
☐ Tyvek	☑ Decontamination	☑ Calibration	☐ Exclusion Zone
☐ Respirator	☑ Procedure/Hazard	☑ Phones/Radios	☑ Chain of command
☑ Gloves	☑ IDW Management	☑ Emergency #'s	☑ Certification of personnel
	☑ Driving	☑ 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

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Jonathan Rokicki Leidos		6/21/22
Chris McFarland		6/21/22
Carter James C Leidos		6/21/22
Mitchell DeBorba: Leidos		6/21/22

Site Safety and Health: Officer Rick Spinnel (Printed Name) (Signature) 6/21/22 (Date)

DAILY SAFETY INSPECTION

PROJECT: RVAAP 66 Groundwater/FWGW

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

DAILY SAFETY INSPECTION

PROJECT: RVAAP FWAD

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

6/21/22

Rich Spring 6/21/22

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/21/22

Task Team Members:
Rich Sprinkel (FM/SSHO)
Chris McFarland / Carter James
Jonathan Rokicki / Mitchell

Kevin Sullak - ARNG PM
RS 06/21/22

Narrative (include time and location):

0745 Rich arrived @ 1036. Met field crew (onsite @ 0700) + started loading trucks.
0800 Teams calibrate Aquatrolls while Rich provided H&S Briefing (Heat Stress)
0810 Rich @ Range Control (1037) - approval received for WBG (through Wed), and also 1036 / LL1 / LL3 / LL12 (to set QED pumps).
0830 Field teams depart for WBG. Setup up initially at MWBGmw-0009/020, so both teams can work acclimate / train Mitchell + Jonathan
0915 Chris requested MPI @ air fitting: Rich heads out to WBG. (Note Kevin (PM) @ 1036 briefly).
0925 Rich @ WBG w/ air fitting.
1015 Rich departed WBG. (found/salvaged a MW lid/top ring to test fit @ SCMW04)
1022 Returned to 1036.
1045 Office chair's legs broke + Rich fell on ground. Informed Ryan Lauricich (FM).
1215 RS heads to WBG (lot 2 MWs are done / pumps ready to be picked up).
1230 RS @ WBG mw-006/021 (both teams purging). Observe GW purging / sampling.
1300 Retrieved 3rd pump from WBGmw-006. Head back to 1036 to decon.
1315 Returned to B1036. Setup decon.
1330 Stopped by Range Control. DET MWs can be done Thursday
1345 Begin decon of 3 pumps.
1415 RS called Workcare after informing Jed Thomas (PM) / Steve Lacey (H&S) due to some soreness.
1450 To Nathan having turbidity issue (visually clear). Tried to reach Ryan. Spoke to Amanda Sprinkel & she would call him directly to troubleshoot.
1455 Chris' team also having higher than 50 NTU turbidity so they stopped purging.

Daily Weather Condition: A.M. 65-75 Sunny, light wind, humid.
P.M. 75-85 sunny, humid

Recorded By: RS 6/21/22 (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/21/22

Page 2 of 2

Task Team Members:

see pg 1

RS 6/21/22

RS 6/21/22

Narrative (include time and location):

1500 ER sample collected from QED bladder pump deconed after sampling WBGmw-006. Pine DI Lot#1GK248 / Nov 2023. Filled Bladder Pump w/ DI water then poured into containers #WBGmw-RB06212022.
1515 Begin QC COCs / samples + pack up
1545 1 cooler packed. Fedex # 570845897560
Reassemble 3 deconed pumps
1600 All offsite. 1036 secured. Rich called Range Control (EOD)
1645 Rich dropped off 1 cooler @ Fedex (Twinsburg). EOD.

RS 6/21/22.

Daily Weather Condition: A.M. See pg 1

P.M. see pg 1.

Recorded By: RS 6/21/22 (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/21/22 Page 1 of 3

Task Team Members:
Chris McFarland
Carter Sames
CM 6/21/22

Narrative (include time and location):

CM 6/21/22

0740 Arrive onsite and prep equipment for mob at bldg ~~[illegible]~~ 1036
0800 H&S Tailgate hosted by Rich (Leidos FM)
0830 Depart 1036 for WBGMW-009
0900 Arrive at WBGMW-009 and set up equipment
0915 Call Rich (Leidos FM) to notify of missing air pump adaptor.
Rich ~~[illegible]~~ to bring spare to field from bldg 1036
CM 6/16/22

0930 Rich arrives at WBGMW-009 w/ spare air adaptor
0936 Begin Pre-Purge
DTW: 9.68'
CPM: 2/2614 20psi 100mL/min
Pre-Purge volume: 1440 mL
~~0940~~ CM 6/21/22
0950 Pre Purge complete. Begin Purge
DTW: 10.74'
CPM: 2/2713 18psi 75 mL/min
Total Purge volume: 6140mL
~~1005 Purge Complete. Sample [illegible] collected and tested for~~ CM 6/21/22
~~1026 Air compressor failed/overheated and swapped for replacement~~ CM 6/21/22
1005 Purge Complete. Sample WBGMW-009-220601-GW collected and sampled for Explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC.
1026 Air compressor failed/overheated. Swapped for replacement air compressor.

Daily Weather Condition: A.M. 70°F, Sunny, humid
P.M. 90°F, Sunny, humid, winds E 10mph

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/21/22

Page 2 of 3

Task Team Members:
Chris McFarland
Carter Sames

CM 6/21/22

Narrative (include time and location):

1115 Sample complete & teardown equipment. Remove pump + tubing. Put in clean trash bags

1125 Depart WB6mw-006 for WB6mw-006

1135 Arrive at WB6mw-006 and set up equipment

~~1148~~ CM 6/21/22

11:36 Begin Pre-Purge

DTW: 4.44'

CPM: 2/25/5 18PSI 175 ml/min

Pre-Purge volume: 1460 mL

11:48 Begin Purge

DTW 4.68

CPM 2/25/5 18 PSI 175 ml/min

CM Total Purge volume: 6160 mL

1214 Purge complete, well stable. Sample WB6mw-006-220601. Low collected and sampled/tested for explosives, sulfide, Nitrate/Nitrite/Sulfate, alkalinity, and TOC

1227 Sample complete, equipment torn down. Remove purge & tubing placed in clean trash bags

1234 Depart WB6mw-006 for WB6mw017.

1257 Arrive at WB6mw-017 and set up equipment

1315 Call w/ Amanda Spriggs regarding pump tubing, instructed to add 1000 mL to pre purge volume

CM 6/21/22

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/21/22

Page 3 of 3

Task Team Members:

Chris McFarland
Carter Sames

CM 6/21/22

Narrative (include time and location):

~~1300~~ begin Pre-Purge
CM 6/21/22

DTW 5.28'

1320 CPM 2/25/5 20 psi 175 ml/min

Pre-Purge volume 3051 mL

1338 begin Purge DTW 5.28

CPM 2/25/5 20 psi 175 ml/min

CM 6/21/22 ~~Pre-P~~ Total Purge volume: N/A

1357 lost connection to field laptop, reconnected.

14:50 Purge stopped due to time limitations. equipment packed to return to field office (bldg 1036). High turbidity resulted in well purging for 1 hour 22 minutes without stabilization.

1520 Arrive at field office (bldg 1036) and unload equipment.

CM 6/21/22

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: Chris McFarland (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/21/22

Task Team Members:

Mitchell Di Bartoli
Jonathan Rokicki
JR 6/21/22
JR 6/21/22

Narrative (include time and location):

0900 Arrive at WBGmw-020 (Pump intake depth: 36.65 ft)
initial depth to water: 10.70 ft
0926 Begin ~~Prepurge~~ (pre purge vol. calculated 1,760
0959 Begin purge (PSI 29, CPM 1/40/20)
1017 Empty flow cell
1058 Well is stabilized ~~/ Stop pr~~ JR 6/21/22
1100 Collect sample WBGmw-020-220601-GW for expand explosives (remove nondedicated QED stainless steel pump after sampling)
1135 Arrive at WBGmw-021 (Pump intake depth: 36.60 ft)
initial water level: 8.29 ft
~~1142 Begin prepurge~~ JR 6/21/22
1155 Begin prepurge
1207 Begin purge: PSI 30 / CPM 3/15/5
Prepurge volume: 1600 mL
1235 Well is stabilized
1236 Collect sample WBGmw-021-220601-GW for expanded explosives (remove nondedicated QED SS pumps after sampling
1310 Arrive at WBGmw-016 (pump intake depth: 18.34)
Call Amanda Sprinkel to try to obtain the adjusted template with updated tubing diameter
1334 * Adding an additional 1 L to prepurge for tubing adjustment
JR 6/21/22 1338 Begin pre-purge

Daily Weather Condition: A.M. 75°F

P.M. 80°F

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/21/2022

Page 2 of 2

Task Team Members:

See page 1

JR 6/21/22

JR 6/21/22

Narrative (include time and location):

1358 Begin purge PSI: 20 CPM 2.128/2
* removed 1700 mL plus an additional liter for tubing adjustment
1405 Emptied flow cell due to high turbidity
1412 Empty flow cell, clean sensor
1435 Inform Rich of turbidity issue
1450 Call Amanda & continue to try to reduce turbidity
1500 Clean flow cell again; turbidity remains high; pack up equipment and return to 1036
1515 Arrive at 1036 to demob and pack samples
1600 Leidos offsite

JR 6/21/22

Daily Weather Condition: A.M. See page 1

P.M. See page 1

Recorded By: (Signature)

QC Checked by: (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: 6/22/22	**Temperature:** 75-90°	**Wind:** light
Weather: Humid, mostly sunny		
Safety Moment Topic: Spotty Signal/Cellphone		

Task Descriptions:	**Associated Hazards:**
GW Sampling	Slips Trips Falls/open Holes
IDW Sampling	Heat Stress
	Wildlife
	Biological (Bugs & Bees)
	Spotty Signal (Cellphone)
	COCs WBG Construction

RS 6/22/22

Subcontractors Onsite:	**Equipment Onsite:**
None	GW sampling Equipment

RS 6/22/22

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 /Aquatroll	☑ 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
Severe cut (Knife/broken glass/wire)	- Provide Immediate First Aid care to control Bleeding. - Call Range Control + Head to ETP (if nearby) and possible to transport employee. - Inform EM/PM/H+S. - Complete Incident Report within 24hrs
(signature) RS 6/22/22	

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Chris McFarland / Leidos	[signature]	6/22/22
Carter James / Leidos	[signature]	6/22/22
Jonathan Rokicki / Leidos	[signature]	6/22/22
Mitchell DeBordali / Leidos	[signature]	6/22/22

Site Safety and Health: Officer Rich Gprinzel **(Printed Name)** [signature] **(Signature)** 6/22/22 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RUMAP-66 FWGW

N	Y	NA	Item
	✓		Daily safety briefing conducted
	✓		Emergency numbers and route to hospital posted
	✓		FWSHP and project-specific Addenda on-site, available to employees, and complete
		✓	Required exposure monitoring conducted and documented
		✓	Monitoring instruments (PID, OVA, CGI) calibrated daily against known standard and documented
	✓		First aid kit available and inspected weekly
	✓		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)
	✓		Personnel using buddy system (maintain visual or verbal contact and able to render aid)
	✓		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
		✓	If temperature <40°F: cold stress training conducted, controls in SSHP implemented
	✓		Personnel using appropriate biological hazard controls (See SSHP)
		✓	Drill rig operating manual on-site
		✓	Drill rigs inspected weekly and documented
		✓	Personnel near drill rig or other overhead hazards wearing hardhats
		✓	Each of two drill rig emergency shutdown devices tested daily
		✓	Employees excluded from under lifted loads
		✓	Unnecessary personnel excluded from hazardous areas, specifically near heavy equipment
		✓	Radius of exclusion zone around drill rig at least equal to mast height
		✓	Personnel wearing hearing protection when within 25 ft of drill rigs, generators, or other noisy equipment
	✓		Containers of flammable liquids closed and labeled properly
	✓		Fully charged fire extinguisher available 25 to 50 ft from flammables storage area and inspected monthly fieldtrucks + 1036
	✓		Personnel exiting potentially contaminated areas washing hands before eating
		✓	Personnel using steam washer wearing faceshield, hearing protection, heavy duty waterproof gloves, Saranax or rainsuit

DAILY SAFETY INSPECTION

PROJECT: RIAAP-66 FWGW

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 each go box
	✓		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

Rich Sprinkl RG 6/22/22

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/22/22

Task Team Members:

Rich Spinnel (FM/SSHO)
Chris McFarland
Jonathan Rokicki
Mitchell
Carter James
Kevin Sedlak (ARNG PM)

Narrative (include time and location):

0750 Rich arrived @ 1036. Field crew already onsite & prepped/calibrated equipment.
0810 Ice & Briefing by Rich (Heat & Stress)
0815 Rich @ 1037 - Range Control approved WBG/LL1/LL3/LL12.
0875 Kevin Sedlak (ARNG PM) briefly onsite at 1036. Field teams depart 1036 for WBG.
0830 Rich/Carter depart 1036. Head to LL1/LL3/LL12 to install QED pumps
0845 Arrived @ SCfmw-004. Checked casing OD to see if matched WBG lid/ring - same size However, need to obtain allen/hex keys to remove ring from casing.
0900 Arrived North side of LL1mw-086, walked along fence - road is not flooded but some mud/saturation - may not be passable w/ trucks - will inform Ryan (FM)/Jed (FM)
0910 Arrived @ LL1.
0915 Arrived @ LL1mw-082. Overgrown grass - weed whacked around well.
0930 Gauge LL1mw-082. DTW = 28.28' BTOC
TD = 41.50' BTOC. (semi-soft bottom)
Height WC = 13.22'
0940 Begin setting pump (QED Stainless pump). Intake depth ~36.50' BTOC. 1/4 x 1/4 dual tubing
0955 Tested pump - worked. (Set middle of 10' screen, ~5' from bottom
1005 Depart LL1mw-082. Secured LL1 gate.
1020 Arrived @ LL3mw-245. Clear tall grass then prep to set pump
1025 ~~Gauge LL3mw-245. DTW = 28.22/22~~ Existing 3/8 x 1/4 dual tubing so need to wait for 3/8" pump
~~TD = 75.6/22/22~~
~~Height WC = 6/22/22~~
~~1028 Begin to set pump. 25.6/22/22~~ Depart for LL12

Daily Weather Condition: A.M. 75-85° sunny, humid
P.M. 85-93° sunny humid, light wind

Recorded By: RSpinnel 6/22/22 (Signature)
QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/22/22 Page 2 of 3

Task Team Members:

Seepg

RS 6/22/22

Narrative (include time and location):

1035 Arrived @ LL2 (South gate).
1040 Arrived @ LL2mw-246. Clear tall grass away from well.
1045 Gauge LL2mw-246. DTW = 15.61' BTOC
TD = 34.95' BTOC
Height WC = 19.34'
1055 Set pump (QED Bladder Pump + dual tubing in bag from 1036 - 1/4 x 1/4)
Intake Depth = 29.95' BTOC
1105 pump tested - worked. Secure twine to casing.
1115 Depart LL2. Secured gate
1130 Returned to 1036. Unload truck & manage IDW.
1150 Carter heads to WBG to assist Chris.
1200 Spoke to Ryan Launch (FEM). He said to remove 3/8 tubing @ LL3mw-245 & install 1/4 x 1/4 tubing on the QED bladder pump.
1245 Depart 1036.
1255 Arrived @ LL3mw-245 (Carter met Rich).
1300 Removed existing 3/8 x 1/4" dual tubing (into bag).
1303 Gauge MW. DTW = 12.40' BTOC
TD = 48.64' BTOC (hard bottom). Height WC = 36.24' (> top of screen
1310 Begin to set pump (QED SS Bladder Pump) with new 1/4" x 1/4 dual tubing
- set middle of 10' screen - intake depth ~ 43
1325 Tested pump - worked. Secure pump w/ tubing to casing + secure MW.
1330 Rich/Carter depart. Carter back to WBG. Rich to SCFmw-004

Daily Weather Condition: A.M. Seepg

P.M. Seepg

Recorded By: RSmith 6/22/22 (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/22/22

Task Team Members:

See pg 1

RS 6/22/22

Narrative (include time and location):

1340 Rich @ SCFmw-004. Removed broken top ring off outer casing. Installed top ring/lid from WBG MW (recently converted to flushmount) and lock.
1355 Depart SCFmw-004.
1415 Arrive @ /036. Unload truck. Setup to decon pumps (3x) and setup cooler to ship.
1450 Pump decon completed. Begin sample QC/packing as field teams return.
1600 All offsite. Rich called Range Control (EOD)
1645 Dropped off coolers @ Fedex. EOD.

RS 6/22/22

Daily Weather Condition: A.M. See pg 1

P.M. See pg 1

Recorded By: RS 6/22/22 (Signature)

QC Checked by: Carter Gon (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/22/22

Page 1 of 2

Task Team Members:

Mitchell D. Bartoli

Jonathan Rokicki

JR 6/22/22

JR 6/22/22

Narrative (include time and location):

0845 Arrive at WBGmw-016 (pump intake depth 18.34')
0903 Begin prepurge
0919 Removed prepurge volume of 1400 mL plus an additional liter; begin purge
PSI 20 CPM 2/26/4
0937 Empty flow cell in attempt to reduce turbidity
1136 Stabilized (after 2 hour period for high turbidity)
1155 Arrive at WBGmw-018 (pump intake depth 18') WL = 16.86
1206 Begin pre-purge
1218 Remove pre-purge volume of 1300 mL plus an additional liter; JR 6/22/22 begin purge
PSI 20 CPM 4/12/3
1248 Well is stable; Collect sample WBGmw-018-220601-GW for explosives, sulfide, nitrate/nitrite/sulfate, alkalinity, and TOC
1137 Collect sample WBGmw-016-220601-GW for explosives
1340 Arrive at FWGmw-004 WL = 13.96'
1349 Begin pre-purge
1353 pre-purge stopped due to aquatroll; pre-purge resumed
1405 Pre-purge volume removed (1370 mL); begin purge
PSI 30, CPM 2/29/1
1416 Well is stable
1417 Collect sample FWGmw-004-220601-GW; FWGmw-004-220601MSD, FWGmw-004-220602-GW

Daily Weather Condition: A.M. 76° F; Sunny

P.M. 90° F; Sunny

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/22/22

Page 2 of 2

Task Team Members:

See pg 1

JR 6/22/22

JR 6/22/22

Narrative (include time and location):

1450 Return to 1036 to demob / pack samples
1600 Leidos offsite

JR 6/22/22

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/22/22 Page 1 of 3

Task Team Members:
Chris McFarland
Carter James CM 6/22/22

Narrative (include time and location):
0700 Arrive onsite and prep equipment for mob from field office (bldg 1036)
0800 H&S tailgate hosted by Rich (Leidos FM)
0830 Depart bldg 1036 for WB6mw-07
0845 Arrive at WB6mw-017 and set up equipment
0915 Begin pre-purge
DTW 5.28'
CPM 2/25/5 18 psi 150 ml/min
Pre-Purge volume 3005 mL
including additional 1000 mL
of purge volume from 6/21/22 conversation
w/ Amanda Spring
0927 Tablet disconnected from flotroll, reconnected & restarted pre-purge time.
0938 Begin Purge
DTW: 5.32
CPM: 2/25/5 18 psi 150 mL/min
Total Purge volume: 2205 mL
1048 It was observed temp was not being recorded. Settings were edited and set for temp to record.
~~1150 Sample Complete.~~ CM 6/22/22
1138 Well sampled after two hour purge. Turbidity did not stabilize. Sample WB6mw-017-220601-GW collected. Sampled/tested for explosives.

Daily Weather Condition: A.M. 75°F sunny, clear, humid
P.M. 92°F, sunny, humid.

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/22/22

Task Team Members:
Chris McFarland
Carter Jones
CM 6/22/22

Narrative (include time and location):

CM 6/22/22
1145 Carter arrived at WBGMW-017
1150 Sample complete. Equipment torn down and packed. Non-dedicated QED stainless steel bladder pump removed from well for decon.
1215 Depart WBGMW-017 for WBGMW-014.
1230 Arrive at WBGMW-014 and setup equipment. Well sampled using non-dedicated QED Stainless Steel bladder pump.
1240 Begin Pre-Purge CM 6/22/22 * ~~well~~ GW appeared w/ increase in heave at beginning of purge.
DTW: ~~11.63'~~ 12.63'
CPM: 4/1.0/5 22 psi 350 mL/min
Pre-Purge volume: 2691
1250 Begin Purge
DTW: 12.35
CPM: 4/1.0/5 22 psi 350 mL/min
Total purge volume: 4569l
1345 Emptied flow cell due to high turbidity
1424 disconnected from flow cell / flow trail
14:55 Well stabilized. Sampled WBGMW-014-220601-GW collected and tested/sampled for explosives.
CM 6/22/22
15:00 Sampling completed, equipment torn down / pump pulled from well (non-dedicated QED Stainless Steel bladder pump)

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: Chris McFarland (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/22/22

Page 3 of 3

Task Team Members:
Chris McFarland
Carter James

CM 6/22/22

Narrative (include time and location):
1500 Depart WB6mw-014 for field office (bldg 1036)
1535 Arrive at field office (bldg 1036)
1600 Left site

CM 6/22/22

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: (Signature)

QC Checked by: (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: 06/23/22	**Temperature:** 63°-77°	**Wind:** light
Weather: sunny, cooler today		
Safety Moment Topic:		

Task Descriptions:	**Associated Hazards:**
GW Sampling	Slips trips falls
IDW Sampling	Wildlife
	Biological (Bugs, Bees, Ticks)
	Cell phone coverage

Subcontractors Onsite:	**Equipment Onsite:**
None	GW Sampling Equipment

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
On Site Emergencies	- Call Range Control - Rally point at Bldg 1036 - Notify H&S mgr and Proj Mgr
	- Everyone has Stop Work Authority - Call Workcare for personal injury or incident
RS 6/23/22	

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Carter Jones / Leidos	Carter Jones	6/23/22
Mitchell DeSoto / Leidos	[illegible]	6/23/22
Jonathan Rokicki / Leidos	[illegible]	6/23/22
Chris McFarland / Leidos	Chris McFarland	6/23/22

Site Safety and Health Officer: Rich Sprinkl (Printed Name) RSprinkl (Signature) 6/23/22 (Date)

DAILY SAFETY INSPECTION

PROJECT: RVAAP-66 FWGW 6/23/22

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

DAILY SAFETY INSPECTION

PROJECT: RVAAP-66 FWGW

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 RS 6/23/22
		✓	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

Richard Spinnel RS 6/23/22

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/23/22 Page 1 of 1

Task Team Members:

Jed Thomas
Jonathan Rokicki
Rich Sprinzl
Chris McFarland
Mitchell DeBortoli
Carter James

Narrative (include time and location):

0700 Jed/Mitchell/Jonathan/Chris/Carter arrive at RVAAP. Go thru Main Gate
Start calibrating Aquatrolls
0715 Jed visits Range Control. Approved to access ODA2
0725 H&S Briefing and tailgate briefing
0730 Team departs to ODA2
RS 6/23/22 0745 Rich onsite at Main Gate then 1036. Unload ice bags.
0800 Jed returned to 1036 Discuss schedule/staffing for next week.
0825 Jed departs RVAAP. Rich called Ryan Laurich to discuss DET-004
water level is below pump (top). Ryan suggested to attempt to pump
and maintain the proposed flow rate. Rich informed Chris.
1035 Rich visits Range Control - Approved to access LL1 and LL2.
1045 Jonathan/Mitchell returned to 1036. Prep to head LL1mw-080/081.
(Carter also returned to join Jonathan).
1240 Rich arrived @ LL1 to assist Jonathan + picked up extra compressor
from Mitchell (@ LL1mw-081). 2 trees down on RR bed to 50/81 and LL1
roads are overgrown.
1330 Rich @ ODA2. Hooked up compressor + did same issue as other 2 compressors
in use by Chris @ DET-004.
1440 Rich @ 1036. Begin QC of Samples
1500 All field teams are back at 1036 and unloading trucks + prepping coolers
1600 All offsite. Rich called Range Control (EOD).
1645 Coolers dropped off @ Fedex. EOD.

Daily Weather Condition: A.M. 65°-72° Sunny

P.M. 72-78° Sunny

Recorded By: Jed Thomas (Signature) RSinzl 6/23/22

QC Checked by: Carter James (Signature)

07-162(NE)/102507

FTP-1215, Revision 0, 4/07/99

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/23/22

Page 1 of 2

Task Team Members:
Chris McFarland
Carter Jones
CM 6/23/22

Narrative (include time and location):

0700 Arrived on site and prep for fieldwork / load equipment for mob.
0730 H&S Tailgate hosted by Jed (Leidos PM)
0745 Depart field office (bldg 1036) for DET mw-004
0800 Arrive at DET mw-004 and set up equipment
0815 When gauging well, no water was detected. Interface probe hitting obstruction in well at 9.87' below TOC. Contacted Rich (Leidos PM)
~~0820~~ CM 6/23/22 and awaited further instruction
0825 Rich informs team to ~~Purge~~ CM 6/23/22 continue w/ sample, process and pre-purge at 50 mL/min as suggested by previous field activity
0835 Begin Pre-Purge
* DTW: 11.9'
CPM: 1/58/2 15 psi 50 mL/min
Pre-purge volume: 1244 mL (assumed no volume in hose line)
~~* 20 CM 6/23/22~~
* GW level below top of pump, unable to be gauged, assumed to be pump intake depth of 11.9' below TOC.
0915 Begin Purge
* DTW: 11.9' (see above)
CPM 1/58/2 15 psi 50 mL/min
~~Pre-purge volume~~ CM 6/23/22
Total purge volume:
0923 Well stable, begin sampling. (continue on next page) additional sample was recorded on tablet after flow cell emptied

Daily Weather Condition: A.M. 65°F Sunny
P.M. 78°F Sunny

Recorded By: [signature] (Signature)
QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/23/22

Page 2 of 2

Task Team Members:
Chris McFarland
Carter Jones

CM 06/23/22

Narrative (include time and location):

0923 Samples DET-004-220601-GW (sampled/tested for VOCs, Phthalates/Nitro-aromatics/Phenols, LL PAHs, PCBs, Pesticides, Explosives, Cyanide, and Tot. Metals) and FWGTB-21040__-TB (sampled/tested for VOCs) collected.
trip blank

0940 air bubbles in Pump line (water below pump intake) adjusted flow rate to 215 mL/min

1045 Carter departed DET-004 for field office (bldg 1036

1450 Sampling complete. Clean/tear down equipment

1510 Depart DET-004 for field office (bldg 1036)

1525 Arrive at 1036 and unload equipment

1600 off site

6/23/22

CM

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: Chris McFarland (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/23/22 Page 1 of 1

Task Team Members:

Jonathan Rokicki
Carter James
Mitchell D. Bartholi

JR 6/23/22

Narrative (include time and location):

0800 Arrive at DET-003 WL=9.17
0820 Begin pre-purge
0830 ~~Be~~ JR 6/23/22 Remove pre-purge volume (~1400mL); begin purge
PSI 20, cPM 3/14.5/5.5
0839 Well is stabilized
0840 Collect sample, Sample ID's DET-003-220601-GW;
DET-003-220601-GWMSD, DET-003-220602-GW, FWGTB-210412-TB
1160 Arrive at LL1mw-080 WL=11.47
1214 Begin pre-purge
1222 Remove pre-purge water (1400mL); begin purge
PSI 20, cPM 3/18/2
1232 Well is stable
1250 Collect sample LL1mw-080-220601-GW
for explosives, sulfide, nitrate/nitrite/sulfate, alkalinity, & TOC
1335 Arrive at LL2mw-059
1345 Begin pre-purge WL=12.56
1354 Begin purge; removed pre-purge volume (1400mL)
PSI 20, cPM 3/18/2
1408 Well is stabilized
1409 Collect sample LL2mw-059-220601-GW for
explosives, sulfide, anions, and TOC
1450 Return to 1036 to decon & pack samples

Daily Weather Condition: A.M. 70° F, sunny
P.M. 80° F, sunny

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/23/22

Page 1 of 1

Task Team Members:

Mitchell DeBoBasi

MD 6/23/22

Narrative (include time and location):

PID MD 6/23/22

WL = 28.72 ft 38.71 ft

1430 0327

1225 Arrive @ LLT-081
1228 Begin equipment start
1229 Begin pre-purge
1246 Begin purge. Pre-purge removed (1430 mL)
PSI 20 CPM2 R28 D2 77°F; Sunny
1432 Begin sampling/end purge 3.5 gal
Sample ID LLTMW-0816021-GW
1500 Leave LLT-081
1503 Arrive back @ building 1036

RS 6/24/22

Daily Weather Condition: A.M. —

P.M. 77°F Sunny

MD 6/23/22

Recorded By: (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: 6/24/22	**Temperature:** 60-80s	**Wind:** slight
Weather: sunny		
Safety Moment Topic: Active Ranges all over site. Training		

Task Descriptions:	**Associated Hazards:**
GW Sampling	Sun/UV
IDW Management	Driving/Traffic
	EOCs/Splash
	Chemical Decon
	Biological
	Slips Trips Falls

Heavy lifting/carrying (wagon)

Subcontractors Onsite:	**Equipment Onsite:**
None	GW Equipment

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
Heat Stress / Stroke	- Call Range Control - Put employee into cooled/shaded vehicle/area + hydrate - Notify HAS/FM/PM - Report to HAS

RS 6/24/22

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Mitchell DeBoard / Leidos		6/24/22
Carter Jones / Leidos		6/24/22
Chris McFarland / Leidos		6/24/22
Jonathan Rokicki / Leidos		6/24/22

Site Safety and Health: Officer Rich Sprinkl **(Printed Name)** RS **(Signature)** 6/24/22 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RIAAP-66 FWGW 6/24/22 Page 1 of 2

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

DAILY SAFETY INSPECTION

PROJECT: RVAAP-66 · Fuzw

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 RS 6/24/12
		✓	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

Name	Signature	Date
Rich Spaml	RSpaml	6/24/12

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/24/22

Page 1 of 1

Task Team Members:

Rich Sprinz/(FM/SSHO)
Jonathan Rokicki
Chris McFarland
Mitchell DiBartoli
Carter James

Narrative (include time and location):

0700 Rich/Jonathan/Chris/Mitchell/Carter arrived @ RVAAP Main Gate then 1036. Begin calibrating Aquatrolls (3x) + loading field trucks.

0730 H&S Briefing by Rich

0745 Rich @ Range Control - Approved for only LL1/LL3/LL12
*Lots of active rangers in North/west areas + training near LL2/most sites.

0820 Field teams depart for LL1 + LL3 (3 teams). IDW Inspection completed.

0900 Rich to LL1mw-086 to dropoff equipment to Chris/Carter

0920 Returned to 1036. Prep coolers for shipping later.

1130 Chris having issues w/ compressors. No extra but found 1 extra MP10 to try that as potential issue.

1145 Rich near LL1mw-086 - swap equipment w/ Chris + Carter

1155 MP10 did not work. Jonathan arrived w/ his MP50 → take it to Chris to try.

1205 Determined battery was issue.

1220 Head to LL1mw-082 w/ Jonathan to help Setup to purge.

1410 Rich departed LL1 (helped Jonathan w/ sample).

1420 Returned to 1036. Chris/Carter back too. Begin sample QC + prepping to ship.

1600 All offsite. Rich visits Range Control to inform offsite/EOD.

1645 Fedex dropoff - 1 cooler #274757700612.

1700 Returned to office. EOD.

Daily Weather Condition: A.M. 60-70° sunny

P.M. 70-85° Sunny

Recorded By: [signature] 6/24/22 (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/24/22

Page 1 of 3

Task Team Members:

Jonathan Rokicki
JR 6/24/22

JOZ 6/24/22

Narrative (include time and location):

0845 Arrive at LL3mw-237 WL = 15.95'
0907 Begin pre-purge
0924 Removed pre-purge volume (1430 mL); begin purge
PSI 25, CPM 2/28/2 new WL = 16.44'
0930 Change to CPM 2/29/1 to prevent drawdown
new WL = 16.48, new flow rate = 75 mL/min
0952 Well is stable
0953 Collect sample LL3mw-237-220601-GW for explosives
1025 Check in with Mitchell at LL3mw-239
1045 Arrive at LL3mw-239 WL = 12.32
1110 Begin pre-purge
1121 Remove pre-purge volume (1500 mL); begin purge
CPM 3/18/2 PSI 20; flow rate = 250 mL/min
1147 Well is stable
1150 Collect sample LL3mw-241-220601-GW for explosives
1230 Meet Rich at LL1mw-064 to swap MP50 for MP10 & compressor from Chris & Carter; receive bottles for LL1mw-082
1300 Arrive at LL1mw-082 with Rich and setup with compressor & MP10 (initial WL = 28.63)
1317 Begin pre-purge
1332 Empty flow cell to reduce turbidity
1333 Begin purge; remove pre-purge volume (1500 mL) PSI 20 CPM 3/12.5/2.5

Daily Weather Condition: A.M. 70° F, sunny

P.M. 85° F, sunny

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/24/22

Page 2 of 2

Task Team Members:

Jonathan Rodzicki
JR 6/24/22

JR 6/24/22

Narrative (include time and location):

1358 Stabiled
1400 Collect Sample UUmw-082-20601-GW for explosives
1420 Give samples to Rich
1450 Return to 1036 to demob & pack samples
1600 Leidos offsite

JR 6/24/22

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/24/22

Page 1 of 1

Task Team Members:

Mitchell DeBordo

6/24/22

Narrative (include time and location):

0844 Arrive @ LL3-239 after searching for 15-20 minutes for well, begin setup

0900 Turn on equip & wait for flow cell to fill

0908 Begin pre-purge after emptying 1370 mL

1003 Begin purge CPM1 R56 D4 30psi

1139 Begin sampling Sample ID LL3-MW-239-220601-GW

1235 Leave LL3-239 for LL3-235

1239 Arrive @ LL3-238 1290 WL 17.93

1259 Begin pre purge @ LL3-238

1315 Empty 1290 mL, end pre purge, begin purge. CPM2 R28D2 20psi

1355 End purge CPM1R58D2 20psi

1400 Begin sampling Sample ID LL3mw-238-220601-GW

1500 Leave LL3-238 for 1036

1510 Arrive @ 1036

MD 6/24/22

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

P.M. 82°F Sunny

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/24/22

Task Team Members:

Carter James
Chris McFarland
CJ Grover

Narrative (include time and location):

0700 arrive onsite and prep for Field work
0800 Health and Safety tailgate hosted by Rich (Leidos FM)
0810 Depart for Field (LLI mw ~~-087~~) (CJ 6/24/22 - 086)
0853 Arrived at Well and began setup
0930 Started Pre-Purge
DTW: 7.87 ft
GPM (3/18/2)
PSI 55
Pre-Purge Volume: 2551 mL
Flow rate: 175 mL/m
0953 Start Purge
DTW: 7.97 ft
Gpm 3/18/2 55 psi 175 ml/min
Total Purge Volume: 33500 mL
~~7~~ 6/24
1006 Disconnected from Aquatroll and Reconnected
1123 Compressor overheated and was reduced
1246 Found problem, Bad Battery
1250 Disregard times between 1:42:16 - 3:12:40, equipment malfunctioned and time spent troubleshooting was determined to be bad battery. Readings are void. Switched to MP56 S.N. 2325.

Daily Weather Condition: A.M. 63°F Sunny
P.M. 80°F Sunny

Recorded By: Carter Gomez (Signature)
QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/24/22

Task Team Members:

~~Se~~ CJ 6/24

Carter James

Chris McFarland

CJ 6/24/22

Narrative (include time and location):

1323 Following 2 hour purge due to high turbidity, well was sampled. ~~Sample~~ CJ 6/24/22 Sample LLI mw-086-220621-GW was collected and sampled/tested for explosives

1330 Sample complete, equipment put in truck

1352 Departed LLI mw-086 for Field office Bldg 1036

1422 Arrived at Field office

* Log was saved without additional notes

Mp50: 2325 Compressor: 22817 Solinst: 42832

At 1123, air compressor was unable to maintain air pressure and began troubleshooting. After switching to a Mp50, it was determined to be a bad battery. Used truck battery to solve issue and resumed purge at 1246. Void readings between time stamps 1:42:16 - 3:12:40.

Begin low flow purge at 0953 CPS 55/ Lpm 3 (18/2)

Stagnant water volume: 2541 mL

Stagnant water volume removed at 0953

Completion of 2 hour purge due to high turbidity at 1323

Water is cloudy, colorless, odorless throughout purge

Measured total volume purged: 33,500 mL

Daily Weather Condition: A.M. See page 1

P.M. See page 1

Recorded By: Courtney Gomez (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/24/22

Page 3 of 3

Task Team Members:

Carter Jarrel
Chow McFarland
CT 6/24

CT 6/24

Narrative (include time and location):

Sample for explosives at 1323 on 06/24/22
1600 Offsite

CT
6/24/22

Daily Weather Condition: A.M. See Page 1

P.M. See Page 1

Recorded By: Carter Jarrel (Signature)

QC Checked by: (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: ~~6/23/22~~ 6/27/22	**Temperature:** 60s-70s	**Wind:** light
Weather: Sunny		
Safety Moment Topic:		

Task Descriptions:	**Associated Hazards:**
GW Sampling	Biological / Sharp Brambles/Briars
IDW management	Sun/UV/Heat Stress / Cutting Tools
	COCs/Chemicals / Slips Trip Falls
	Lifting / Open Holes
	Driving on/off road + to/from office.
	OHARNG training activity

Subcontractors Onsite:	**Equipment Onsite:**
RS 6/27/22	GW Sampling Equipment
	Decon Chemicals

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 (Aquatrolls)	☑ 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
Poked in eye by Brush	- Provide immediate First Aid Care to employee. - If emergency (bleeding), call Range Control
(+ all onsite emergencies)	- or call Work care (non emergency) - Notify FM/PM/HHS. - Follow up w/ Incident Report

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Mitchell DeBartolo / Leidos		6/27/22
Jonathan Rokicki / Leidos		6/27/22
Carter James / Leidos		6/27/22

Site Safety and Health: Officer Ruth Spranzl **(Printed Name)** _____ **(Signature)** 6/27/22 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP-66 FWGW 6/27/22

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

DAILY SAFETY INSPECTION

PROJECT: RVAAP-66 FWGW

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 RSG 6/27/22
		✓	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

Name	Signature	Date
R. Sprinzl	RSprinzl	6/27/22

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP RVAAP-66 **PROJECT NO:** June 2022 Sampling Event

Date: (mm/dd/yy): 06/27/22 Page 1 of 2

Task Team Members:

Rich Sprinzl (FM/SSHO) Carter James
Mitchell DeBartoli Jed Thomas (PM/offsite)
Jonathan Rokicki Ryan Laurich (FM/offsite)

Narrative (include time and location):

0700 Mitchell/Jonathan/Carter arrived @ RVAAP Main Gate/1036. Begin loading trucks + calibrating Aquatrolls.

0745 Rich arrived @ RVAAP + 1036. All 3 Aquatrolls not calibrating ORP. Mitchell has attempted to call Insitu Tech support already; tried all 3 cal solutions; and tried additional cleaning with DI water.

0755 Rich @ Range Control - Approved for access to LL3 + LL12.

0830 Mitchell spoke to InSitu Tech Support - recommended to soak in QuickCal Solution for 2 hours then reattempt calibration.
- Note Rich spoke to Ryan Laurich + Danielle Anderson about troubleshooting (resetting factory cal defaults did not work).

0930 Spoke to Jed Thomas (PM) - he suggested to send teams to remaining wells to clear vegetation while waiting for Horibas; and call Pine to check if Horibas were available.

0935 Teams left together to clear LL12.

0950 Rich @ Range Control. Approved to access FB0/LL10 + other FWGMWs nearby for cleaning.

1020 Crew back @ 1036 to check Aquatrolls. Still out of Range/High ORP. Mitchell called InSitu again. Suggested to change ORP/pH reference solution in sensor.

1050 Mitchell indicated sensor solution did not resolve issue. Tech rep suggested ORP solution (which Mitchell had a bottle). All 3 Aquatrolls were re-calibrated

1130 All 3 Samplers head out to setup on 1st MWs at LL3 + LL12

1150 Rich called Insitu Sales Rep - will overnight replacement QuickCal to RVAAP.

Daily Weather Condition: A.M. 60s sunny, light wind.

P.M. 70s sunny, light

Recorded By: RSprinzl 06/27/22 (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/27/22 Page 2 of 2

Task Team Members:

see page 1

RS 6/27/22

Narrative (include time and location):

1430 Rich to LL12
1445 Rich LL12mw-185. picked up QED pump from Jonathan to decon
1458 returned to 1036. Decon QED pump.
1530 QC/puck samples as teams return to 1036.
1600 All offsite. Rich called Range Control (EOD).
1645 Fedex dropoff - 1 cooler (#274846313400)
1700 EOD office.

RS 6/27/22

1520 Collected ER sample LL12mwFB06272022
from decomed QED SS pump used at LL12mw-246.
Pine Environmental DI water (#1GK248) was used for ER,
by pouring over/into Bladder Pump housing + filling bottle ware

Daily Weather Condition: A.M. See pg 1

P.M.

Recorded By: RS 6/27/22 (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/27/22

Page 1 of 2

Task Team Members:
Carter Jones
CJ 6/27/22
CJ 6/27/22

Narrative (include time and location):

0700 Arrive on site
0800 Quick cal solution not working for ORP
0830 Leave to clean wells in LL12
1030 Arrive back at building 1036
1100 Told to use Quick Cal and a new ORP Solution to solve the ORP problem
1115 Health and Safety hosted by Rich (FM)
1131 Arrive at LL12 mw-244 WL = 9.78'
1159 Start Pre-Purge
1208 Removed pre-purge volume (664 mL); began purge at Cpm 3/15.5/4.5, psi 25 new WL = 13.40 Flow rate = ~~350 mL/min~~ 250 mL/min CJ 6/27/22
1224 Due to drawdown, change cpm to 3/14/1 Flow = 100 mL/min WL = 14.61
1248 Empty flow cell due to low turbidity but extremely murky water
1320 Empty flow cell again same issue
1425 Finish purge for two hours, turbidity jeniser is reading incorrectly Purge Volume: 15,000 mL
1427 Collect sample LL12mw-244_220601-GW for Nitrate and Ammonia
1440 Visit Jonathan and Mitchell to grab samples

Daily Weather Condition: A.M. 70°F, Sunny
P.M. 73°F, Sunny

Recorded By: Carter Jones (Signature)
QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/27/22

Page 2 of 2

Task Team Members:

Carter Jones

CJ 6/27

CJ 6/27

Narrative (include time and location):

~~0945~~ Head back to building 636 to pack up materials

6/27

CJ 6/27/22

~~1440 Visit Together and Mitchell to grab samples~~ CJ 6/27

1600 Leave site

CJ 6/27/22

Daily Weather Condition: A.M. See Page 1

P.M. See Page 1

Recorded By: Carter Jones (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/27/22 Page 1 of 1

Task Team Members:
Mitchell DeSarbol
MD 6/27/22
MD 6/27/22

Narrative (include time and location):

WL 12.62ft 1900 Stag water

0730 Try to calibrate aquatrolls, calibration of ORP was not working. Called In-Situ & they instructed team to let
0830 the sensors "soak" in Quick cal sln
0930 Go out w/Jon & Carter to clear area around wells in LL12
1020 Call In-Situ back to get further instruction since ORP was still not calibrating. We were able to calibrat w/ORP solution I had in my bin ORP had to be calibrated separately from COND/pH
1114 Leave 1036 for LL3 245
1121 Arrive @ LL3 245
1130 Begin pre purge WL = 12.62 Need to purge 1900mL
1155 Begin purge CPM1 R12 D4 CPM ~38 Flow rate 175ml/min
1205 Sample @ LL3-245 Sample ID LL3mw-245-220601-GW ADD 500 mL TO TOTA
1225 Leave LL3-245 for LL12-245
1239 Arrive @ LL3-245 WL = 7.55 25 1.5gal
1249 Begin pre-purge Pre Purge volume 1570mL
1438 End pre purge CPM1 R54 D1 20psi
1508 Begin sample @ LL12-245 CPM1 R58 D2 20psi
Sample ID LL12 mw-245-220601-GW
1538 Head back to 1036
1546 Arrive @ 1036

Daily Weather Condition: A.M. 67°F Sunny
P.M. 79°F Sunny

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/27/22

Page 1 of 2

Task Team Members:

Jonathan Rodsick

JR 6/27/22

JR 6/27/22

Narrative (include time and location):

0700 Unlock door to 1036 and begin loading equipment / calibrating
* ORP Cal is high; call tech support; told to wait 2 hours and try again
* Call tech support again; use different ORP cal fluid
* Clear vegetation at LLR wells; return to 1036 & mobilize

1140 Arrive at LLRmw-246 WL = 15.85

1158 Begin pre-purge

1209 Begin purge; removed pre-purge volume (1600 mL)
PSI 30, CPM 2/25/5 flow rate = 200 mL/min

1212 Change to PSI 30, CPM 2/26/4 flow rate = 125 mL/min

1230 Empty flow cell in attempt to reduce turbidity

1249 Stabilize

1250 Collect sample LLRmw-246-220601-GW for ammonia and nitrate

JR 6/27/22 ~~1300~~ 1330 Arrive at LLRmw-185 WL = 6.87

1343 Begin pre-purge
* calculated pre-purge volume is 1700 mL + an additional liter = 2700 mL
* Flow rate is 25 mL so I increased CPM to 2/29/1 in order to speed up pre-purge; will lower flow rate to 25 once pre-purge is finished to reduce drawdown (flow rate during pre-purge = 75 mL/min)

1421 Remove pre-purge volume (2700 mL); begin purge PSI 18 (CPM 1/59/1)
Flow rate is back down to 25 mL/min to reduce drawdown from pre-purge

Daily Weather Condition: A.M. 65° F, sunny

P.M. 78° F, sunny

Recorded By: [signature] (Signature)

QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/27/22

Page 2 of 2

Task Team Members:

See Page 1

JR 6/27/22

JR 6/27/22

Narrative (include time and location):

1435 Rich comes to pick up pump from LL12mw-246
1442 Well stabilizes
1445 Collect sample LL12mw-185-220601-GW
LL12mw-185-220601-GWMSD
LL12mw-185-220602-GW
1545 Return to 1036 to demob & pack samples
1600 Offsite

JR 6/27/22

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: (Signature)

QC Checked by: (Signature)

leidos

Daily Tailgate Safety Briefing

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

Date: 6/28/22	**Temperature:** 60-70s	**Wind:** minimal
Weather: Sunny		
Safety Moment Topic: Black Bear in NE Ohio		

Task Descriptions:	**Associated Hazards:**
GW Sampling	wildlife
IDW Management	Driving on/off road.
	COCs
	Slips Trips Falls
	Sharps
	Carrying/Lifting

Subcontractors Onsite:	**Equipment Onsite:**
None RS 6/28/22	GW Sampling Equipment
	H+S Equipment
	MS 6/28/22

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/Aquatrolls	☑ 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
onsite Emergencies	– Ensure site/area is safe/secured. – Call Range Control + Meet at nearest ETP, if possible – Provide immediate First Aid Care – Notify FM/PM/HFS.

RS 6/28/22

Individuals attending daily tailgate meeting (signatures):

Name/Company	Signature	Date
Mitchell DeBorda / Leidos		6/28/22
Jonathan Rokicki / Leidos		6/28/22
Carter Jones / Leidos		6/28/22
Chris McFerland / Leidos		6/28/22

Site Safety and Health: Officer Rich Sprinzl **(Printed Name)** **(Signature)** 6/28/22 **(Date)**

DAILY SAFETY INSPECTION

PROJECT: RVAAP-66 FWGW 6/28/22 Page 1 of 2

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

DAILY SAFETY INSPECTION

PROJECT: _____

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 as6/28/22
		✓	15-min eyewash (accessible and full) within 100 ft of areas where corrosive sample preservatives are poured eyewash (small bottles in go-Boxes
	✓		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

Rich Sprinzl [signature] 6/28/22

Name Signature Date

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/28/22 Page 1 of 1

Task Team Members:

Rich Sprinzl (FM/SSHO)
Mitchell DeBortoli
Chris McFarland
Carter James
Jonathan Rokicki
RS 6/28/22

Narrative (include time and location):

0700 Mitchell/Chris/Jonathan/Carter arrived RVAAP/B1036. Begin calibrating Aquatrolls/loading trucks + sample coolers/Decon QED pumps (2x).
0745 Rich arrived at RVAAP/B1036.
0800 Rich @ Range Control - Approved entry for access to LL12/LL10/FBQ/FWG-23/07.
0815 H+S Briefing by Rich. Kevin Sedlak (ARNG PM) onsite briefly. Provided status update.
0825 Field teams depart for GW sampling (1 team will clear LL10 + FBQ wells first).
1000 pack up deconed QED pumps and other excess equipment/supplies.
1030 Consolidated IDW spill containment pallets/tanks.
1130 Rich heads toward FBQ to provide backup compressor to Chris/Carter.
1140 Met up w/ Chris + Carter - Finished 1st of 3 FBQ MWs. Mitchell also done w/ 2 MWs (LL10 MW + FWG-023). Both teams will headback to FBS to start last 2 MWs.
1195 Returned to 1036. Manage IDW + QC samples collected so far.
1200 Fedex delivered new Quick Cal Solutions (4pack) from Insitu.
1230 Begin packing additional items/bagging up tubing/cleaning up 1036.
1425 Chris/Carter returned with all IDW from 3 teams. Manage IDW + prep to sample.
1440 Chris/Carter collected IDW composite sample FWGIDW-220601-WW from 3 drums, using disposable bailer.
1530 Pack up 3 sample coolers, + load up all equipment/supplies (demob today) + clean up 1036.
1600 All offsite. 1036 secured. Rich called Range Control (EOD).
1645 3 coolers dropped off @ Fedex (Twinsburg) then meet crew @ office to unload equipment.

Daily Weather Condition: A.M. 60s-70s Sunny

P.M. 70s Sunny

Recorded By: RS 06/28/22 (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/28/22

Page 1 of ~~3~~ 3
CM 6/28/22

Task Team Members:

Carter James
Chris McFarland
CS 6/28

CJ 6/28

Narrative (include time and location):

0700 Arrive on site and prep trucks
0800 Health and Safty with Rich (Leidos Fm) leave for assigned wells
0830 Clear wells in LL10 and FBQ
0927 Arrived at well FBQ-173. Sprayed w/ wasp killer due to wasps nest.
0952 Begin Pre-Purge
DTW: 42.60' CM 6/28/22
CPM: ~~3/0.5/4~~ @ 60 psi 350 mL/min CPM 3/15/5
pre-purge volume: 1403 mL
0956 Begin Purge
DTW 43.76'
CPM 3/15.5/4.5 60 psi 30 ml/min
Total Purge volume: 11753 mL
1017 Well Stable. Samples FBQmw-173-220601-GW and FBQmw-173-220602-GW collected and sampled/tested for explosives, sulfide, Nitrat/Nitrite/Sulfate, Alkalinity, and TOC.
1030 Pump over heated during sampling. MPW set to "HOLD" until pump (air compressor) ~~tells~~ CM 6/28/22 cools.
1054 air compressor turned back on and sampling complete.
1057 Sample collection finished. Equipment packed
1107 Depart FBQmw-173 to meet Rich & get backup pump.
1115 Meet Rich and hand off samples, set backup pump.

Daily Weather Condition: A.M. 60° Sunny
P.M. 74° Sunny

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/28/22

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CM 6/28/22

Task Team Members:
Chris McFarland
Carter Jones
CM 6/28/22

Narrative (include time and location):

11:30 Depart for FBQmw-174
11:38 Arrive at FBQmw-174 and set up equipment. Give bottleware to Mitchell for adjacent FBQmw-175
11:52 Begin Pre-purge
DTW 19.69'
CPM 3/18.5/1.5 32 PSI 125 mL/min
Pre Purge volume 1244 mL
. Upon sounding well, an obstruction was encountered at 15.54' below TOC assumed to be the top of the dedicated pump. No GW was detected. Therefore DTW assumed to be pump intake depth
Assumed to be twice pump volume or 1244 mL since DTW is below top of pump and pump lines are void of water.
12:02 Begin purge
DTW 19.69'
CPM 3/18.5/1.5 32 PSI 125 mL/min
Total Purge volume: 4654 mL
12:12 Well Stabalized, Sample FBQmw-174-220601-GW collected and sampled/tested for explosives, Sulfide, Nitrat/Nitrite/Sulfate, alkalinity, and TOC.
12:25 Air compressor overheated, replaced w/ back up compressor. Resume sampling
12:27 Sampling Complete, Pack equipment, Wait for Mitchell to complete purge to take IDW back to 1030

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: [signature] (Signature) QC Checked by: [signature] (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/28/22

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Task Team Members:
Chris McFarland
Carter Sumes

CM 6/28/22

Narrative (include time and location):
1325 Depart for 1036
1340 Arrive at 1036, unload equipment & pack out
1600 Leave site.

CM 6/28/22

Daily Weather Condition: A.M. See Page 1

P.M.

Recorded By: (Signature)

QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 06/28/22 Page 1 of 1

Task Team Members:

Jonathan Rokicki
JR 6/28/22

JR 6/28/22

Narrative (include time and location):

0700 Arrive at 1036 to unlock door & load up trucks
0800 Rich (FM) holds health & safety tailgate
0830 Arrive at LL12mw-187 WL = 9.66'
0848 Begin pre-purge
0902 Remove pre-purge volume (1900mL calculated pre-purge vol.; 2600mL actually removed during pre-purge)
* Begin purge: PSI 25 / CPM 2/26/4 ; Flow rate = 200
0914 Well is stable
0915 Collect sample LL12mw-187-GW-220601-GW for nitrate & ammonia
1014 Arrive at FWGmw-007 WL = 23.62'
1029 Begin pre-purge
1043 Remove pre-purge volume (1400mL); begin purge: PSI 25 /CPM 2/28/2 Flow rate = 100mL/min
1055 Well is stable
1057 Collect sample FWGmw-007-220601-GW for explosives
1135 Arrive at Fuze & Booster to help out Chris/Carter and Mitchell
* help Mitchell sample FBQmw-175
1450 Depart Fuze & Booster for 1036
1505 Arrive at 1036 to demob & pack samples; load up rental equipment
1600 Leidos offsite

JR 6/28/22

Daily Weather Condition: A.M. 65° F, sunny
P.M. 75° F, sunny

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/28/22 Page 1 of 2

Task Team Members:
Mitchell DeBartolo

MD 6/28/22 MD 6/28/22

Narrative (include time and location):

0700 Arrive @ RVAAP (0695) ~~with~~ & get let in. Start calibrating equip/ gabber equipment.
0820 Leave 1036 to go to FWGmw-023
0841 Had to call Rich to get to FWG-023, Rich helped direct me to well location WL=116.29 22.0 103.21
0855 Stagnant water volume 5700
0857 Start pre purge CPM1 R20 D80 110psi
0915 Start purge 5700mL removed CPM1 R20 D40 110psi
0933 Start sampling Sample ID FWGmw-023-220601-GW
0938 Leave FWGMW-023
0958 Arrive @ LL1mw-003 WL=21.04 26.9
1013 Begin pre-purge, 1360mL for pre-purge volume CPM3 R18 D2 20psi
1030 Change to R17 D3 to get pre purge moving slightly faster if water level stays stable
1035 End pre-purge change back to CPM3 R18 D2 20psi to get less flow for smaller bottles
1047 Well stable, begin sampling Sample ID LL1mw-003-220601-GW
1106 ~~Leave~~ Pack up & head to 1031
1131 ~~After~~ meeting rich/chris/carter ~~Invent~~ to FBQmw-78 w/Chris & carter to sample WL=17.33 23
1141 Begin pre-purge 1350mL pre-purge volume

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

P.M. 72°F Sunny

Recorded By: (Signature) QC Checked by: (Signature)

TASK TEAM ACTIVITY LOG SHEET

PROJECT NAME: FWGWMP
RVAAP-66

PROJECT NO: June 2022 Sampling Event

Date: (mm/dd/yy): 6/28/22

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Task Team Members:

Mitchell DeBartolo

MD 6/28/22

MD 6/28/22

Narrative (include time and location):

1157 Start purge CPM2 R27 D3 20psi
1158 Change to CPM2 R28 D2 20psi
1211 Empty flow cell
1329 End purge begin sampling Sample ID: FBQmw-175-220601-GW
FBQmw-175-220601-GWMSD, FBQmw-175-220602-GW
1450 Leave FBQmw-175
1500 Arrive @ 1036
1505 Unload truck & equipment, finish inventory/pack coolers/meet w/team and finish for day

MD 6/28/22

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

P.M. 72°F Sunny

Recorded By: (Signature)

QC Checked by: (Signature)

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

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RVAAP-03 OPEN DEMOLITION AREA #2

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Low-Flow Test Report:

Test Date / Time: 6/23/2022 8:30 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Mitchell DeBortoli

Location Name: DET-003 **Well Diameter: 2 in** **Top of Screen: 7 ft** **Total Depth: 15 ft** **Initial Depth to Water: 9.17 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: 4,415.5 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 250 mL/min** **Final Draw Down: 0.13 ft**	**Instruments Used:** **Aqua TROLL 600: 518813** **Water Level: 09872** **MP50: 2325**

Test Notes:

CPM 3 14.5:5.5, 20 PSI, 250 mL/min

Weather Conditions:

60°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	+/- 0.3	
6/23/2022 8:20 AM	00:00	7.04 pH	12.72 °C	0.63 mS/cm	6.07 mg/L	138.94 NTU	21.3 mV	9.17 ft	225.00 mL/min
6/23/2022 8:25 AM	04:26	6.79 pH	11.21 °C	0.66 mS/cm	0.58 mg/L	24.54 NTU	-42.3 mV	9.30 ft	240.00 mL/min
6/23/2022 8:29 AM	08:52	6.69 pH	11.14 °C	0.66 mS/cm	0.31 mg/L	6.16 NTU	-44.8 mV	9.30 ft	240.00 mL/min
6/23/2022 8:30 AM	09:33	6.68 pH	11.07 °C	0.66 mS/cm	0.29 mg/L	5.95 NTU	-45.1 mV	9.30 ft	240.00 mL/min
6/23/2022 8:33 AM	12:33	6.65 pH	11.07 °C	0.66 mS/cm	0.23 mg/L	3.22 NTU	-44.9 mV	9.30 ft	240.00 mL/min
6/23/2022 8:36 AM	15:33	6.63 pH	10.94 °C	0.66 mS/cm	0.19 mg/L	1.44 NTU	-45.3 mV	9.30 ft	250.00 mL/min
6/23/2022 8:39 AM	18:33	6.64 pH	10.94 °C	0.66 mS/cm	0.18 mg/L	0.66 NTU	-46.0 mV	9.30 ft	250.00 mL/min

Samples

Sample ID:	Description:
DET-003-220601-GW DET-003-220601-GWMSD DET-003-220602-GW	8:20 AM Begin low flow purge; PSI20/CPM/R14.5D5.5 Stagnant water volume 1,300 mL 8:30 AM Stagnant water removed. Purge took longer than anticipated. 8:39 Stable 8:40 Collect samples Water is clear colorless odorless throughout purge Measured total vol purged 39.6 L Sample for TAL Metals, Explosives, VOCs, SVOCs, PCBs, Pesticides, and Cyanide

Created using VuSitu from In-Situ, Inc.

Completed By Mitchell DeBortoli
06/23/2022

QA Check By _____
08/30/2022

Low-Flow Test Report:

Test Date / Time: 6/23/2022 8:31:22 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Chris McFarland

Location Name: DET-004 **Well Diameter: 2 in**	**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: 8,374 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 50 mL/min** **Final Draw Down: 11.9 m**	**Instrument Used:** **Aqua TROLL 600: 513574** **MP10: 1143** **Compressor: 22817** **Solinst Water Meter: 42832**

Test Notes:

CPM 1 59:1; PSI 15; 50 mL/min

While gauging well for initial DTW an obstruction was encountered at 9.87 ft below TOC. It was assumed to be the top of the pump. No groundwater was detected. Upon initiating the prepurge, water was drawn through the pump. Therefore the DTW was set as the pump intake depth of 11.9 ft below TOC.

An initial pump rate of 50 mL/min was used and the well stabilize however approximately 20 minutes into sampling, air bubbles began to appear. The pump rate was lowered to 25 mL/min and air bubbles ceased to appear.

The stagnant water volume calculated assumes the pump hose line is free of water and only accounts for twice the pump volume, or 1,244 mL.

Weather Conditions:

60°F clear

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	+/- 0.3	
6/23/2022 8:31 AM	00:00	6.79 pH	15.77 °C	0.77 mS/cm	3.13 mg/L	9.40 NTU	217.8 mV	11.90 ft	50.00 mL/min
6/23/2022 8:34 AM	02:41	6.52 pH	15.99 °C	0.77 mS/cm	2.28 mg/L	13.71 NTU	223.9 mV	11.90 ft	50.00 mL/min
6/23/2022 8:53 AM	22:37	6.30 pH	14.61 °C	0.75 mS/cm	0.45 mg/L	9.91 NTU	104.4 mV	11.90 ft	50.00 mL/min
6/23/2022 9:09 AM	37:55	6.35 pH	15.18 °C	0.74 mS/cm	0.34 mg/L	4.81 NTU	105.5 mV	11.90 ft	25.00 mL/min
6/23/2022 9:12 AM	40:55	6.37 pH	15.25 °C	0.74 mS/cm	0.35 mg/L	4.64 NTU	102.3 mV	11.90 ft	25.00 mL/min
6/23/2022 9:15 AM	43:55	6.38 pH	15.31 °C	0.74 mS/cm	0.37 mg/L	4.42 NTU	99.3 mV	11.90 ft	25.00 mL/min
6/23/2022 9:18 AM	46:55	6.39 pH	15.29 °C	0.74 mS/cm	0.40 mg/L	4.48 NTU	97.6 mV	11.90 ft	25.00 mL/min

Samples

Sample ID:	Description:
DET-004-220601-GW	Begin prepurge at 8:31 AM Stagnant water volume: 1,244 mL Stagnant water volume removed at 9:15 AM Stable at 9:18 AM Water is clear, colorless, odorless throughout purge Measured total volume purged: 8,374 mL Sample for VOCs, Phthalates/Nitroaromatics/Phenols, PAHs, PCBs, Pesticides, Explosives, Cyanide, and TAL Metals at 9:23 AM

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Completed By _____
06/23/2022

QA Check By _____
08/30/2022

Additional QA by _____
11/03/2022

RVAAP-05 WINKLEPECK BURNING GROUNDS

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Low-Flow Test Report:

Test Date / Time: 6/21/2022 11:38:31
AM **Project:** FWGWMP-June 2022
Event **Sampler Name:** Chris McFarland

Location Name: WBGmw-006 **Well Diameter: 2 in** **Total Depth: 18 ft** **Initial Depth to Water: 4.44 ft**	**Pump Type: QED SS Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 30 ft** **Pump Intake From TOC: 15 ft** **Estimated Total Volume Pumped: 6,160 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 175 mL/min** **Final Draw Down: 0.24 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 2 25:5, 18 PSI, 175 mL/min

Weather Conditions:
75°F clear, 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	+/- 0.3	
6/21/2022 11:38 AM	00:00	7.45 pH	17.04 °C	0.52 mS/cm	5.65 mg/L	8.17 NTU	175.9 mV	4.44 ft	175.00 ml/min
6/21/2022 11:47 AM	08:48	6.96 pH	14.36 °C	0.53 mS/cm	0.13 mg/L	3.22 NTU	194.8 mV	4.44 ft	175.00 ml/min
6/21/2022 11:48 AM	09:59	6.97 pH	14.51 °C	0.53 mS/cm	0.11 mg/L	4.64 NTU	193.6 mV	4.68 ft	175.00 ml/min
6/21/2022 11:51 AM	12:59	6.93 pH	14.15 °C	0.53 mS/cm	0.10 mg/L	8.39 NTU	193.5 mV	4.68 ft	175.00 ml/min
6/21/2022 11:54 AM	15:59	6.89 pH	13.81 °C	0.53 mS/cm	0.06 mg/L	17.64 NTU	194.7 mV	4.68 ft	175.00 ml/min
6/21/2022 11:57 AM	18:59	6.88 pH	13.85 °C	0.53 mS/cm	0.06 mg/L	28.84 NTU	193.6 mV	4.68 ft	175.00 ml/min
6/21/2022 12:00 PM	21:59	6.87 pH	13.66 °C	0.53 mS/cm	0.06 mg/L	1.76 NTU	194.2 mV	4.68 ft	175.00 ml/min

Samples

Sample ID:	Description:
WBGmw-006-220601-GW	Begin low flow purge at 11:38 AM (PSI 18 / CPM 2/25/5) Stagnant water volume: 1,460 mL Stagnant water volume removed at 11:48 AM Stable at 12:00 PM (21:59) Water is clear, colorless, odorless throughout purge Measured total volume purged: 6,160 mL Sample for explosives, Sulfide, Nitrate/Nitrite/sulfate, Alkalinity, and TOC at 12:10 PM on 06/21/2022

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Sampled By: ,06/21/2022

QA Check By: ,07/20/2022

Low-Flow Test Report:

Test Date / Time: 6/21/2022 9:36:46 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: WBGmw-009 **Well Diameter: 2 in** **Total Depth: 21.5 ft** **Initial Depth to Water: 9.68 ft**	**Pump Type: QED SS Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 40 ft** **Pump Intake From TOC: 16 ft** **Estimated Total Volume Pumped: 6,140 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 75 mL/min** **Final Draw Down: 1.06 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 2 27:3, 18 PSI, 75 mL/min

Weather Conditions:
70°F clear, 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	+/- 0.3	
6/21/2022 9:36 AM	00:00	6.45 pH	16.61 °C	0.25 mS/cm	3.67 mg/L	2.48 NTU	197.7 mV	9.68 ft	100.00 ml/min
6/21/2022 9:50 AM	13:51	5.62 pH	15.32 °C	0.24 mS/cm	0.20 mg/L	9.36 NTU	219.9 mV	9.68 ft	100.00 ml/min
6/21/2022 9:53 AM	16:51	5.58 pH	16.09 °C	0.24 mS/cm	0.16 mg/L	15.49 NTU	219.8 mV	10.74 ft	100.00 ml/min
6/21/2022 9:56 AM	19:51	5.56 pH	16.46 °C	0.24 mS/cm	0.17 mg/L	17.00 NTU	216.8 mV	10.74 ft	75.00 ml/min
6/21/2022 9:59 AM	22:51	5.55 pH	16.25 °C	0.24 mS/cm	0.14 mg/L	37.15 NTU	217.4 mV	10.74 ft	75.00 ml/min
6/21/2022 10:02 AM	25:51	5.55 pH	16.08 °C	0.24 mS/cm	0.13 mg/L	54.18 NTU	216.6 mV	10.74 ft	75.00 ml/min
6/21/2022 10:05 AM	28:51	5.55 pH	16.29 °C	0.23 mS/cm	0.12 mg/L	70.33 NTU	218.8 mV	10.74 ft	75.00 ml/min
6/21/2022 10:08 AM	31:51	5.56 pH	17.90 °C	0.23 mS/cm	8.36 mg/L	0.96 NTU	220.9 mV	10.74 ft	75.00 ml/min
6/21/2022 10:11 AM	34:51	5.57 pH	17.15 °C	0.23 mS/cm	0.34 mg/L	0.76 NTU	223.7 mV	10.74 ft	75.00 ml/min
6/21/2022 10:14 AM	37:51	5.59 pH	16.55 °C	0.23 mS/cm	0.17 mg/L	0.86 NTU	225.4 mV	10.74 ft	75.00 ml/min
6/21/2022 10:17 AM	40:51	5.59 pH	17.32 °C	0.23 mS/cm	0.17 mg/L	1.10 NTU	227.5 mV	10.74 ft	75.00 ml/min
6/21/2022 10:20 AM	43:51	5.60 pH	17.16 °C	0.23 mS/cm	0.16 mg/L	1.28 NTU	234.6 mV	10.74 ft	75.00 ml/min

6/21/2022 10:23 AM	46:51	5.61 pH	17.15 °C	0.23 mS/cm	0.15 mg/L	1.44 NTU	234.7 mV	10.74 ft	75.00 ml/min

Samples

Sample ID:	Description:
WBGmw-009-220601-GW	Begin low flow purge at 9:36 AM (PSI 18/ CPM 2/27 /3) Stagnant water volume: 1,440 mL Stagnant water volume removed at 9:36 AM (13:51). Stable at 10:23 AM (46:51) Water is clear, colorless, odorless throughout purge Measured total volume purged: 6,140 mL Sample for explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC at 1025 on 06/21/2022

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Sampled By: ,06/21/2022

QA Check By: ,07/20/2022

Low-Flow Test Report:

Test Date / Time: 6/22/2022 12:40:03 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: WBGmw-014 **Well Diameter: 2 in** **Total Depth: 22.3 ft** **Initial Depth to Water: 11.63 ft**	**Pump Type: QED SS Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 39 ft** **Pump Intake From TOC: 23 ft** **Estimated Total Volume Pumped: 45,691 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 350 mL/min** **Final Draw Down: 0.72 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 4 10:5, 22 PSI, 350 mL/min

Weather Conditions:
Clear, 90°F, 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	+/- 0.3	
6/22/2022 12:40 PM	00:00	7.61 pH	17.44 °C	0.42 mS/cm	5.72 mg/L	4.29 NTU	194.8 mV	11.63 ft	400.00 ml/min
6/22/2022 12:43 PM	03:09	7.20 pH	13.21 °C	0.47 mS/cm	5.33 mg/L	108.27 NTU	217.1 mV	12.10 ft	350.00 ml/min
6/22/2022 12:46 PM	06:18	7.18 pH	13.03 °C	0.48 mS/cm	4.77 mg/L	291.51 NTU	211.9 mV	12.10 ft	350.00 ml/min
6/22/2022 12:49 PM	09:27	7.16 pH	12.58 °C	0.48 mS/cm	4.53 mg/L	290.14 NTU	196.3 mV	12.10 ft	350.00 ml/min
6/22/2022 12:50 PM	10:19	7.14 pH	12.40 °C	0.48 mS/cm	4.63 mg/L	341.84 NTU	194.6 mV	12.35 ft	350.00 ml/min
6/22/2022 12:53 PM	13:19	7.16 pH	12.23 °C	0.48 mS/cm	5.03 mg/L	285.20 NTU	176.3 mV	12.35 ft	350.00 ml/min
6/22/2022 12:55 PM	15:03	7.16 pH	12.22 °C	0.48 mS/cm	4.85 mg/L	233.84 NTU	167.2 mV	12.35 ft	350.00 ml/min
6/22/2022 12:58 PM	18:03	7.14 pH	12.56 °C	0.48 mS/cm	4.76 mg/L	173.68 NTU	158.5 mV	12.35 ft	350.00 ml/min
6/22/2022 1:01 PM	21:03	7.12 pH	12.43 °C	0.48 mS/cm	4.69 mg/L	186.05 NTU	144.2 mV	12.35 ft	350.00 ml/min
6/22/2022 1:04 PM	24:03	7.11 pH	12.50 °C	0.48 mS/cm	4.63 mg/L	130.34 NTU	133.0 mV	12.35 ft	350.00 ml/min
6/22/2022 1:07 PM	27:03	7.11 pH	11.83 °C	0.48 mS/cm	4.65 mg/L	98.27 NTU	124.7 mV	12.35 ft	350.00 ml/min

6/22/2022 1:10 PM	30:03	7.10 pH	12.30 °C	0.48 mS/cm	4.73 mg/L	109.80 NTU	116.8 mV	12.35 ft	350.00 ml/min
6/22/2022 1:13 PM	33:03	7.08 pH	12.37 °C	0.48 mS/cm	4.45 mg/L	128.10 NTU	110.9 mV	12.35 ft	350.00 ml/min
6/22/2022 1:16 PM	36:03	7.14 pH	12.40 °C	0.48 mS/cm	4.45 mg/L	57.45 NTU	101.7 mV	12.35 ft	350.00 ml/min
6/22/2022 1:19 PM	39:03	7.10 pH	12.23 °C	0.48 mS/cm	4.74 mg/L	71.51 NTU	101.9 mV	12.35 ft	350.00 ml/min
6/22/2022 1:22 PM	42:03	7.13 pH	12.47 °C	0.48 mS/cm	4.71 mg/L	50.51 NTU	95.4 mV	12.35 ft	350.00 ml/min
6/22/2022 1:25 PM	45:03	7.10 pH	12.27 °C	0.48 mS/cm	4.57 mg/L	50.75 NTU	94.8 mV	12.35 ft	350.00 ml/min
6/22/2022 1:28 PM	48:03	7.12 pH	12.35 °C	0.48 mS/cm	4.78 mg/L	42.76 NTU	91.4 mV	12.35 ft	350.00 ml/min
6/22/2022 1:31 PM	51:03	7.12 pH	12.16 °C	0.48 mS/cm	4.62 mg/L	51.86 NTU	90.0 mV	12.35 ft	350.00 ml/min
6/22/2022 1:34 PM	54:03	7.12 pH	12.24 °C	0.48 mS/cm	4.72 mg/L	45.45 NTU	91.4 mV	12.35 ft	350.00 ml/min
6/22/2022 1:37 PM	57:03	7.11 pH	12.50 °C	0.48 mS/cm	4.44 mg/L	49.30 NTU	89.9 mV	12.35 ft	350.00 ml/min
6/22/2022 1:40 PM	01:00:03	7.11 pH	12.51 °C	0.49 mS/cm	4.46 mg/L	43.53 NTU	89.5 mV	12.35 ft	350.00 ml/min
6/22/2022 1:43 PM	01:03:03	7.13 pH	12.49 °C	0.48 mS/cm	4.64 mg/L	40.88 NTU	87.7 mV	12.35 ft	350.00 ml/min
6/22/2022 1:46 PM	01:06:03	7.12 pH	12.16 °C	0.48 mS/cm	4.72 mg/L	36.41 NTU	90.3 mV	12.35 ft	350.00 ml/min
6/22/2022 1:49 PM	01:09:03	7.13 pH	12.16 °C	0.48 mS/cm	4.67 mg/L	36.10 NTU	88.6 mV	12.35 ft	350.00 ml/min
6/22/2022 1:52 PM	01:12:03	7.13 pH	12.00 °C	0.48 mS/cm	4.75 mg/L	34.25 NTU	87.2 mV	12.35 ft	350.00 ml/min
6/22/2022 1:55 PM	01:15:03	7.12 pH	12.24 °C	0.48 mS/cm	4.68 mg/L	23.61 NTU	86.5 mV	12.35 ft	350.00 ml/min
6/22/2022 1:58 PM	01:18:03	7.12 pH	12.32 °C	0.48 mS/cm	4.65 mg/L	34.28 NTU	84.6 mV	12.35 ft	350.00 ml/min
6/22/2022 2:01 PM	01:21:03	7.14 pH	12.49 °C	0.48 mS/cm	4.43 mg/L	22.32 NTU	83.3 mV	12.35 ft	350.00 ml/min
6/22/2022 2:04 PM	01:24:03	7.12 pH	12.32 °C	0.48 mS/cm	4.55 mg/L	30.22 NTU	85.1 mV	12.35 ft	350.00 ml/min
6/22/2022 2:07 PM	01:27:03	7.10 pH	12.45 °C	0.48 mS/cm	4.74 mg/L	22.97 NTU	84.2 mV	12.35 ft	350.00 ml/min
6/22/2022 2:10 PM	01:30:03	7.12 pH	12.29 °C	0.48 mS/cm	4.72 mg/L	17.21 NTU	82.1 mV	12.35 ft	350.00 ml/min
6/22/2022 2:13 PM	01:33:03	7.12 pH	12.49 °C	0.48 mS/cm	4.77 mg/L	22.41 NTU	82.0 mV	12.35 ft	350.00 ml/min
6/22/2022 2:16 PM	01:36:03	7.12 pH	12.35 °C	0.48 mS/cm	4.60 mg/L	16.54 NTU	82.4 mV	12.35 ft	350.00 ml/min
6/22/2022 2:19 PM	01:39:03	7.12 pH	12.47 °C	0.48 mS/cm	4.68 mg/L	16.67 NTU	83.1 mV	12.35 ft	350.00 ml/min
6/22/2022 2:22 PM	01:42:37	7.15 pH	12.60 °C	0.48 mS/cm	4.85 mg/L	18.84 NTU	81.6 mV	12.35 ft	350.00 ml/min
6/22/2022 2:25 PM	01:45:37	7.12 pH	12.50 °C	0.48 mS/cm	4.57 mg/L	15.84 NTU	83.6 mV	12.35 ft	350.00 ml/min
6/22/2022 2:28 PM	01:48:37	7.13 pH	12.84 °C	0.48 mS/cm	4.61 mg/L	18.92 NTU	81.7 mV	12.35 ft	350.00 ml/min
6/22/2022 2:31 PM	01:51:37	7.13 pH	12.53 °C	0.48 mS/cm	4.47 mg/L	19.06 NTU	81.9 mV	12.35 ft	350.00 ml/min

6/22/2022 2:34 PM	01:54:37	7.12 pH	12.78 °C	0.48 mS/cm	4.53 mg/L	20.90 NTU	80.1 mV	12.35 ft	350.00 ml/min
6/22/2022 2:37 PM	01:57:37	7.16 pH	12.76 °C	0.48 mS/cm	4.65 mg/L	19.22 NTU	79.3 mV	12.35 ft	350.00 ml/min
6/22/2022 2:40 PM	02:00:37	7.18 pH	12.71 °C	0.49 mS/cm	4.86 mg/L	11.84 NTU	79.5 mV	12.35 ft	350.00 ml/min
6/22/2022 2:43 PM	02:03:37	7.21 pH	12.81 °C	0.48 mS/cm	4.74 mg/L	13.01 NTU	77.5 mV	12.35 ft	350.00 ml/min
6/22/2022 2:46 PM	02:06:37	7.23 pH	12.67 °C	0.48 mS/cm	4.65 mg/L	13.42 NTU	76.0 mV	12.35 ft	350.00 ml/min
6/22/2022 2:49 PM	02:09:37	7.24 pH	12.47 °C	0.48 mS/cm	4.51 mg/L	19.22 NTU	75.3 mV	12.35 ft	350.00 ml/min
6/22/2022 2:52 PM	02:12:37	7.24 pH	12.41 °C	0.48 mS/cm	4.60 mg/L	9.43 NTU	75.5 mV	12.35 ft	350.00 ml/min

Samples

Sample ID:	Description:
WBGmw-014-220601-GW	Begin low flow purge at 12:40 PM (PSI 22 / CPM 4/10/5) Stagnant water volume: 2,691 mL Stagnant water volume removed at 12:50 PM (10:19) Aqua TROLL disconnected from tablet at 2:19 PM (01:39:03) and reconnected at 2:22 PM (01:42:37) Stable at 2:52 PM (02:12:37) Water is cloudy, colorless, odorless at the beginning of purge, but became clear, colorless, odorless throughout purge Measured total volume purged: 45,691 mL Sampled for explosives at 2:55 PM on 06/22/2022

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Sampled By: ,06/22/2022

QA Check By: ,09/01/2022

Low-Flow Test Report:

Test Date / Time: 6/22/2022 9:03:44 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Mitchell DeBortoli

Location Name: WBGmw-016 **Well Diameter: 2 in** **Total Depth: 25.4 ft** **Initial Depth to Water: 14.28 ft**	**Pump Type: QED MP-10 Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 30 ft** **Pump Intake From TOC: 25 ft** **Estimated Total Volume Pumped: 22,143.334 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 150 mL/min** **Final Draw Down: 0.01 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **Water Level - 09872** **MP50 Controller - 2325**

Test Notes:
CPM 2, 26:4, PSI 20, 150 mL/min

Weather Conditions:
79°F Mostly 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	+/- 0.3	
6/22/2022 9:03 AM	00:00	7.00 pH	18.64 °C	0.50 mS/cm	5.69 mg/L	89.73 NTU	226.5 mV	14.28 ft	100.00 ml/min
6/22/2022 9:15 AM	11:47	6.72 pH	12.18 °C	0.49 mS/cm	3.35 mg/L	174.41 NTU	256.3 mV	14.28 ft	100.00 ml/min
6/22/2022 9:19 AM	15:56	6.60 pH	12.16 °C	0.49 mS/cm	3.49 mg/L	136.03 NTU	263.5 mV	14.28 ft	100.00 ml/min
6/22/2022 9:22 AM	18:56	6.55 pH	11.95 °C	0.49 mS/cm	3.51 mg/L	150.50 NTU	265.9 mV	14.28 ft	150.00 ml/min
6/22/2022 9:25 AM	21:56	6.53 pH	12.28 °C	0.50 mS/cm	3.43 mg/L	95.29 NTU	266.6 mV	14.28 ft	150.00 ml/min
6/22/2022 9:28 AM	24:56	6.56 pH	12.21 °C	0.50 mS/cm	3.62 mg/L	90.67 NTU	264.6 mV	14.28 ft	150.00 ml/min
6/22/2022 9:31 AM	27:56	6.59 pH	12.17 °C	0.50 mS/cm	3.65 mg/L	87.65 NTU	262.2 mV	14.28 ft	150.00 ml/min
6/22/2022 9:34 AM	30:56	6.61 pH	12.10 °C	0.50 mS/cm	3.75 mg/L	96.89 NTU	260.4 mV	14.28 ft	150.00 ml/min
6/22/2022 9:37 AM	33:56	6.66 pH	12.83 °C	0.00 mS/cm	8.36 mg/L	0.00 NTU	257.6 mV	14.28 ft	150.00 ml/min
6/22/2022 9:40 AM	36:56	6.64 pH	12.25 °C	0.50 mS/cm	4.21 mg/L	74.25 NTU	260.2 mV	14.28 ft	150.00 ml/min
6/22/2022 9:43 AM	39:56	6.65 pH	12.18 °C	0.50 mS/cm	3.98 mg/L	68.73 NTU	258.7 mV	14.28 ft	150.00 ml/min
6/22/2022 9:46 AM	42:56	6.66 pH	12.38 °C	0.50 mS/cm	3.81 mg/L	68.58 NTU	257.1 mV	14.28 ft	150.00 ml/min
6/22/2022 9:49 AM	45:56	6.67 pH	12.19 °C	0.50 mS/cm	3.98 mg/L	71.65 NTU	256.0 mV	14.28 ft	150.00 ml/min

6/22/2022 9:52 AM	48:56	6.67 pH	12.11 °C	0.50 mS/cm	3.80 mg/L	84.18 NTU	255.1 mV	14.28 ft	150.00 ml/min
6/22/2022 9:55 AM	51:56	6.67 pH	12.46 °C	0.51 mS/cm	3.72 mg/L	49.39 NTU	253.7 mV	14.28 ft	150.00 ml/min
6/22/2022 9:58 AM	54:56	6.67 pH	12.82 °C	0.51 mS/cm	3.56 mg/L	48.74 NTU	253.1 mV	14.28 ft	150.00 ml/min
6/22/2022 10:01 AM	57:56	6.68 pH	12.73 °C	0.51 mS/cm	3.73 mg/L	57.63 NTU	252.2 mV	14.28 ft	150.00 ml/min
6/22/2022 10:04 AM	01:00:56	6.69 pH	12.54 °C	0.51 mS/cm	3.83 mg/L	66.99 NTU	251.4 mV	14.28 ft	150.00 ml/min
6/22/2022 10:07 AM	01:03:56	6.69 pH	12.56 °C	0.51 mS/cm	3.90 mg/L	71.98 NTU	250.6 mV	14.28 ft	150.00 ml/min
6/22/2022 10:10 AM	01:06:56	6.71 pH	12.64 °C	0.49 mS/cm	4.03 mg/L	67.96 NTU	249.6 mV	14.28 ft	150.00 ml/min
6/22/2022 10:13 AM	01:09:56	6.70 pH	13.08 °C	0.49 mS/cm	3.91 mg/L	38.81 NTU	249.0 mV	14.28 ft	150.00 ml/min
6/22/2022 10:16 AM	01:12:56	6.71 pH	12.81 °C	0.48 mS/cm	4.13 mg/L	46.01 NTU	248.2 mV	14.28 ft	150.00 ml/min
6/22/2022 10:19 AM	01:15:56	6.72 pH	12.72 °C	0.50 mS/cm	4.21 mg/L	47.61 NTU	247.4 mV	14.28 ft	150.00 ml/min
6/22/2022 10:22 AM	01:18:56	6.73 pH	12.36 °C	0.50 mS/cm	4.32 mg/L	52.65 NTU	246.6 mV	14.28 ft	150.00 ml/min
6/22/2022 10:25 AM	01:21:56	6.72 pH	12.76 °C	0.50 mS/cm	4.00 mg/L	41.17 NTU	245.8 mV	14.28 ft	150.00 ml/min
6/22/2022 10:28 AM	01:24:56	6.73 pH	12.97 °C	0.50 mS/cm	4.37 mg/L	29.30 NTU	244.8 mV	14.28 ft	150.00 ml/min
6/22/2022 10:31 AM	01:27:56	6.73 pH	13.02 °C	0.50 mS/cm	4.31 mg/L	29.32 NTU	243.9 mV	14.28 ft	150.00 ml/min
6/22/2022 10:34 AM	01:30:56	6.74 pH	12.86 °C	0.50 mS/cm	4.23 mg/L	28.46 NTU	243.1 mV	14.28 ft	150.00 ml/min
6/22/2022 10:37 AM	01:33:56	6.76 pH	12.87 °C	0.50 mS/cm	4.47 mg/L	33.24 NTU	242.0 mV	14.28 ft	150.00 ml/min
6/22/2022 10:40 AM	01:36:56	6.76 pH	12.72 °C	0.50 mS/cm	4.36 mg/L	38.71 NTU	241.2 mV	14.28 ft	150.00 ml/min
6/22/2022 10:43 AM	01:39:56	6.77 pH	12.85 °C	0.50 mS/cm	4.17 mg/L	22.03 NTU	240.3 mV	14.28 ft	150.00 ml/min
6/22/2022 10:46 AM	01:42:56	6.77 pH	12.98 °C	0.50 mS/cm	4.22 mg/L	23.26 NTU	239.5 mV	14.28 ft	150.00 ml/min
6/22/2022 10:49 AM	01:45:56	6.78 pH	12.97 °C	0.50 mS/cm	4.17 mg/L	27.81 NTU	238.5 mV	14.28 ft	150.00 ml/min
6/22/2022 10:52 AM	01:48:56	6.79 pH	13.11 °C	0.51 mS/cm	4.22 mg/L	29.60 NTU	237.4 mV	14.28 ft	150.00 ml/min
6/22/2022 10:55 AM	01:51:56	6.80 pH	13.17 °C	0.51 mS/cm	4.12 mg/L	33.60 NTU	236.3 mV	14.28 ft	150.00 ml/min
6/22/2022 10:58 AM	01:54:56	6.82 pH	13.09 °C	0.50 mS/cm	4.15 mg/L	24.58 NTU	235.1 mV	14.28 ft	150.00 ml/min
6/22/2022 10:01 AM	01:57:56	6.84 pH	13.13 °C	0.50 mS/cm	4.22 mg/L	26.06 NTU	234.0 mV	14.28 ft	150.00 ml/min
6/22/2022 11:04 AM	02:00:56	6.85 pH	13.16 °C	0.50 mS/cm	4.48 mg/L	34.24 NTU	232.9 mV	14.28 ft	150.00 ml/min
6/22/2022 11:07 AM	02:03:56	6.86 pH	13.23 °C	0.50 mS/cm	4.65 mg/L	29.97 NTU	232.0 mV	14.28 ft	150.00 ml/min
6/22/2022 11:10 AM	02:06:56	6.87 pH	13.39 °C	0.50 mS/cm	4.58 mg/L	31.10 NTU	230.5 mV	14.28 ft	150.00 ml/min
6/22/2022 11:13 AM	02:09:56	6.89 pH	13.38 °C	0.50 mS/cm	4.58 mg/L	21.04 NTU	229.1 mV	14.28 ft	150.00 ml/min
6/22/2022 11:16 AM	02:12:56	6.90 pH	13.19 °C	0.50 mS/cm	4.25 mg/L	32.26 NTU	227.9 mV	14.28 ft	150.00 ml/min

6/22/2022 11:19 AM	02:15:56	6.92 pH	13.29 °C	0.50 mS/cm	4.34 mg/L	43.33 NTU	226.6 mV	14.28 ft	150.00 ml/min
6/22/2022 11:22 AM	02:18:56	6.93 pH	13.92 °C	0.50 mS/cm	4.49 mg/L	43.17 NTU	225.2 mV	14.28 ft	150.00 ml/min
6/22/2022 11:25 AM	02:21:56	6.95 pH	13.22 °C	0.50 mS/cm	4.66 mg/L	67.06 NTU	224.1 mV	14.28 ft	150.00 ml/min
6/22/2022 11:28 AM	02:24:56	6.96 pH	13.24 °C	0.50 mS/cm	4.25 mg/L	48.88 NTU	222.9 mV	14.28 ft	150.00 ml/min
6/22/2022 11:31 AM	02:27:56	6.97 pH	13.35 °C	0.50 mS/cm	4.14 mg/L	17.15 NTU	222.5 mV	14.28 ft	150.00 ml/min
6/22/2022 11:34 AM	02:30:56	6.96 pH	13.47 °C	0.50 mS/cm	4.04 mg/L	14.87 NTU	222.1 mV	14.28 ft	150.00 ml/min
6/22/2022 11:36 AM	02:33:56	6.96 pH	13.45 °C	0.50 mS/cm	3.97 mg/L	17.28 NTU	221.8 mV	14.28 ft	150.00 ml/min

Samples

Sample ID:	Description:
WBGmw-016-220601-GW	Begin low flow purge at 9:03 AM PSI 20/CPM 2/26/4 Stagnant water volume 2,400 mL Stagnant water removed at 9:19 AM (15:56) Stable at except for turbidity 11:36 AM (02:33:56) (2 hour purge) Water is clear, colorless, odorless throughout purge Measured total volume purged: 24,600 mL Sample for explosives at 11:37 AM on 06/22/2022

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Sampled By: *Mitchell DeBortoli* ,06/22/2022

QA Check By: ,08/29/2022

Low-Flow Test Report:

Test Date / Time: 6/22/2022 9:15:11 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: WBGmw-017 **Well Diameter: 2 in** **Total Depth: 23.9 ft** **Initial Depth to Water: 5.28 ft**	**Pump Type: QED MP-10 Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 30 ft** **Pump Intake From TOC: 20 ft** **Estimated Total Volume Pumped: 22,051 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 150 mL/min** **Final Draw Down: 0.05 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller -1143** **Compressor - 22817**

Test Notes:
CPM 2 25:5, 18 PSI, 150 mL/min

Weather Conditions:
75°F clear

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	+/- 0.3	
6/22/2022 9:15 AM	00:00	7.39 pH	21.32 °C	0.51 mS/cm	5.07 mg/L	57.20 NTU	169.6 mV	5.28 ft	150.00 ml/min
6/22/2022 9:27 AM	12:17	6.91 pH	14.62 °C	0.50 mS/cm	0.18 mg/L	301.69 NTU	-15.8 mV	5.28 ft	150.00 ml/min
6/22/2022 9:28 AM	13:09	6.90 pH	14.73 °C	0.50 mS/cm	0.17 mg/L	331.63 NTU	-16.4 mV	5.28 ft	150.00 ml/min
6/22/2022 9:31 AM	16:49	6.90 pH	14.45 °C	0.49 mS/cm	0.13 mg/L	250.42 NTU	-22.8 mV	5.32 ft	150.00 ml/min
6/22/2022 9:32 AM	17:29	6.89 pH	14.63 °C	0.50 mS/cm	0.13 mg/L	261.37 NTU	-23.5 mV	5.32 ft	150.00 ml/min
6/22/2022 9:32 AM	17:43	6.89 pH	14.76 °C	0.50 mS/cm	0.13 mg/L	293.22 NTU	-22.9 mV	5.32 ft	150.00 ml/min
6/22/2022 9:37 AM	22:09	6.87 pH	15.05 °C	0.50 mS/cm	0.12 mg/L	197.48 NTU	-27.5 mV	5.32 ft	150.00 ml/min
6/22/2022 9:40 AM	25:09	6.86 pH	15.36 °C	0.50 mS/cm	0.12 mg/L	152.07 NTU	-29.9 mV	5.32 ft	150.00 ml/min
6/22/2022 9:43 AM	28:09	6.87 pH	14.78 °C	0.50 mS/cm	0.10 mg/L	166.65 NTU	-32.3 mV	5.32 ft	150.00 ml/min
6/22/2022 9:46 AM	31:09	6.87 pH	15.04 °C	0.50 mS/cm	0.09 mg/L	150.66 NTU	-33.1 mV	5.32 ft	150.00 ml/min
6/22/2022 9:49 AM	34:09	6.87 pH	15.31 °C	0.50 mS/cm	0.09 mg/L	100.26 NTU	-34.5 mV	5.32 ft	150.00 ml/min

6/22/2022 9:52 AM	37:09	6.88 pH	15.10 °C	0.50 mS/cm	0.08 mg/L	108.52 NTU	-36.2 mV	5.32 ft	150.00 ml/min
6/22/2022 9:54 AM	39:01	6.88 pH	15.43 °C	0.50 mS/cm	0.08 mg/L	110.86 NTU	-37.5 mV	5.32 ft	150.00 ml/min
6/22/2022 9:57 AM	42:01	6.89 pH	15.23 °C	0.50 mS/cm	0.08 mg/L	79.68 NTU	-37.7 mV	5.32 ft	150.00 ml/min
6/22/2022 10:00 AM	45:01	6.89 pH	15.20 °C	0.50 mS/cm	0.08 mg/L	71.34 NTU	-38.6 mV	5.32 ft	150.00 ml/min
6/22/2022 10:03 AM	48:01	6.90 pH	15.09 °C	0.50 mS/cm	0.07 mg/L	81.10 NTU	-40.5 mV	5.32 ft	150.00 ml/min
6/22/2022 10:06 AM	51:01	6.89 pH	15.27 °C	0.50 mS/cm	0.07 mg/L	75.93 NTU	-39.9 mV	5.32 ft	150.00 ml/min
6/22/2022 10:09 AM	54:01	6.90 pH	15.46 °C	0.50 mS/cm	0.07 mg/L	71.63 NTU	-40.6 mV	5.32 ft	150.00 ml/min
6/22/2022 10:12 AM	57:01	6.90 pH	15.57 °C	0.50 mS/cm	0.07 mg/L	61.06 NTU	-41.4 mV	5.32 ft	150.00 ml/min
6/22/2022 10:15 AM	01:00:01	6.90 pH	15.47 °C	0.50 mS/cm	0.07 mg/L	64.38 NTU	-41.3 mV	5.32 ft	150.00 ml/min
6/22/2022 10:18 AM	01:03:01	6.91 pH	14.68 °C	0.49 mS/cm	0.06 mg/L	60.72 NTU	-41.4 mV	5.32 ft	150.00 ml/min
6/22/2022 10:21 AM	01:06:01	6.91 pH	15.54 °C	0.50 mS/cm	0.06 mg/L	73.26 NTU	-42.3 mV	5.32 ft	150.00 ml/min
6/22/2022 10:24 AM	01:09:01	6.91 pH	15.57 °C	0.50 mS/cm	0.06 mg/L	66.54 NTU	-41.5 mV	5.32 ft	150.00 ml/min
6/22/2022 10:27 AM	01:12:01	6.91 pH	15.67 °C	0.50 mS/cm	0.06 mg/L	69.36 NTU	-42.2 mV	5.32 ft	150.00 ml/min
6/22/2022 10:30 AM	01:15:01	6.92 pH	15.72 °C	0.50 mS/cm	0.06 mg/L	75.20 NTU	-43.0 mV	5.32 ft	150.00 ml/min
6/22/2022 10:33 AM	01:18:01	6.94 pH	15.74 °C	0.49 mS/cm	0.05 mg/L	112.50 NTU	-44.2 mV	5.32 ft	150.00 ml/min
6/22/2022 10:36 AM	01:21:01	6.96 pH	16.00 °C	0.50 mS/cm	0.06 mg/L	45.26 NTU	-44.5 mV	5.32 ft	150.00 ml/min
6/22/2022 10:39 AM	01:24:01	6.99 pH	16.45 °C	0.50 mS/cm	0.06 mg/L	29.01 NTU	-46.9 mV	5.32 ft	150.00 ml/min
6/22/2022 10:42 AM	01:27:01	7.05 pH	16.07 °C	0.50 mS/cm	0.07 mg/L	31.29 NTU	-50.8 mV	5.32 ft	150.00 ml/min
6/22/2022 10:45 AM	01:30:01	7.10 pH	15.76 °C	0.50 mS/cm	0.05 mg/L	22.18 NTU	-53.9 mV	5.32 ft	150.00 ml/min
6/22/2022 10:48 AM	01:33:01	7.07 pH	17.61 °C	0.50 mS/cm	0.07 mg/L	21.20 NTU	-53.1 mV	5.32 ft	150.00 ml/min
6/22/2022 10:48 AM	01:33:37	7.08 pH	18.84 °C	0.50 mS/cm	0.08 mg/L	28.13 NTU	-56.3 mV	5.32 ft	150.00 ml/min
6/22/2022 10:51 AM	01:36:37	7.21 pH	16.54 °C	0.50 mS/cm	0.06 mg/L	23.21 NTU	-61.9 mV	5.32 ft	150.00 ml/min
6/22/2022 10:54 AM	01:39:37	7.26 pH	16.22 °C	0.50 mS/cm	0.05 mg/L	20.88 NTU	-63.9 mV	5.32 ft	150.00 ml/min
6/22/2022 10:57 AM	01:42:37	7.26 pH	15.83 °C	0.50 mS/cm	0.05 mg/L	15.22 NTU	-63.6 mV	5.32 ft	150.00 ml/min
6/22/2022 11:00 AM	01:45:37	7.23 pH	15.91 °C	0.50 mS/cm	0.05 mg/L	18.84 NTU	-62.0 mV	5.32 ft	150.00 ml/min
6/22/2022 11:03 AM	01:48:37	7.21 pH	16.24 °C	0.50 mS/cm	0.05 mg/L	17.64 NTU	-61.7 mV	5.32 ft	150.00 ml/min
6/22/2022 11:06 AM	01:51:37	7.22 pH	16.08 °C	0.50 mS/cm	0.05 mg/L	17.84 NTU	-60.9 mV	5.32 ft	150.00 ml/min

6/22/2022 11:09 AM	01:54:37	7.22 pH	16.30 °C	0.50 mS/cm	0.05 mg/L	15.33 NTU	-61.5 mV	5.32 ft	150.00 ml/min
6/22/2022 11:12 AM	01:57:37	7.23 pH	15.78 °C	0.50 mS/cm	0.05 mg/L	15.74 NTU	-61.5 mV	5.32 ft	150.00 ml/min
6/22/2022 11:15 AM	02:00:37	7.24 pH	15.85 °C	0.50 mS/cm	0.04 mg/L	19.56 NTU	-62.5 mV	5.32 ft	150.00 ml/min
6/22/2022 11:18 AM	02:03:37	7.25 pH	16.01 °C	0.50 mS/cm	0.06 mg/L	15.72 NTU	-64.3 mV	5.32 ft	150.00 ml/min
6/22/2022 11:21 AM	02:06:37	7.26 pH	16.02 °C	0.50 mS/cm	0.04 mg/L	15.20 NTU	-63.1 mV	5.32 ft	150.00 ml/min
6/22/2022 11:24 AM	02:09:37	7.26 pH	15.68 °C	0.50 mS/cm	0.05 mg/L	15.61 NTU	-62.7 mV	5.32 ft	150.00 ml/min
6/22/2022 11:27 AM	02:12:37	7.26 pH	15.66 °C	0.50 mS/cm	0.04 mg/L	15.02 NTU	-63.9 mV	5.32 ft	150.00 ml/min
6/22/2022 11:30 AM	02:15:37	7.26 pH	15.98 °C	0.50 mS/cm	0.04 mg/L	13.97 NTU	-63.4 mV	5.32 ft	150.00 ml/min
6/22/2022 11:33 AM	02:18:37	7.26 pH	16.18 °C	0.50 mS/cm	0.05 mg/L	12.21 NTU	-63.8 mV	5.32 ft	150.00 ml/min
6/22/2022 11:36 AM	02:21:37	7.27 pH	16.23 °C	0.50 mS/cm	0.04 mg/L	13.66 NTU	-64.8 mV	5.32 ft	150.00 ml/min

Samples

	Description:
WBGmw-017-220601-GW	Begin low flow purge at 9:15 AM PSI 18 / CPM 2/25/5 Stagnant water volume: 3,051 mL Stagnant water volume removed at 9:37 AM Stable at except for turbidity 11:36 AM (2 hour purge) Water is cloudy, orange, and odorless throughout purge Measured total volume purged: 22,051 mL Sample for explosives at 11:38 AM on 06/22/22.

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Sampled By: ,06/22/2022

QA Check By: ,08/31/2022

Low-Flow Test Report:

Test Date / Time: 6/22/2022 12:06:25 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Mitchell DeBortoli

Location Name: WBGmw-018 **Well Diameter: 2 in** **Total Depth: 23.8 ft** **Initial Depth to Water: 16.86 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.25 in** **Tubing Length: 35 ft** **Pump Intake From TOC: 18 ft** **Estimated Total Volume Pumped: 14,465.833 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 350 mL/min** **Final Draw Down: 0.15 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **Water Level - 09872** **MP50 Controller - 2325**

Test Notes:
CPM 4, 12:3, PSI 20, 350 mL/min
Weather Conditions:
89°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	+/- 0.3	
6/22/2022 12:06 PM	00:00	6.44 pH	15.13 °C	0.10 mS/cm	7.30 mg/L	15.34 NTU	210.5 mV	16.86 ft	400.00 ml/min
6/22/2022 12:09 PM	03:04	6.13 pH	10.60 °C	0.10 mS/cm	4.61 mg/L	0.20 NTU	234.8 mV	16.86 ft	400.00 ml/min
6/22/2022 12:12 PM	06:08	6.10 pH	10.69 °C	0.10 mS/cm	4.51 mg/L	0.84 NTU	238.2 mV	16.86 ft	400.00 ml/min
6/22/2022 12:15 PM	09:12	6.17 pH	10.57 °C	0.10 mS/cm	4.52 mg/L	1.63 NTU	238.9 mV	17.01 ft	350.00 ml/min
6/22/2022 12:16 PM	10:26	6.13 pH	10.54 °C	0.10 mS/cm	4.51 mg/L	0.36 NTU	242.0 mV	17.01 ft	350.00 ml/min
6/22/2022 12:16 PM	10:35	6.07 pH	10.48 °C	0.10 mS/cm	4.50 mg/L	0.74 NTU	245.2 mV	17.01 ft	350.00 ml/min
6/22/2022 12:19 PM	13:35	6.11 pH	10.70 °C	0.10 mS/cm	4.51 mg/L	0.08 NTU	244.6 mV	17.01 ft	350.00 ml/min
6/22/2022 12:22 PM	16:35	6.03 pH	10.44 °C	0.10 mS/cm	4.55 mg/L	0.00 NTU	250.4 mV	17.01 ft	350.00 ml/min
6/22/2022 12:25 PM	19:01	5.95 pH	10.51 °C	0.10 mS/cm	4.57 mg/L	0.03 NTU	255.5 mV	17.01 ft	350.00 ml/min
6/22/2022 12:28 PM	22:01	5.86 pH	10.28 °C	0.10 mS/cm	4.59 mg/L	0.00 NTU	262.0 mV	17.01 ft	350.00 ml/min
6/22/2022 12:31 PM	25:01	5.78 pH	10.60 °C	0.10 mS/cm	4.60 mg/L	0.00 NTU	267.0 mV	17.01 ft	350.00 ml/min

6/22/2022 12:34 PM	28:01	5.71 pH	10.53 °C	0.10 mS/cm	4.61 mg/L	0.00 NTU	271.9 mV	17.01 ft	350.00 ml/min
6/22/2022 12:37 PM	31:01	5.64 pH	10.47 °C	0.10 mS/cm	4.59 mg/L	0.00 NTU	276.0 mV	17.01 ft	350.00 ml/min
6/22/2022 12:40 PM	34:01	5.58 pH	10.51 °C	0.10 mS/cm	4.64 mg/L	0.00 NTU	279.9 mV	17.01 ft	350.00 ml/min
6/22/2022 12:43 PM	37:01	5.53 pH	10.43 °C	0.10 mS/cm	4.67 mg/L	0.00 NTU	283.1 mV	17.01 ft	350.00 ml/min
6/22/2022 12:46 PM	40:01	5.50 pH	10.72 °C	0.10 mS/cm	4.66 mg/L	0.00 NTU	285.5 mV	17.01 ft	350.00 ml/min

Samples

Sample ID:	Description:
WBGmw-018-220601-GW	Begin low flow purge at 12:06 PM PSI 20/CPM 2/26/4 Stagnant water volume 2,300 mL Stagnant water removed at 12:25 PM Stable at 12:46 PM Water is colorless and odorless throughout purge Measured total volume purged: 20,470 mL Sample for explosives/TOC/sulfide/nitrate, nitrite, sulfate/alkalinity at 12:48 PM on 06/22/2022

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Sampled By: ,06/22/2022

QA Check By: ,08/30/2022

Mitchell DeBortoli

Low-Flow Test Report:

Test Date / Time: 6/21/2022 9:33:56 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Jon Rokicki

Location Name: WBGmw-020 **Well Diameter: 2 in** **Total Depth: 43.3 ft** **Initial Depth to Water: 10.7 ft**	**Pump Type: QED SS Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 79 ft** **Pump Intake From TOC: 38 ft** **Estimated Total Volume Pumped: 8,600 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 0 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **Water Level - 09872** **MP50 Controller - 050494**

Test Notes:
CPM 1 40:20, 29 PSI, 100 mL/min

Weather Conditions:
Clear Breezy 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	+/- 0.3	
6/21/2022 9:33 AM	00:00	7.03 pH	19.14 °C	0.28 mS/cm	4.70 mg/L	51.18 NTU	232.7 mV	10.70 ft	100.00 ml/min
6/21/2022 9:59 AM	26:03	6.49 pH	14.10 °C	0.25 mS/cm	0.21 mg/L	22.71 NTU	-51.9 mV	10.70 ft	100.00 ml/min
6/21/2022 10:00 AM	26:33	6.49 pH	13.46 °C	0.25 mS/cm	0.19 mg/L	23.41 NTU	-51.6 mV	10.70 ft	100.00 ml/min
6/21/2022 10:03 AM	29:33	6.38 pH	14.51 °C	0.25 mS/cm	0.19 mg/L	22.85 NTU	-45.9 mV	10.70 ft	100.00 ml/min
6/21/2022 10:06 AM	32:33	6.30 pH	14.14 °C	0.25 mS/cm	0.18 mg/L	20.39 NTU	-40.4 mV	10.70 ft	100.00 ml/min
6/21/2022 10:09 AM	35:33	6.24 pH	14.11 °C	0.25 mS/cm	0.17 mg/L	19.08 NTU	-36.7 mV	10.70 ft	100.00 ml/min
6/21/2022 10:12 AM	38:33	6.22 pH	13.96 °C	0.25 mS/cm	0.16 mg/L	17.00 NTU	-35.0 mV	10.70 ft	100.00 ml/min
6/21/2022 10:15 AM	41:33	6.20 pH	14.10 °C	0.25 mS/cm	0.15 mg/L	18.36 NTU	-32.6 mV	10.70 ft	100.00 ml/min
6/21/2022 10:18 AM	44:33	6.19 pH	13.79 °C	0.25 mS/cm	0.15 mg/L	20.60 NTU	-32.5 mV	10.70 ft	100.00 ml/min
6/21/2022 10:21 AM	47:33	6.20 pH	14.07 °C	0.25 mS/cm	0.68 mg/L	19.98 NTU	-27.7 mV	10.70 ft	100.00 ml/min
6/21/2022 10:24 AM	50:33	6.19 pH	13.79 °C	0.25 mS/cm	0.26 mg/L	14.60 NTU	-25.6 mV	10.70 ft	100.00 ml/min
6/21/2022 10:27 AM	53:33	6.19 pH	13.74 °C	0.25 mS/cm	0.23 mg/L	15.22 NTU	-24.1 mV	10.70 ft	100.00 ml/min
6/21/2022 10:30 AM	56:33	6.18 pH	13.55 °C	0.24 mS/cm	0.21 mg/L	15.99 NTU	-24.1 mV	10.70 ft	100.00 ml/min

6/21/2022 10:33 AM	59:33	6.18 pH	14.39 °C	0.24 mS/cm	0.19 mg/L	14.83 NTU	-24.4 mV	10.70 ft	100.00 ml/min
6/21/2022 10:36 AM	01:02:33	6.18 pH	14.22 °C	0.25 mS/cm	0.18 mg/L	13.64 NTU	-24.3 mV	10.70 ft	100.00 ml/min
6/21/2022 10:39 AM	01:05:33	6.20 pH	14.22 °C	0.25 mS/cm	0.17 mg/L	14.53 NTU	-24.3 mV	10.70 ft	100.00 ml/min
6/21/2022 10:42 AM	01:08:33	6.21 pH	14.14 °C	0.25 mS/cm	0.17 mg/L	11.59 NTU	-24.6 mV	10.70 ft	100.00 ml/min
6/21/2022 10:45 AM	01:11:33	6.22 pH	14.26 °C	0.25 mS/cm	0.16 mg/L	13.34 NTU	-24.9 mV	10.70 ft	100.00 ml/min
6/21/2022 10:48 AM	01:14:33	6.24 pH	14.57 °C	0.25 mS/cm	1.06 mg/L	12.78 NTU	-23.2 mV	10.70 ft	100.00 ml/min
6/21/2022 10:51 AM	01:17:33	6.25 pH	14.45 °C	0.25 mS/cm	0.17 mg/L	10.90 NTU	-23.1 mV	10.70 ft	100.00 ml/min
6/21/2022 10:54 AM	01:20:33	6.26 pH	14.11 °C	0.25 mS/cm	0.13 mg/L	10.73 NTU	-23.4 mV	10.70 ft	100.00 ml/min
6/21/2022 10:57 AM	01:23:33	6.28 pH	14.20 °C	0.25 mS/cm	0.12 mg/L	11.01 NTU	-24.0 mV	10.70 ft	100.00 ml/min
6/21/2022 11:00 AM	01:26:33	6.28 pH	13.83 °C	0.24 mS/cm	0.12 mg/L	9.52 NTU	-24.4 mV	10.70 ft	100.00 ml/min

Samples

Sample ID:	Description:
WBGmw-020-220601-GW	Begin low flow purge at 8:33 AM PSI 29 / CPM 1/40/20 Stagnant water volume: 1,760 mL Stagnant water removed at 9:59 AM (26:03) Stable at 11:00 AM (01:26:33) Water is colorless odorless throughout purge Measured total vol purged: 3,800 mL Sample for explosives at 11:00 AM on 06/27/2022

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Sampled By: ,06/21/2022

QA Check By: ,07/20/2022

Low-Flow Test Report:

Test Date / Time: 6/21/2022 11:55:40 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Jon Rokicki

Location Name: WBGmw-021 **Well Diameter: 2 in** **Total Depth: 42.5 ft** **Initial Depth to Water: 8.29 ft**	**Pump Type: QED SS Portable Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 79 ft** **Pump Intake From TOC: 37 ft** **Estimated Total Volume Pumped: 7,873.333 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 200 mL/min** **Final Draw Down: 0.1 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **Water Level - 09872** **MP50 Controller - 050494**

Test Notes:
CPM 3 15:5, 30 PSI, 200 mL/min

Weather Conditions:
Clear Breezy 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	+/- 0.3	
6/21/2022 11:55 AM	00:00	7.38 pH	13.19 °C	0.48 mS/cm	0.27 mg/L	105.33 NTU	-2.9 mV	8.32 ft	200.00 ml/min
6/21/2022 12:06 AM	10:25	7.02 pH	15.05 °C	0.48 mS/cm	0.16 mg/L	35.37 NTU	15.3 mV	8.29 ft	200.00 ml/min
6/21/2022 12:08 AM	12:22	6.97 pH	14.95 °C	0.48 mS/cm	0.14 mg/L	29.04 NTU	14.7 mV	8.29 ft	200.00 ml/min
6/21/2022 12:11 AM	15:22	6.90 pH	14.30 °C	0.48 mS/cm	0.12 mg/L	34.53 NTU	17.9 mV	8.29 ft	200.00 ml/min
6/21/2022 12:14 AM	18:22	6.85 pH	13.51 °C	0.48 mS/cm	0.11 mg/L	29.65 NTU	23.4 mV	8.29 ft	200.00 ml/min
6/21/2022 12:17 AM	21:22	6.81 pH	13.75 °C	0.49 mS/cm	0.09 mg/L	22.59 NTU	26.7 mV	8.29 ft	200.00 ml/min
6/21/2022 12:20 AM	24:22	6.78 pH	13.73 °C	0.48 mS/cm	0.09 mg/L	23.45 NTU	28.3 mV	8.29 ft	200.00 ml/min
6/21/2022 12:23 AM	27:22	6.76 pH	13.51 °C	0.48 mS/cm	0.08 mg/L	17.85 NTU	29.3 mV	8.29 ft	200.00 ml/min
6/21/2022 12:26 AM	30:22	6.75 pH	13.94 °C	0.48 mS/cm	0.06 mg/L	13.20 NTU	30.0 mV	8.29 ft	200.00 ml/min
6/21/2022 12:29 AM	33:22	6.75 pH	13.58 °C	0.48 mS/cm	0.06 mg/L	12.69 NTU	30.0 mV	8.29 ft	200.00 ml/min
6/21/2022 12:32 AM	36:22	6.74 pH	13.69 °C	0.48 mS/cm	0.06 mg/L	11.85 NTU	30.0 mV	8.29 ft	200.00 ml/min
6/21/2022 12:35 AM	39:22	6.73 pH	13.73 °C	0.48 mS/cm	0.05 mg/L	8.16 NTU	30.1 mV	8.29 ft	200.00 ml/min

Samples

Sample ID:	Description:
WBGmw-021-220601-GW	Begin low flow purge at 11:55 AM PSI 30/ CPM 3/15/5 Stagnant water vol: 1,600 mL Stagnant water removed at 12:08 PM (12:22) Stable at 12:35 PM (39:22) Water is colorless odorless throughout purge Measured total vol purged 6,500 mL Sample for explosives at 12:36 PM on 06/21/2022

Created using VuSitu from In-Situ, Inc.

Sampled By: ,06/21/2022

QA Check By: ,07/20/2022

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RVAAP-08 LOAD LINE 1

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Low-Flow Test Report:

Test Date / Time: 6/17/2022 1:38:03 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Danielle Anderson

Location Name: LL1mw-063 **Well Diameter: 2 in** **Initial Depth to Water: 22.58 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: 5,223.333 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 75 mL/min** **Final Draw Down: 0.34 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 42832** **MP50 Controller - 050494**

Test Notes:
CPM 2 28:2, 25 PSI, 75 mL/min

Weather Conditions:
80°F 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	
6/17/2022 1:38 PM	00:00	4.44 pH	31.35 °C	0.14 mS/cm	6.95 mg/L	14.19 NTU	310.9 mV	22.58 ft	100.00 ml/min
6/17/2022 1:53 PM	15:34	4.01 pH	15.86 °C	0.24 mS/cm	7.58 mg/L	26.35 NTU	412.9 mV	22.58 ft	100.00 ml/min
6/17/2022 1:55 PM	17:44	4.02 pH	15.89 °C	0.24 mS/cm	7.51 mg/L	19.23 NTU	415.1 mV	22.92 ft	100.00 ml/min
6/17/2022 1:58 PM	20:44	4.02 pH	16.69 °C	0.24 mS/cm	7.45 mg/L	27.65 NTU	415.1 mV	22.92 ft	75.00 ml/min
6/17/2022 2:01 PM	23:44	4.04 pH	16.71 °C	0.24 mS/cm	7.41 mg/L	33.73 NTU	417.7 mV	22.92 ft	75.00 ml/min
6/17/2022 2:04 PM	26:44	4.06 pH	17.37 °C	0.24 mS/cm	7.07 mg/L	30.83 NTU	419.3 mV	22.92 ft	75.00 ml/min
6/17/2022 2:07 PM	29:44	4.09 pH	17.14 °C	0.24 mS/cm	7.27 mg/L	43.01 NTU	417.9 mV	22.92 ft	75.00 ml/min
6/17/2022 2:10 PM	32:44	4.14 pH	17.37 °C	0.24 mS/cm	7.23 mg/L	14.86 NTU	412.8 mV	22.92 ft	75.00 ml/min
6/17/2022 2:13 PM	35:44	4.22 pH	16.84 °C	0.24 mS/cm	7.34 mg/L	13.86 NTU	406.8 mV	22.92 ft	75.00 ml/min
6/17/2022 2:16 PM	38:44	4.33 pH	16.72 °C	0.24 mS/cm	7.34 mg/L	16.86 NTU	397.3 mV	22.92 ft	75.00 ml/min
6/17/2022 2:19 PM	41:44	4.44 pH	17.17 °C	0.24 mS/cm	7.39 mg/L	17.67 NTU	388.3 mV	22.92 ft	75.00 ml/min

6/17/2022 2:22 PM	44:44	4.55 pH	15.96 °C	0.24 mS/cm	7.51 mg/L	17.24 NTU	379.8 mV	22.92 ft	75.00 ml/min
6/17/2022 2:25 PM	47:44	4.58 pH	14.87 °C	0.24 mS/cm	7.63 mg/L	20.54 NTU	371.7 mV	22.92 ft	75.00 ml/min
6/17/2022 2:28 PM	50:44	4.60 pH	14.69 °C	0.24 mS/cm	7.69 mg/L	24.29 NTU	366.7 mV	22.92 ft	75.00 ml/min
6/17/2022 2:31 PM	53:44	4.60 pH	14.33 °C	0.24 mS/cm	7.68 mg/L	22.24 NTU	364.4 mV	22.92 ft	75.00 ml/min
6/17/2022 2:34 PM	56:44	4.63 pH	15.44 °C	0.24 mS/cm	7.66 mg/L	8.21 NTU	360.0 mV	22.92 ft	75.00 ml/min
6/17/2022 2:37 PM	59:44	4.65 pH	15.67 °C	0.24 mS/cm	7.63 mg/L	8.19 NTU	357.5 mV	22.92 ft	75.00 ml/min
6/17/2022 2:40 PM	01:02:44	4.67 pH	15.57 °C	0.24 mS/cm	7.66 mg/L	8.57 NTU	356.1 mV	22.92 ft	75.00 ml/min

Samples

Sample ID:	Description:
LL1mw-063-220601-GW	Begin low flow purge at 1:38 PM (PSI 25/ CPM 2/28/2) Stagnant water volume: 1,370.20 mL Stagnant water volume removed at 1:55 PM (17:44) Stable at 2:40 PM (01:02:44) Water is slightly turbid with suspended solids colorless, odorless and became clear throughout purge Measured total volume purged: 5,475 mL Sample for explosives at 2:40 PM on 06/17/2022

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Sampled By: ,06/17/2022

QA Check By: ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/15/2022 10:50:30 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: LL1mw-064 **Well Diameter: 2 in** **Initial Depth to Water: 0.97 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: 47,038 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 400 mL/min** **Final Draw Down: 0.45 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 2 28:2, 17 PSI, 400 mL/min

Weather Conditions:
Party cloudy, 80°F, 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	+/- 0.3	
6/15/2022 10:50 AM	00:00	7.41 pH	12.46 °C	0.38 mS/cm	0.35 mg/L	206.60 NTU	-46.5 mV	0.97 ft	400.00 ml/min
6/15/2022 10:55 AM	04:31	7.31 pH	12.98 °C	0.38 mS/cm	0.09 mg/L	325.98 NTU	-67.2 mV	0.97 ft	400.00 ml/min
6/15/2022 10:56 AM	04:56	7.32 pH	12.92 °C	0.37 mS/cm	0.08 mg/L	326.53 NTU	-68.4 mV	1.42 ft	450.00 ml/min
6/15/2022 10:59 AM	07:56	7.25 pH	13.15 °C	0.37 mS/cm	0.07 mg/L	550.23 NTU	-65.3 mV	1.42 ft	450.00 ml/min
6/15/2022 11:02 AM	10:56	7.22 pH	13.02 °C	0.37 mS/cm	0.05 mg/L	389.42 NTU	-65.9 mV	1.42 ft	450.00 ml/min
6/15/2022 11:05 AM	13:56	7.21 pH	13.06 °C	0.37 mS/cm	0.06 mg/L	57.42 NTU	-73.8 mV	1.42 ft	400.00 ml/min
6/15/2022 11:08 AM	16:56	7.21 pH	13.51 °C	0.37 mS/cm	0.06 mg/L	15.55 NTU	-77.8 mV	1.42 ft	400.00 ml/min
6/15/2022 11:11 AM	19:56	7.21 pH	13.31 °C	0.37 mS/cm	0.06 mg/L	36.95 NTU	-79.3 mV	1.42 ft	400.00 ml/min
6/15/2022 11:14 AM	22:56	7.21 pH	13.43 °C	0.37 mS/cm	0.05 mg/L	84.46 NTU	-79.8 mV	1.42 ft	400.00 ml/min
6/15/2022 11:17 AM	25:56	7.22 pH	13.41 °C	0.37 mS/cm	0.05 mg/L	112.67 NTU	-81.5 mV	1.42 ft	400.00 ml/min
6/15/2022 11:20 AM	28:56	7.23 pH	13.56 °C	0.37 mS/cm	0.06 mg/L	226.02 NTU	-81.8 mV	1.42 ft	400.00 ml/min
6/15/2022 11:23 AM	31:56	7.14 pH	13.84 °C	0.01 mS/cm	1.05 mg/L	1.08 NTU	-60.2 mV	1.42 ft	400.00 ml/min

6/15/2022 11:26 AM	34:56	7.25 pH	13.81 °C	0.33 mS/cm	0.22 mg/L	547.73 NTU	-62.4 mV	1.42 ft	400.00 ml/min
6/15/2022 11:29 AM	37:56	7.28 pH	13.45 °C	0.38 mS/cm	0.06 mg/L	484.03 NTU	-76.8 mV	1.42 ft	400.00 ml/min
6/15/2022 11:32 AM	40:56	7.29 pH	13.25 °C	0.37 mS/cm	0.05 mg/L	84.35 NTU	-84.7 mV	1.42 ft	400.00 ml/min
6/15/2022 11:35 AM	43:56	7.27 pH	14.23 °C	0.38 mS/cm	0.06 mg/L	24.02 NTU	-87.7 mV	1.42 ft	400.00 ml/min
6/15/2022 11:38 AM	46:56	7.27 pH	14.34 °C	0.37 mS/cm	0.06 mg/L	2.29 NTU	-89.5 mV	1.42 ft	400.00 ml/min
6/15/2022 11:41 AM	49:56	7.26 pH	14.59 °C	0.37 mS/cm	0.07 mg/L	1.16 NTU	-90.5 mV	1.42 ft	400.00 ml/min
6/15/2022 11:50 AM	59:19	7.30 pH	13.56 °C	0.37 mS/cm	0.05 mg/L	51.83 NTU	-91.4 mV	1.42 ft	400.00 ml/min
6/15/2022 11:53 AM	01:02:19	7.32 pH	13.40 °C	0.37 mS/cm	0.05 mg/L	12.93 NTU	-93.5 mV	1.42 ft	400.00 ml/min
6/15/2022 11:56 AM	01:05:19	7.32 pH	13.51 °C	0.37 mS/cm	0.04 mg/L	25.95 NTU	-93.4 mV	1.42 ft	400.00 ml/min
6/15/2022 11:59 AM	01:08:19	7.33 pH	13.18 °C	0.38 mS/cm	0.05 mg/L	116.20 NTU	-93.3 mV	1.42 ft	400.00 ml/min
6/15/2022 12:02 PM	01:11:19	7.32 pH	13.54 °C	0.35 mS/cm	0.63 mg/L	52.11 NTU	-76.2 mV	1.42 ft	400.00 ml/min
6/15/2022 12:05 PM	01:14:19	7.36 pH	13.51 °C	0.35 mS/cm	0.07 mg/L	45.97 NTU	-90.3 mV	1.42 ft	400.00 ml/min
6/15/2022 12:08 PM	01:17:19	7.36 pH	13.40 °C	0.35 mS/cm	0.05 mg/L	205.06 NTU	-93.5 mV	1.42 ft	400.00 ml/min
6/15/2022 12:11 PM	01:20:19	7.35 pH	13.75 °C	0.35 mS/cm	0.06 mg/L	718.40 NTU	-90.0 mV	1.42 ft	400.00 ml/min
6/15/2022 12:14 PM	01:23:19	7.38 pH	13.77 °C	0.35 mS/cm	0.05 mg/L	409.92 NTU	-93.2 mV	1.42 ft	400.00 ml/min
6/15/2022 12:17 PM	01:26:19	7.42 pH	13.74 °C	0.35 mS/cm	0.06 mg/L	134.10 NTU	-98.7 mV	1.42 ft	400.00 ml/min
6/15/2022 12:20 PM	01:29:19	7.45 pH	13.94 °C	0.33 mS/cm	0.05 mg/L	44.84 NTU	-101.5 mV	1.42 ft	400.00 ml/min
6/15/2022 12:23 PM	01:32:19	7.50 pH	14.16 °C	0.33 mS/cm	0.05 mg/L	28.92 NTU	-104.1 mV	1.42 ft	400.00 ml/min
6/15/2022 12:26 PM	01:35:19	7.55 pH	14.27 °C	0.33 mS/cm	0.05 mg/L	33.80 NTU	-106.5 mV	1.42 ft	400.00 ml/min
6/15/2022 12:29 PM	01:38:19	7.59 pH	14.28 °C	0.34 mS/cm	0.05 mg/L	38.47 NTU	-109.2 mV	1.42 ft	400.00 ml/min
6/15/2022 12:32 PM	01:41:19	7.64 pH	14.22 °C	0.33 mS/cm	0.05 mg/L	29.40 NTU	-111.6 mV	1.42 ft	400.00 ml/min
6/15/2022 12:35 PM	01:44:19	7.69 pH	13.10 °C	0.34 mS/cm	0.05 mg/L	31.33 NTU	-112.3 mV	1.42 ft	400.00 ml/min
6/15/2022 12:38 PM	01:47:19	7.67 pH	13.22 °C	0.33 mS/cm	0.04 mg/L	40.54 NTU	-112.6 mV	1.42 ft	400.00 ml/min
6/15/2022 12:41 PM	01:50:19	7.69 pH	13.47 °C	0.32 mS/cm	0.04 mg/L	50.54 NTU	-113.1 mV	1.42 ft	400.00 ml/min
6/15/2022 12:44 PM	01:53:19	7.70 pH	13.45 °C	0.35 mS/cm	0.04 mg/L	59.40 NTU	-115.0 mV	1.42 ft	400.00 ml/min
6/15/2022 12:47 PM	01:56:19	7.70 pH	13.71 °C	0.35 mS/cm	0.04 mg/L	75.77 NTU	-115.4 mV	1.42 ft	400.00 ml/min
6/15/2022 12:50 PM	01:59:19	7.71 pH	13.87 °C	0.35 mS/cm	0.04 mg/L	85.84 NTU	-116.2 mV	1.42 ft	400.00 ml/min

Samples

Sample ID:	Description:
LL1mw-064-220601-GW	Begin low flow purge at 10:50 AM (PSI 17/ CPM 2/28/2) Stagnant water volume: 1,038mL Stagnant water volume removed at 10:55 AM (04:31) Well did not stabilize for Turbidity only. Well was sampled after two (2) hours of continuous purge. Flow cell emptied due to erroneous turbidity at 11:20 AM (28:56) and 11:55 AM (01:10:19). Air compressor overheated and shut off at 11:35 AM (43:56). Resumed purge at 11:40 AM (48:56) with replacement air compressor. Aquatroll disconnected for 9 minutes from 11:41 AM (49:56) to 11:50 AM (59:19) Water during initial purge was cloudy and orange with noticeable sediment and became slightly cloudy, orange, odorless after one hour of purge. Well stable at 12:50 PM (01:59:19) Measured total volume purged: 47,038.00 mL Sample for explosives at 1250 on 6/15/2022

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Sampled By: ,06/14/2022

QA Check By: ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/23/2022 12:14:14 PM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Carter James

Location Name: LL1mw-080 **Well Diameter: 2 in** **Initial Depth to Water: 11.47 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: 1,951.667 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 135 mL/min** **Final Draw Down: 0.43 ft**	**Instrument Used:** **AquaTROLL 600: 513266** **Water Level: 39350** **MP50: 050494**

Test Notes:

CPM 3 18:2, PSI 20, 135 mL/min

Weather Conditions:
76°F 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	+/- 0.3	
6/23/2022 12:14 PM	00:00	6.77 pH	21.63 °C	0.28 mS/cm	6.63 mg/L	3.12 NTU	200.2 mV	11.47 ft	125.00 mL/min
6/23/2022 12:22 PM	08:37	6.66 pH	14.96 °C	0.28 mS/cm	4.99 mg/L	1.81 NTU	218.4 mV	11.47 ft	125.00 mL/min
6/23/2022 12:23 PM	09:08	6.67 pH	15.48 °C	0.28 mS/cm	4.95 mg/L	2.74 NTU	218.1 mV	11.90 ft	135.00 mL/min
6/23/2022 12:26 PM	12:08	6.65 pH	15.64 °C	0.28 mS/cm	4.95 mg/L	1.79 NTU	216.9 mV	11.90 ft	135.00 mL/min
6/23/2022 12:29 PM	15:08	6.61 pH	15.39 °C	0.28 mS/cm	4.98 mg/L	2.04 NTU	218.8 mV	11.90 ft	135.00 mL/min

Samples

Sample ID:	Description:
LL1mw-080-220601-GW	Begin low flow purge at 12:22 PM Stagnant water volume: 1,400 mL Stagnant water volume removed at 12:22 PM Stable at 12:32 PM Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 8,500 mL Sample for Explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC at 12:50 PM

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Completed By _____
06/23/2022

QA Check By _____
08/30/2022

Low-Flow Test Report:

Test Date / Time: 6/23/2022 12:29:20 PM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Mitchell DeBortoli

Location Name: LL1mw-081 **Well Diameter: 2 in** **Initial Depth to Water: 28.72 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: 15,454.167 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 0.67 ft**	**Instrument Used:** **AquaTROLL 600: 518813** **Compressor: 18239** **Water level: 09872** **Aquatroll: 518813** **MP10: 1143**

Test Notes:

CPM 28/2, PSI/20, 100 mL/min

At 2:45 PM, an additional water parameter measurement was collected after the well had stabilized and the Aqua TROLL had been disconnected. It is not indicative of the stability of the water during sampling.

Weather Conditions:

76°F and 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	+/- 0.3	
6/23/2022 12:29 PM	00:00	6.96 pH	21.93 °C	0.33 mS/cm	6.90 mg/L	89.37 NTU	18.9 mV	28.72 ft	250.00 mL/min

6/23/2022 12:41 PM	12:35	6.54 pH	14.46 °C	0.35 mS/cm	0.47 mg/L	443.90 NTU	-21.0 mV	29.39 ft	100.00 mL/min
6/23/2022 12:46 PM	17:07	6.46 pH	14.38 °C	0.34 mS/cm	0.56 mg/L	1,090.0 NTU	-8.1 mV	29.39 ft	100.00 mL/min
6/23/2022 12:49 PM	20:07	6.39 pH	14.59 °C	0.34 mS/cm	0.64 mg/L	591.16 NTU	0.5 mV	29.39 ft	100.00 mL/min
6/23/2022 12:52 PM	23:07	6.32 pH	14.37 °C	0.34 mS/cm	0.68 mg/L	303.59 NTU	4.5 mV	29.39 ft	100.00 mL/min
6/23/2022 12:55 PM	26:07	6.26 pH	14.32 °C	0.35 mS/cm	0.72 mg/L	178.03 NTU	8.1 mV	29.39 ft	100.00 mL/min
6/23/2022 12:58 PM	29:07	6.20 pH	14.04 °C	0.34 mS/cm	0.72 mg/L	250.67 NTU	12.0 mV	29.39 ft	100.00 mL/min
6/23/2022 1:01 PM	32:07	6.38 pH	14.84 °C	0.00 mS/cm	5.00 mg/L	0.00 NTU	22.2 mV	29.39 ft	100.00 mL/min
6/23/2022 1:04 PM	35:07	6.18 pH	14.87 °C	0.35 mS/cm	1.48 mg/L	96.24 NTU	11.5 mV	29.39 ft	100.00 mL/min
6/23/2022 1:07 PM	38:07	6.19 pH	14.69 °C	0.35 mS/cm	2.18 mg/L	83.06 NTU	6.1 mV	29.39 ft	100.00 mL/min
6/23/2022 1:10 PM	41:07	6.18 pH	14.26 °C	0.35 mS/cm	0.75 mg/L	45.41 NTU	7.9 mV	29.39 ft	100.00 mL/min
6/23/2022 1:13 PM	44:07	6.18 pH	14.20 °C	0.35 mS/cm	0.65 mg/L	48.34 NTU	10.1 mV	29.39 ft	100.00 mL/min
6/23/2022 1:16 PM	47:07	6.17 pH	14.07 °C	0.35 mS/cm	0.60 mg/L	49.72 NTU	11.4 mV	29.39 ft	100.00 mL/min
6/23/2022 1:19 PM	50:07	6.17 pH	13.89 °C	0.35 mS/cm	0.56 mg/L	35.28 NTU	12.0 mV	29.39 ft	100.00 mL/min
6/23/2022 1:22 PM	53:07	6.15 pH	14.27 °C	0.35 mS/cm	0.51 mg/L	26.77 NTU	12.6 mV	29.39 ft	100.00 mL/min
6/23/2022 1:25 PM	56:07	6.14 pH	14.21 °C	0.35 mS/cm	0.47 mg/L	28.90 NTU	13.3 mV	29.39 ft	100.00 mL/min
6/23/2022 1:28 PM	59:07	6.13 pH	14.22 °C	0.35 mS/cm	0.43 mg/L	25.87 NTU	13.8 mV	29.39 ft	100.00 mL/min
6/23/2022 1:31 PM	01:02:07	6.12 pH	13.97 °C	0.35 mS/cm	0.40 mg/L	30.61 NTU	14.2 mV	29.39 ft	100.00 mL/min
6/23/2022 1:34 PM	01:05:07	6.10 pH	14.01 °C	0.35 mS/cm	0.37 mg/L	20.78 NTU	14.5 mV	29.39 ft	100.00 mL/min
6/23/2022 1:42 PM	01:13:21	6.09 pH	14.04 °C	0.36 mS/cm	0.33 mg/L	28.14 NTU	26.6 mV	29.39 ft	100.00 mL/min
6/23/2022 1:45 PM	01:16:21	6.04 pH	14.02 °C	0.36 mS/cm	0.31 mg/L	16.96 NTU	25.8 mV	29.39 ft	100.00 mL/min
6/23/2022 1:48 PM	01:19:21	6.01 pH	14.19 °C	0.35 mS/cm	0.29 mg/L	12.21 NTU	25.6 mV	29.39 ft	100.00 mL/min
6/23/2022 1:51 PM	01:22:21	5.98 pH	14.22 °C	0.36 mS/cm	0.28 mg/L	17.12 NTU	25.6 mV	29.39 ft	100.00 mL/min
6/23/2022 1:54 PM	01:25:21	5.97 pH	14.18 °C	0.36 mS/cm	0.27 mg/L	17.08 NTU	25.4 mV	29.39 ft	100.00 mL/min
6/23/2022 1:57 PM	01:28:21	5.96 pH	14.28 °C	0.36 mS/cm	0.26 mg/L	14.63 NTU	24.7 mV	29.39 ft	100.00 mL/min
6/23/2022 2:00 PM	01:31:21	5.97 pH	14.06 °C	0.36 mS/cm	0.26 mg/L	8.84 NTU	23.4 mV	29.39 ft	100.00 mL/min
6/23/2022 2:03 PM	01:34:21	5.97 pH	13.96 °C	0.36 mS/cm	0.25 mg/L	39.47 NTU	22.9 mV	29.39 ft	100.00 mL/min
6/23/2022 2:05 PM	01:36:24	5.96 pH	13.95 °C	0.36 mS/cm	0.26 mg/L	26.16 NTU	92.1 mV	29.39 ft	100.00 mL/min
6/23/2022 2:08 PM	01:39:24	5.96 pH	14.20 °C	0.36 mS/cm	0.24 mg/L	13.95 NTU	38.5 mV	29.39 ft	100.00 mL/min
6/23/2022 2:11 PM	01:42:24	5.96 pH	14.19 °C	0.36 mS/cm	0.24 mg/L	63.13 NTU	31.5 mV	29.39 ft	100.00 mL/min

6/23/2022 2:14 PM	01:45:24	6.00 pH	15.29 °C	0.36 mS/cm	3.74 mg/L	118.80 NTU	20.8 mV	29.39 ft	100.00 mL/min
6/23/2022 2:17 PM	01:48:24	5.98 pH	14.24 °C	0.36 mS/cm	0.41 mg/L	65.74 NTU	19.9 mV	29.39 ft	100.00 mL/min
6/23/2022 2:20 PM	01:51:24	5.97 pH	14.05 °C	0.36 mS/cm	0.25 mg/L	30.75 NTU	22.0 mV	29.39 ft	100.00 mL/min
6/23/2022 2:23 PM	01:54:24	5.98 pH	14.00 °C	0.36 mS/cm	0.23 mg/L	22.02 NTU	22.3 mV	29.39 ft	100.00 mL/min
6/23/2022 2:26 PM	01:56:40	5.98 pH	14.26 °C	0.36 mS/cm	0.22 mg/L	14.30 NTU	22.2 mV	29.39 ft	100.00 mL/min
6/23/2022 2:29 PM	01:59:40	5.99 pH	14.12 °C	0.36 mS/cm	0.22 mg/L	10.17 NTU	21.9 mV	29.39 ft	100.00 mL/min
6/23/2022 2:32 PM	02:02:40	5.99 pH	14.16 °C	0.36 mS/cm	0.22 mg/L	9.42 NTU	21.6 mV	29.39 ft	100.00 mL/min
6/23/2022 2:45 PM	02:15:40	6.40 pH	19.73 °C	0.00 mS/cm	8.74 mg/L	0.00 NTU	62.9 mV	29.39 ft	100.00 mL/min

Samples

Sample ID:	Description:
LL1mw-081-220601-GW	Begin prepurge at 12:30 PM Stagnant water volume: 1,430 mL Stagnant water removed. Begin low flow purge at 12:46 PM Stable at 2:32 PM Collect samples at 2:45 PM Water is clear colorless and odorless Measured total vol purged: 15,100 mL Sample for Explosives

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Completed By Mitchell DeBortoli
06/23/2022

QA Check By _____
08/30/2022

Mitchell D

Low-Flow Test Report:

Test Date / Time: 6/24/2022 01:17:27 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Jon Rokicki

Location Name: LL1mw-082 **Well Diameter: 2 in** **Total Depth: 41.39 ft** **Initial Depth to Water: 28.63 ft**	**Pump Type: QED MP-10 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: 4,875 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 0.88 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 39350** **MP10 Controller - 1143** **Compressor - 18421**

Test Notes:

CPM 3 17.5:2.5, 20 PSI, 100 mL/min

Weather Conditions:
85° 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	+/- 0.3	
6/24/2022 1:17 PM	00:00	6.76 pH	23.94 °C	0.20 mS/cm	6.68 mg/L	415.79 NTU	98.8 mV	28.63 ft	150.00 ml/min
6/24/2022 1:32 PM	15:30	6.61 pH	13.44 °C	0.25 mS/cm	2.78 mg/L	25.15 NTU	-24.0 mV	28.63 ft	150.00 ml/min
6/24/2022 1:35 PM	18:30	6.47 pH	13.68 °C	0.25 mS/cm	1.01 mg/L	17.58 NTU	-15.2 mV	29.51 ft	100.00 ml/min
6/24/2022 1:38 PM	21:30	6.36 pH	13.80 °C	0.25 mS/cm	1.05 mg/L	15.31 NTU	-5.9 mV	29.51 ft	100.00 ml/min
6/24/2022 1:41 PM	24:30	6.27 pH	13.40 °C	0.25 mS/cm	1.02 mg/L	11.70 NTU	0.2 mV	29.51 ft	100.00 ml/min
6/24/2022 1:44 PM	27:30	6.22 pH	13.56 °C	0.25 mS/cm	0.86 mg/L	8.67 NTU	2.2 mV	29.51 ft	100.00 ml/min
6/24/2022 1:47 PM	30:30	6.19 pH	13.76 °C	0.25 mS/cm	0.64 mg/L	6.09 NTU	2.2 mV	29.51 ft	100.00 ml/min
6/24/2022 1:50 PM	33:30	6.17 pH	13.51 °C	0.25 mS/cm	0.49 mg/L	7.93 NTU	1.1 mV	29.51 ft	100.00 ml/min
6/24/2022 1:53 PM	36:30	6.16 pH	13.38 °C	0.25 mS/cm	0.41 mg/L	8.01 NTU	0.1 mV	29.51 ft	100.00 ml/min
6/24/2022 1:56 PM	39:30	6.15 pH	13.44 °C	0.25 mS/cm	0.35 mg/L	9.19 NTU	-0.6 mV	29.51 ft	100.00 ml/min

Samples

Sample ID:	Description:
LL1mw-082-220601-GW	Begin low flow purge at 1:17 PM (PSI 20 / CPM 3 /17.5 /2.5) Stagnant water volume: 1,500 mL Stagnant water volume removed at 1:32 PM (15:30) Stable at 1:56 PM (39:30) Water is clear, colorless and odorless throughout purge Measured total volume purged: 5,600 mL Sample for explosives at 1400 on 06/24/2022

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Sampled By: ,06/24/2022

QA Check By: Melissa Rego ,09/02/2022

Low-Flow Test Report:

Test Date / Time: 6/17/2022 1:33:20 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: LL1mw-083 **Well Diameter: 2 in** **Initial Depth to Water: 30.82 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: 8,240 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 200 mL/min** **Final Draw Down: 0.48 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 2 26:4, 40 PSI, 200 mL/min

Weather Conditions:
Clear, 80°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	+/- 0.3	
6/17/2022 1:33 PM	00:00	5.43 pH	23.84 °C	0.25 mS/cm	6.16 mg/L	2.74 NTU	173.4 mV	30.82 ft	200.00 ml/min
6/17/2022 1:45 PM	11:00	4.49 pH	13.29 °C	0.26 mS/cm	3.39 mg/L	2.30 NTU	268.3 mV	31.30 ft	200.00 ml/min
6/17/2022 1:47 PM	13:07	4.44 pH	13.35 °C	0.26 mS/cm	3.26 mg/L	2.31 NTU	273.3 mV	31.30 ft	200.00 ml/min
6/17/2022 1:50 PM	16:07	4.34 pH	12.93 °C	0.26 mS/cm	3.22 mg/L	1.68 NTU	287.4 mV	31.30 ft	200.00 ml/min
6/17/2022 1:53 PM	19:07	4.26 pH	12.85 °C	0.26 mS/cm	3.22 mg/L	1.35 NTU	299.8 mV	31.30 ft	200.00 ml/min
6/17/2022 1:56 PM	22:07	4.21 pH	12.62 °C	0.26 mS/cm	3.21 mg/L	1.38 NTU	311.3 mV	31.30 ft	200.00 ml/min
6/17/2022 1:59 PM	25:07	4.17 pH	12.71 °C	0.26 mS/cm	3.19 mg/L	1.33 NTU	321.8 mV	31.30 ft	200.00 ml/min
6/17/2022 2:02 PM	28:07	4.14 pH	12.54 °C	0.26 mS/cm	3.18 mg/L	1.07 NTU	331.9 mV	31.30 ft	200.00 ml/min
6/17/2022 2:05 PM	31:07	4.17 pH	12.90 °C	0.26 mS/cm	3.14 mg/L	1.11 NTU	338.1 mV	31.30 ft	200.00 ml/min

Samples

Sample ID:	Description:
LL1mw-083-220601-GW	Begin low flow purge at 1:33 PM (PSI 40 / CPM 2/26/4) Stagnant water volume: 1,640 mL Stagnant water volume removed at 1:45 PM (11:00) Stable at 2:05 PM (31:07) Water is clear, colorless, odorless throughout purge Measured total volume purged: 8,240 mL Sample for explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC at 2:05 PM on 06/17/2022

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Sampled By: ,06/17/2022

QA Check By: ,07/20/2022

Low-Flow Test Report:

Test Date / Time: 6/17/2022 10:14:16 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: LL1mw-084 **Well Diameter: 2 in** **Initial Depth to Water: 26.97 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: 9,426.1 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 75 mL/min Final Draw Down: 1.13 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 1 57:3, 25 PSi, 75 mL/min

Weather Conditions:
Clear, 75°F, 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	+/- 0.3	
6/17/2022 10:14 AM	00:00	6.17 pH	18.19 °C	0.33 mS/cm	7.86 mg/L	1.06 NTU	212.5 mV	26.97 ft	100.00 ml/min
6/17/2022 10:28 AM	14:26	5.68 pH	16.18 °C	0.34 mS/cm	5.46 mg/L	1.41 NTU	248.0 mV	26.97 ft	50.00 ml/min
6/17/2022 10:50 AM	35:48	5.57 pH	16.83 °C	0.33 mS/cm	4.06 mg/L	2.90 NTU	251.9 mV	26.97 ft	75.00 ml/min
6/17/2022 10:53 AM	37:16	5.57 pH	17.44 °C	0.33 mS/cm	4.03 mg/L	1.93 NTU	251.6 mV	28.10 ft	75.00 ml/min
6/17/2022 10:56 AM	40:16	5.56 pH	17.38 °C	0.33 mS/cm	4.01 mg/L	3.11 NTU	251.8 mV	28.10 ft	75.00 ml/min
6/17/2022 10:59 AM	43:16	5.57 pH	16.75 °C	0.33 mS/cm	3.96 mg/L	4.02 NTU	251.9 mV	28.10 ft	75.00 ml/min
6/17/2022 11:02 AM	46:16	5.58 pH	16.35 °C	0.33 mS/cm	3.95 mg/L	6.53 NTU	252.8 mV	28.10 ft	75.00 ml/min
6/17/2022 11:05 AM	49:16	5.58 pH	16.72 °C	0.33 mS/cm	4.04 mg/L	1.43 NTU	253.1 mV	28.10 ft	75.00 ml/min

Samples

Sample ID:	Description:
LL1mw-084-220601-GW, LL1mw-084-220601-GWMSD, & LL1mw-084-220602-GW	Begin low flow purge at 10:14 AM (PSI 25 / CPM 1/57/3) Stagnant water volume: 1,676.8 mL Stagnant water volume removed at 10:50 AM (35:48). Stable at 11:05 AM (49:16) Water is clear, colorless, odorless throughout purge Measured total volume purged: 9,426.1 mL Sample for explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC at 11:06 AM on 06/17/2022

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Sampled By: ,06/17/2022

QA Check By: ,07/20/2022

Low-Flow Test Report:

Test Date / Time: 6/24/2022 9:30:28 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Ryan Laurich

Location Name: LL1mw-086 **Well Diameter: 2 in** **Total Depth: 77.95 ft** **Initial Depth to Water: 7.87 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: 39,491.668 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 175 mL/min** **Final Draw Down: 0.1 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 - 1143** **Compressor - 22817** **MP50 Controller - 2325**

Test Notes:
CPM 3 18:2, 55 PSI, 175 mL/min

Weather Conditions:
63°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	+/- 0.3	
6/24/2022 9:30 AM	00:00	7.80 pH	15.47 °C	0.49 mS/cm	8.12 mg/L	36.10 NTU	231.8 mV	7.87 ft	175.00 ml/min
6/24/2022 9:45 AM	15:38	10.88 pH	12.04 °C	0.77 mS/cm	3.74 mg/L	10.15 NTU	137.8 mV	7.97 ft	175.00 ml/min
6/24/2022 9:48 AM	18:38	10.84 pH	11.98 °C	0.73 mS/cm	3.42 mg/L	11.89 NTU	124.7 mV	7.97 ft	175.00 ml/min
6/24/2022 9:51 AM	21:38	10.85 pH	12.04 °C	0.75 mS/cm	3.38 mg/L	12.15 NTU	114.5 mV	7.97 ft	175.00 ml/min
6/24/2022 9:54 AM	24:38	10.86 pH	12.08 °C	0.76 mS/cm	3.38 mg/L	13.52 NTU	104.7 mV	7.97 ft	175.00 ml/min
6/24/2022 9:57 AM	27:38	10.66 pH	11.96 °C	0.57 mS/cm	3.10 mg/L	22.40 NTU	92.5 mV	7.97 ft	175.00 ml/min
6/24/2022 10:00 AM	30:16	9.75 pH	12.07 °C	0.44 mS/cm	2.04 mg/L	34.49 NTU	94.1 mV	7.97 ft	175.00 ml/min
6/24/2022 10:03 AM	33:16	9.00 pH	12.03 °C	0.44 mS/cm	1.37 mg/L	53.53 NTU	97.1 mV	7.97 ft	175.00 ml/min
6/24/2022 10:06 AM	36:16	8.65 pH	12.24 °C	0.45 mS/cm	1.13 mg/L	59.48 NTU	99.2 mV	7.97 ft	175.00 ml/min
6/24/2022 10:09 AM	39:16	8.40 pH	12.15 °C	0.46 mS/cm	0.93 mg/L	56.40 NTU	98.9 mV	7.97 ft	175.00 ml/min
6/24/2022 10:12 AM	42:16	8.21 pH	12.22 °C	0.47 mS/cm	0.81 mg/L	78.14 NTU	80.4 mV	7.97 ft	175.00 ml/min
6/24/2022 10:15 AM	45:16	8.02 pH	12.44 °C	0.48 mS/cm	0.71 mg/L	149.21 NTU	-2.8 mV	7.97 ft	175.00 ml/min

6/24/2022 10:18 AM	48:16	7.91 pH	12.48 °C	0.49 mS/cm	0.64 mg/L	139.55 NTU	-71.4 mV	7.97 ft	175.00 ml/min
6/24/2022 10:21 AM	51:16	7.73 pH	12.58 °C	0.49 mS/cm	0.56 mg/L	156.53 NTU	-96.4 mV	7.97 ft	175.00 ml/min
6/24/2022 10:24 AM	54:16	7.65 pH	12.59 °C	0.49 mS/cm	0.53 mg/L	137.09 NTU	-105.5 mV	7.97 ft	175.00 ml/min
6/24/2022 10:27 AM	57:16	7.60 pH	12.89 °C	0.50 mS/cm	0.46 mg/L	145.85 NTU	-108.1 mV	7.97 ft	175.00 ml/min
6/24/2022 10:30 AM	01:00:16	7.52 pH	12.78 °C	0.50 mS/cm	0.43 mg/L	148.49 NTU	-106.7 mV	7.97 ft	175.00 ml/min
6/24/2022 10:33 AM	01:03:16	7.51 pH	12.76 °C	0.50 mS/cm	0.40 mg/L	170.68 NTU	-108.0 mV	7.97 ft	175.00 ml/min
6/24/2022 10:36 AM	01:06:16	7.53 pH	12.85 °C	0.50 mS/cm	0.38 mg/L	97.92 NTU	-110.9 mV	7.97 ft	175.00 ml/min
6/24/2022 10:39 AM	01:09:16	7.52 pH	12.91 °C	0.51 mS/cm	0.35 mg/L	86.74 NTU	-111.6 mV	7.97 ft	175.00 ml/min
6/24/2022 10:42 AM	01:12:16	7.55 pH	12.98 °C	0.50 mS/cm	0.35 mg/L	94.25 NTU	-114.3 mV	7.97 ft	175.00 ml/min
6/24/2022 10:45 AM	01:15:16	7.63 pH	13.09 °C	0.51 mS/cm	0.34 mg/L	115.08 NTU	-119.9 mV	7.97 ft	175.00 ml/min
6/24/2022 10:48 AM	01:18:16	7.67 pH	12.94 °C	0.51 mS/cm	0.33 mg/L	158.49 NTU	-123.4 mV	7.97 ft	175.00 ml/min
6/24/2022 10:51 AM	01:21:16	7.66 pH	12.84 °C	0.51 mS/cm	0.32 mg/L	152.73 NTU	-123.6 mV	7.97 ft	175.00 ml/min
6/24/2022 10:54 AM	01:24:16	7.69 pH	13.35 °C	0.51 mS/cm	0.32 mg/L	57.64 NTU	-125.9 mV	7.97 ft	175.00 ml/min
6/24/2022 10:57 AM	01:27:16	7.74 pH	13.21 °C	0.51 mS/cm	0.32 mg/L	58.33 NTU	-128.8 mV	7.97 ft	175.00 ml/min
6/24/2022 11:00 AM	01:30:16	7.76 pH	13.10 °C	0.51 mS/cm	0.31 mg/L	77.11 NTU	-131.3 mV	7.97 ft	175.00 ml/min
6/24/2022 11:03 AM	01:33:16	7.82 pH	13.49 °C	0.51 mS/cm	0.34 mg/L	65.70 NTU	-135.5 mV	7.97 ft	175.00 ml/min
6/24/2022 11:06 AM	01:36:16	7.82 pH	13.37 °C	0.52 mS/cm	0.31 mg/L	51.88 NTU	-136.3 mV	7.97 ft	175.00 ml/min
6/24/2022 11:09 AM	01:39:16	7.84 pH	13.30 °C	0.51 mS/cm	0.30 mg/L	54.35 NTU	-138.7 mV	7.97 ft	175.00 ml/min
6/24/2022 11:12 AM	01:42:16	7.89 pH	13.91 °C	0.52 mS/cm	0.29 mg/L	49.63 NTU	-143.3 mV	7.97 ft	175.00 ml/min
6/24/2022 11:15 AM	01:45:16	7.86 pH	15.49 °C	0.52 mS/cm	0.41 mg/L	41.49 NTU	-140.5 mV	7.97 ft	175.00 ml/min
6/24/2022 11:18 AM	01:48:16	7.90 pH	13.33 °C	0.52 mS/cm	0.47 mg/L	62.66 NTU	-137.7 mV	7.97 ft	175.00 ml/min
6/24/2022 11:21 AM	01:51:16	7.95 pH	14.20 °C	0.52 mS/cm	0.45 mg/L	60.40 NTU	-141.7 mV	7.97 ft	175.00 ml/min
6/24/2022 11:24 AM	01:54:16	7.97 pH	16.75 °C	0.52 mS/cm	0.87 mg/L	63.55 NTU	-137.3 mV	7.97 ft	175.00 ml/min
6/24/2022 11:27 AM	01:57:16	8.12 pH	16.66 °C	0.51 mS/cm	1.02 mg/L	75.20 NTU	-141.4 mV	7.97 ft	175.00 ml/min
6/24/2022 11:30 AM	02:00:16	8.18 pH	16.45 °C	0.52 mS/cm	0.93 mg/L	82.48 NTU	-143.6 mV	7.97 ft	175.00 ml/min
6/24/2022 11:33 AM	02:03:16	8.12 pH	17.01 °C	0.52 mS/cm	1.03 mg/L	94.46 NTU	-138.7 mV	7.97 ft	175.00 ml/min
6/24/2022 11:36 AM	02:06:16	8.05 pH	17.18 °C	0.52 mS/cm	0.95 mg/L	99.08 NTU	-134.7 mV	7.97 ft	175.00 ml/min
6/24/2022 11:39 AM	02:09:16	8.01 pH	18.16 °C	0.52 mS/cm	1.09 mg/L	113.60 NTU	-131.6 mV	7.97 ft	175.00 ml/min

6/24/2022 11:42 AM	02:12:16	8.08 pH	18.26 °C	0.52 mS/cm	0.99 mg/L	61.91 NTU	-137.3 mV	7.97 ft	175.00 ml/min
6/24/2022 11:45 AM	02:15:16	8.13 pH	19.24 °C	0.53 mS/cm	1.04 mg/L	34.40 NTU	-127.5 mV	7.97 ft	175.00 ml/min
6/24/2022 11:48 AM	02:18:16	8.21 pH	19.42 °C	0.52 mS/cm	1.22 mg/L	43.54 NTU	-115.4 mV	7.97 ft	175.00 ml/min
6/24/2022 11:51 AM	02:21:16	8.17 pH	20.52 °C	0.52 mS/cm	1.23 mg/L	31.86 NTU	-93.4 mV	7.97 ft	175.00 ml/min
6/24/2022 11:54 AM	02:24:16	8.16 pH	21.69 °C	0.53 mS/cm	1.21 mg/L	19.08 NTU	-74.4 mV	7.97 ft	175.00 ml/min
6/24/2022 11:57 AM	02:27:16	8.16 pH	22.73 °C	0.53 mS/cm	1.14 mg/L	19.99 NTU	-62.2 mV	7.97 ft	175.00 ml/min
6/24/2022 12:00 PM	02:30:16	8.16 pH	23.99 °C	0.53 mS/cm	1.12 mg/L	20.88 NTU	-51.7 mV	7.97 ft	175.00 ml/min
6/24/2022 12:03 PM	02:33:16	8.16 pH	25.76 °C	0.53 mS/cm	1.11 mg/L	19.64 NTU	-43.9 mV	7.97 ft	175.00 ml/min
6/24/2022 12:06 PM	02:36:16	8.16 pH	27.42 °C	0.54 mS/cm	1.07 mg/L	16.21 NTU	-38.4 mV	7.97 ft	175.00 ml/min
6/24/2022 12:09 PM	02:39:16	8.16 pH	28.95 °C	0.54 mS/cm	1.08 mg/L	14.16 NTU	-31.9 mV	7.97 ft	175.00 ml/min
6/24/2022 12:12 PM	02:42:16	8.16 pH	30.39 °C	0.54 mS/cm	1.07 mg/L	14.18 NTU	-25.5 mV	7.97 ft	175.00 ml/min
6/24/2022 12:15 PM	02:45:16	8.16 pH	31.76 °C	0.54 mS/cm	1.07 mg/L	15.05 NTU	-19.6 mV	7.97 ft	175.00 ml/min
6/24/2022 12:21 PM	02:51:40	8.25 pH	15.64 °C	0.51 mS/cm	1.05 mg/L	55.49 NTU	2.1 mV	7.97 ft	175.00 ml/min
6/24/2022 12:24 PM	02:54:40	7.93 pH	20.24 °C	0.52 mS/cm	1.04 mg/L	53.23 NTU	12.5 mV	7.97 ft	175.00 ml/min
6/24/2022 12:27 PM	02:57:40	7.78 pH	23.41 °C	0.52 mS/cm	0.99 mg/L	59.62 NTU	20.0 mV	7.97 ft	175.00 ml/min
6/24/2022 12:30 PM	03:00:40	7.89 pH	25.88 °C	0.53 mS/cm	0.97 mg/L	71.73 NTU	16.6 mV	7.97 ft	175.00 ml/min
6/24/2022 12:33 PM	03:03:40	8.07 pH	18.78 °C	0.51 mS/cm	1.44 mg/L	46.17 NTU	10.4 mV	7.97 ft	175.00 ml/min
6/24/2022 12:36 PM	03:06:40	7.99 pH	20.33 °C	0.52 mS/cm	1.21 mg/L	27.35 NTU	-1.3 mV	7.97 ft	175.00 ml/min
6/24/2022 12:39 PM	03:09:40	7.97 pH	18.66 °C	0.50 mS/cm	1.51 mg/L	53.72 NTU	1.1 mV	7.97 ft	175.00 ml/min
6/24/2022 12:42 PM	03:12:40	7.82 pH	13.55 °C	0.51 mS/cm	0.80 mg/L	38.39 NTU	-75.4 mV	7.97 ft	175.00 ml/min
6/24/2022 12:45 PM	03:15:40	7.82 pH	13.23 °C	0.51 mS/cm	0.58 mg/L	42.41 NTU	-124.8 mV	7.97 ft	175.00 ml/min
6/24/2022 12:48 PM	03:18:40	7.71 pH	13.15 °C	0.51 mS/cm	0.45 mg/L	47.43 NTU	-124.5 mV	7.97 ft	175.00 ml/min
6/24/2022 12:51 PM	03:21:40	7.61 pH	13.24 °C	0.52 mS/cm	0.39 mg/L	58.71 NTU	-120.2 mV	7.97 ft	175.00 ml/min
6/24/2022 12:54 PM	03:24:40	7.49 pH	13.20 °C	0.52 mS/cm	0.33 mg/L	79.10 NTU	-116.3 mV	7.97 ft	175.00 ml/min
6/24/2022 12:57 PM	03:27:40	7.49 pH	12.93 °C	0.51 mS/cm	0.31 mg/L	74.81 NTU	-117.0 mV	7.97 ft	175.00 ml/min
6/24/2022 1:00 PM	03:30:40	7.44 pH	12.65 °C	0.52 mS/cm	0.32 mg/L	101.03 NTU	-114.3 mV	7.97 ft	175.00 ml/min
6/24/2022 1:03 PM	03:33:40	7.38 pH	12.71 °C	0.52 mS/cm	0.48 mg/L	41.29 NTU	-108.0 mV	7.97 ft	175.00 ml/min
6/24/2022 1:06 PM	03:36:40	7.29 pH	12.74 °C	0.52 mS/cm	0.41 mg/L	47.11 NTU	-100.7 mV	7.97 ft	175.00 ml/min

6/24/2022 1:09 PM	03:39:40	7.21 pH	12.67 °C	0.52 mS/cm	0.35 mg/L	46.61 NTU	-94.5 mV	7.97 ft	175.00 ml/min
6/24/2022 1:12 PM	03:42:40	7.17 pH	12.56 °C	0.52 mS/cm	0.23 mg/L	49.73 NTU	-92.6 mV	7.97 ft	175.00 ml/min
6/24/2022 1:15 PM	03:45:40	7.15 pH	12.57 °C	0.52 mS/cm	0.24 mg/L	52.06 NTU	-91.1 mV	7.97 ft	175.00 ml/min

Samples

Sample ID:	Description:
LL1mw-086-220601-GW	Begin low flow purge at 9:30 AM (PSI 55 / CPM 3 /18 /2) Stagnant water volume: 2,551 mL Stagnant water volume removed at 9:54 PM (24:38) At 11:23 AM (01:53:16) air compressor was unable to maintain air pressure and began troubleshooting Switched to MP50 Controller Resumed purge at 12:46 PM (03:16:40) Void readings between time stamps 1:42:16-3:12:40 Stable at 1:15 PM (03:45:40) Water is cloudy, colorless, odorless throughout purge Measured total volume purged: 33,500 mL Sample for explosives at 1323 on 06/24/2022

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Sampled By: ,06/24/2022

QA Check By: Melissa Rego ,09/02/2022

Low-Flow Test Report:

Test Date / Time: 6/14/2022 10:45:28 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: LL1mw-089 **Well Diameter: 2 in** **Initial Depth to Water: 22.52 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: 19,023.334 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 350 mL/min** **Final Draw Down: 0.07 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 2 26:4, 35 PSI, 350 mL/min

Weather Conditions:
80°F muggy

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	
6/14/2022 10:45 AM	00:00	6.08 pH	20.16 °C	0.11 mS/cm	6.41 mg/L	26.48 NTU	208.5 mV	22.52 ft	200.00 ml/min
6/14/2022 10:51 AM	06:15	4.55 pH	12.15 °C	0.08 mS/cm	2.11 mg/L	170.17 NTU	189.8 mV	22.52 ft	200.00 ml/min
6/14/2022 10:53 AM	08:07	4.55 pH	11.57 °C	0.08 mS/cm	2.07 mg/L	196.29 NTU	191.8 mV	22.52 ft	200.00 ml/min
6/14/2022 10:56 AM	11:07	4.60 pH	11.94 °C	0.08 mS/cm	2.00 mg/L	203.53 NTU	195.2 mV	22.52 ft	200.00 ml/min
6/14/2022 10:59 AM	14:07	4.56 pH	12.12 °C	0.08 mS/cm	1.94 mg/L	240.68 NTU	207.3 mV	22.52 ft	200.00 ml/min
6/14/2022 11:02 AM	17:07	4.53 pH	12.15 °C	0.08 mS/cm	1.89 mg/L	289.41 NTU	214.1 mV	22.52 ft	200.00 ml/min
6/14/2022 11:05 AM	20:07	4.52 pH	12.08 °C	0.08 mS/cm	1.87 mg/L	313.91 NTU	222.9 mV	22.52 ft	200.00 ml/min
6/14/2022 11:08 AM	23:07	4.53 pH	11.92 °C	0.08 mS/cm	1.89 mg/L	319.82 NTU	230.5 mV	22.52 ft	200.00 ml/min
6/14/2022 11:11 AM	26:07	4.56 pH	11.85 °C	0.08 mS/cm	2.04 mg/L	3.06 NTU	239.8 mV	22.52 ft	200.00 ml/min
6/14/2022 11:14 AM	29:07	4.59 pH	13.65 °C	0.08 mS/cm	1.71 mg/L	5.51 NTU	239.6 mV	22.52 ft	200.00 ml/min
6/14/2022 11:17 AM	32:07	4.61 pH	16.67 °C	0.08 mS/cm	1.76 mg/L	7.95 NTU	242.5 mV	22.52 ft	200.00 ml/min

6/14/2022 11:20 AM	35:07	4.59 pH	18.88 °C	0.09 mS/cm	2.13 mg/L	10.32 NTU	246.1 mV	22.52 ft	200.00 ml/min
6/14/2022 11:23 AM	38:07	4.58 pH	20.43 °C	0.09 mS/cm	2.23 mg/L	14.23 NTU	249.5 mV	22.52 ft	200.00 ml/min
6/14/2022 11:26 AM	41:07	4.62 pH	22.70 °C	0.09 mS/cm	2.04 mg/L	17.01 NTU	247.8 mV	22.52 ft	200.00 ml/min
6/14/2022 11:29 AM	44:07	4.94 pH	24.96 °C	0.09 mS/cm	1.92 mg/L	23.29 NTU	227.6 mV	22.59 ft	200.00 ml/min
6/14/2022 11:32 AM	47:07	5.29 pH	25.91 °C	0.09 mS/cm	1.87 mg/L	30.69 NTU	205.8 mV	22.59 ft	200.00 ml/min
6/14/2022 11:35 AM	50:07	5.35 pH	26.52 °C	0.09 mS/cm	1.85 mg/L	35.13 NTU	202.0 mV	22.59 ft	200.00 ml/min
6/14/2022 11:38 AM	53:07	5.37 pH	19.10 °C	0.08 mS/cm	2.06 mg/L	91.51 NTU	205.9 mV	22.59 ft	350.00 ml/min
6/14/2022 11:41 AM	56:07	5.13 pH	12.72 °C	0.08 mS/cm	2.06 mg/L	99.54 NTU	223.4 mV	22.59 ft	350.00 ml/min
6/14/2022 11:44 AM	59:07	4.63 pH	11.96 °C	0.08 mS/cm	1.99 mg/L	119.63 NTU	243.8 mV	22.59 ft	350.00 ml/min
6/14/2022 11:47 AM	01:02:07	4.57 pH	11.74 °C	0.08 mS/cm	2.05 mg/L	5.64 NTU	241.1 mV	22.59 ft	350.00 ml/min
6/14/2022 11:50 AM	01:05:07	4.59 pH	12.00 °C	0.08 mS/cm	1.84 mg/L	8.24 NTU	236.9 mV	22.59 ft	350.00 ml/min
6/14/2022 11:53 AM	01:08:07	4.59 pH	12.10 °C	0.08 mS/cm	2.57 mg/L	5.69 NTU	239.7 mV	22.59 ft	350.00 ml/min
6/14/2022 11:56 AM	01:11:07	4.57 pH	11.84 °C	0.08 mS/cm	1.86 mg/L	6.34 NTU	244.0 mV	22.59 ft	350.00 ml/min
6/14/2022 11:59 PM	01:14:07	4.56 pH	11.77 °C	0.08 mS/cm	1.76 mg/L	11.30 NTU	248.3 mV	22.59 ft	350.00 ml/min
6/14/2022 12:02 PM	01:17:07	4.55 pH	11.69 °C	0.08 mS/cm	1.79 mg/L	5.25 NTU	252.8 mV	22.59 ft	350.00 ml/min

Samples

Sample ID:	Description:
LL1mw-089-220601-GW & LL1mw-089-220602-GW	Begin low flow purge at 10:45 AM (PSI 35 / CPM 2/26/4) Stagnant water volume: 1,536.88 mL Stagnant water volume removed at 10:53 AM Stable at 12:02 PM (01:17:07) Flow cell emptied due to erroneous turbidity readings at 11:08 AM and 11:44 AM Compressor overheated at 11:12 AM Resume purge at 11:37 AM Water is clear, colorless, odorless throughout purge Measured total volume purged: 12,525 mL Sample and duplicate sample for explosives collected at 12:02 PM on 06/14/2022.

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Sampled By: ,06/14/2022

QA Check By: Daill Ad ,07/08/2022

RVAAP-09 LOAD LINE 2

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Low-Flow Test Report:

Test Date / Time: 6/23/2022 1:45:05 PM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Carter James

Location Name: LL2mw-059 **Well Diameter: 2 in** **Initial Depth to Water: 12.56 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: 3,287.083 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 150 mL/min** **Final Draw Down: 0.31 ft**	**Instrument Used:** **AquaTROLL 600: 513266** **MP50: 050494** **Water Meter: 39350**

Test Notes:

CPM 3 18:2, 20 PSI, 150 mL/min

Weather Conditions:

76°F 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	+/- 0.3	
6/23/2022 1:45 PM	00:00	6.40 pH	20.66 °C	0.38 mS/cm	6.79 mg/L	3.65 NTU	256.2 mV	12.56 ft	125.00 m/min
6/23/2022 1:53 PM	08:37	6.49 pH	13.93 °C	0.99 mS/cm	3.48 mg/L	5.93 NTU	269.4 mV	12.87 ft	150.00 mL/min
6/23/2022 1:54 PM	09:36	6.49 pH	13.77 °C	0.99 mS/cm	3.44 mg/L	5.17 NTU	269.3 mV	12.87 ft	150.00 mL/min
6/23/2022 1:57 PM	12:36	6.48 pH	13.38 °C	0.98 mS/cm	3.36 mg/L	5.49 NTU	270.1 mV	12.87 ft	150.00 mL/min
6/23/2022 2:00 PM	15:36	6.48 pH	13.55 °C	0.98 mS/cm	3.26 mg/L	7.46 NTU	271.4 mV	12.87 ft	150.00 mL/min
6/23/2022 2:02 PM	17:21	6.45 pH	13.57 °C	0.98 mS/cm	3.25 mg/L	10.34 NTU	273.1 mV	12.87 ft	150.00 mL/min
6/23/2022 2:05 PM	20:21	6.45 pH	13.34 °C	0.97 mS/cm	3.19 mg/L	12.62 NTU	273.6 mV	12.87 ft	150.00 mL/min
6/23/2022 2:08 PM	23:21	6.42 pH	13.12 °C	0.96 mS/cm	3.13 mg/L	6.39 NTU	274.9 mV	12.87 ft	150.00 mL/min

Samples

Sample ID:	Description:
LL2mw-059-220601-GW	Begin low flow purge at 1:54 PM Stagnant water volume: 1,400 mL Stagnant water volume removed at 1:54 PM Stable at 2:08 PM Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 5,700 mL Sample for Explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC at 2:09 PM

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Completed By _____
06/23/2022

QA Check By _____
08/30/2022

RVAAP-10 LOAD LINE 3

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Low-Flow Test Report:

Test Date / Time: 6/24/2022 9:07:36 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Jon Rokicki

Location Name: LL3mw-237 **Well Diameter: 2 in** **Initial Depth to Water: 15.95 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: 3,820 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 75 mL/min** **Final Draw Down: 0.53 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 39350** **MP50 Controller - 050494**

Test Notes:
CPM 2 29:1, 25 PSI, 75 mL/min

Weather Conditions:
70° 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	+/- 0.3	
6/24/2022 9:07 AM	00:00	6.84 pH	25.73 °C	0.24 mS/cm	6.94 mg/L	6.26 NTU	232.1 mV	15.95 ft	100.00 ml/min
6/24/2022 9:22 AM	15:01	6.47 pH	13.73 °C	0.26 mS/cm	4.20 mg/L	1.55 NTU	253.9 mV	15.95 ft	100.00 ml/min
6/24/2022 9:24 AM	16:27	6.45 pH	13.46 °C	0.26 mS/cm	4.18 mg/L	1.50 NTU	254.1 mV	16.44 ft	100.00 ml/min
6/24/2022 9:27 AM	19:27	6.41 pH	13.72 °C	0.27 mS/cm	4.05 mg/L	1.48 NTU	255.8 mV	16.44 ft	100.00 ml/min
6/24/2022 9:30 AM	22:27	6.37 pH	13.88 °C	0.26 mS/cm	4.04 mg/L	1.66 NTU	259.1 mV	16.48 ft	75.00 ml/min
6/24/2022 9:33 AM	25:27	6.31 pH	15.02 °C	0.26 mS/cm	4.06 mg/L	2.75 NTU	259.7 mV	16.48 ft	75.00 ml/min
6/24/2022 9:36 AM	28:27	6.26 pH	15.65 °C	0.26 mS/cm	4.04 mg/L	11.33 NTU	261.6 mV	16.48 ft	75.00 ml/min
6/24/2022 9:39 AM	31:27	6.21 pH	15.57 °C	0.31 mS/cm	4.05 mg/L	4.34 NTU	262.7 mV	16.48 ft	75.00 ml/min
6/24/2022 9:42 AM	34:27	6.20 pH	15.12 °C	0.31 mS/cm	4.05 mg/L	6.32 NTU	266.8 mV	16.48 ft	75.00 ml/min
6/24/2022 9:45 AM	37:27	6.17 pH	15.04 °C	0.33 mS/cm	4.02 mg/L	3.66 NTU	274.4 mV	16.48 ft	75.00 ml/min
6/24/2022 9:48 AM	40:27	6.15 pH	14.81 °C	0.33 mS/cm	3.97 mg/L	4.18 NTU	275.8 mV	16.48 ft	75.00 ml/min
6/24/2022 9:51 AM	43:27	6.14 pH	14.78 °C	0.33 mS/cm	3.92 mg/L	2.98 NTU	278.1 mV	16.48 ft	75.00 ml/min

Samples

Sample ID:	Description:
LL3mw-237-220601-GW	Begin low flow purge at 0907 (PSI 25/CPM 2/28/2) Change to CPM 2/29/1 at 9:30 AM (22:27) Stagnant water volume: 1,430 mL Stagnant water volume removed at 9:24 AM (16.27) Stable at 9:51 AM (43:27) Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 4,200 mL Sample for LL3mw-237-220601-GW for explosives at 0953 on 06/24/2022

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Sampled By: ,06/24/2022

QA Check By: Danielle Polan ,11/08/2022

Low-Flow Test Report:

Test Date / Time: 6/24/2022 12:59:07 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Mitchell DeBortoli

Location Name: LL3mw-238 **Well Diameter: 2 in** **Total Depth: 23.16 ft** **Initial Depth to Water: 17.38 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: 3,193.333 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 25 mL/min** **Final Draw Down: 0.62 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **Water Level - 09872** **MP10 Controller - 1143** **Compressor - 18239**

Test Notes:

CPM 1 58:2, 20 PSI, 25 mL/min

Weather Conditions:
79°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	+/- 0.3	
6/24/2022 12:59 PM	00:00	6.83 pH	18.73 °C	0.34 mS/cm	6.59 mg/L	13.36 NTU	169.6 mV	17.60 ft	100.00 ml/min
6/24/2022 1:14 PM	15:26	6.51 pH	17.01 °C	0.37 mS/cm	4.29 mg/L	10.28 NTU	168.5 mV	17.80 ft	50.00 ml/min
6/24/2022 1:17 PM	18:26	6.45 pH	17.17 °C	0.37 mS/cm	4.28 mg/L	13.49 NTU	170.6 mV	17.80 ft	50.00 ml/min
6/24/2022 1:20 PM	21:26	6.38 pH	17.11 °C	0.37 mS/cm	4.26 mg/L	14.84 NTU	173.3 mV	17.80 ft	50.00 ml/min
6/24/2022 1:23 PM	24:26	6.33 pH	17.35 °C	0.37 mS/cm	4.13 mg/L	13.34 NTU	176.1 mV	17.80 ft	50.00 ml/min
6/24/2022 1:26 PM	27:26	6.28 pH	17.31 °C	0.37 mS/cm	4.00 mg/L	12.66 NTU	178.5 mV	17.80 ft	50.00 ml/min
6/24/2022 1:29 PM	30:26	6.24 pH	17.19 °C	0.37 mS/cm	3.91 mg/L	10.64 NTU	180.7 mV	17.80 ft	50.00 ml/min
6/24/2022 1:32 PM	33:26	6.21 pH	17.07 °C	0.37 mS/cm	3.85 mg/L	11.64 NTU	182.7 mV	17.80 ft	50.00 ml/min
6/24/2022 1:35 PM	36:26	6.18 pH	17.90 °C	0.38 mS/cm	3.73 mg/L	10.45 NTU	183.0 mV	17.80 ft	50.00 ml/min
6/24/2022 1:38 PM	39:26	6.14 pH	18.99 °C	0.38 mS/cm	3.64 mg/L	8.21 NTU	183.7 mV	18.00 ft	25.00 ml/min
6/24/2022 1:41 PM	42:26	6.11 pH	20.27 °C	0.39 mS/cm	3.57 mg/L	7.54 NTU	181.4 mV	18.00 ft	25.00 ml/min
6/24/2022 1:44 PM	45:26	6.09 pH	20.34 °C	0.38 mS/cm	3.52 mg/L	8.04 NTU	180.5 mV	18.00 ft	25.00 ml/min

6/24/2022 1:47 PM	48:26	6.09 pH	19.75 °C	0.38 mS/cm	3.48 mg/L	6.08 NTU	181.0 mV	18.00 ft	25.00 ml/min
6/24/2022 1:50 PM	51:26	6.09 pH	19.39 °C	0.38 mS/cm	3.43 mg/L	8.43 NTU	181.3 mV	18.00 ft	25.00 ml/min
6/24/2022 1:53 PM	54:26	6.10 pH	19.24 °C	0.38 mS/cm	3.34 mg/L	7.75 NTU	181.5 mV	18.00 ft	25.00 ml/min
6/24/2022 1:56 PM	57:26	6.10 pH	19.15 °C	0.38 mS/cm	3.27 mg/L	9.02 NTU	181.6 mV	18.00 ft	25.00 ml/min

Samples

Sample ID:	Description:
LL3mw-238-220601-GW	Begin low flow purge at 12:59 PM (PSI 20 / CPM 1 /58 /2) Stagnant water volume: 1,290 mL Stagnant water volume removed at 1:17 PM (18:26) Stable at 1:56 PM (57:26) Water is colorless and odorless throughout purge Measured total volume purged: 5,075 mL Sample for explosives/sulfides/nitrate, nitrite, sulfate/alkalinity/TOC at 1400 on 06/24/2022

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Sampled By: Mitchell DeBortoli ,06/24/2022

QA Check By: Melissa Rego ,09/02/2022

Low-Flow Test Report:

Test Date / Time: 6/24/2022 9:14:00 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Mitchell DeBortoli

Location Name: LL3mw-239
Well Diameter: 2 in
Total Depth: 36.59 ft
Initial Depth to Water: 24.75 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: 5,418.5 mL
Flow Cell Volume: 130 mL
Final Flow Rate: 40 mL/min
Final Draw Down: 0.65 ft

Instrument Used:
Aqua TROLL 600 - 518813
Water Level - 09872
MP10 Controller - 1143
Compressor - 18239

Test Notes:
CPM 1 55:5, 21 PSI, 40 mL/min

Weather Conditions:
Party cloudy, 62°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	+/- 0.3	
6/24/2022 9:14 AM	00:00	6.15 pH	18.91 °C	0.24 mS/cm	8.45 mg/L	63.54 NTU	227.7 mV	25.30 ft	50.00 ml/min
6/24/2022 9:37 AM	23:47	5.10 pH	13.71 °C	0.19 mS/cm	2.32 mg/L	314.04 NTU	239.6 mV	25.30 ft	20.00 ml/min
6/24/2022 10:01 AM	47:34	5.09 pH	14.82 °C	0.19 mS/cm	1.78 mg/L	254.25 NTU	226.1 mV	25.30 ft	20.00 ml/min
6/24/2022 10:03 AM	49:15	5.09 pH	15.01 °C	0.19 mS/cm	1.67 mg/L	224.11 NTU	224.4 mV	25.30 ft	20.00 ml/min
6/24/2022 10:06 AM	52:15	5.10 pH	14.85 °C	0.19 mS/cm	1.54 mg/L	137.55 NTU	219.7 mV	25.30 ft	20.00 ml/min
6/24/2022 10:09 AM	55:15	5.11 pH	14.79 °C	0.19 mS/cm	1.44 mg/L	139.06 NTU	215.5 mV	25.43 ft	40.00 ml/min
6/24/2022 10:12 AM	58:15	5.11 pH	14.81 °C	0.19 mS/cm	1.34 mg/L	140.53 NTU	212.0 mV	25.40 ft	40.00 ml/min
6/24/2022 10:15 AM	01:01:15	5.42 pH	15.86 °C	0.00 mS/cm	6.61 mg/L	0.00 NTU	203.1 mV	25.40 ft	40.00 ml/min
6/24/2022 10:18 AM	01:04:15	4.90 pH	19.47 °C	0.00 mS/cm	4.95 mg/L	0.21 NTU	221.7 mV	25.40 ft	40.00 ml/min
6/24/2022 10:21 AM	01:07:15	4.96 pH	16.11 °C	0.19 mS/cm	1.68 mg/L	260.25 NTU	197.1 mV	25.40 ft	40.00 ml/min
6/24/2022 10:24 AM	01:10:15	5.00 pH	15.85 °C	0.19 mS/cm	1.32 mg/L	243.13 NTU	190.9 mV	25.40 ft	40.00 ml/min

6/24/2022 10:27 AM	01:13:15	5.05 pH	15.77 °C	0.19 mS/cm	1.22 mg/L	269.89 NTU	187.4 mV	25.40 ft	40.00 ml/min
6/24/2022 10:30 AM	01:16:15	5.11 pH	15.97 °C	0.19 mS/cm	1.16 mg/L	260.65 NTU	185.3 mV	25.40 ft	40.00 ml/min
6/24/2022 10:33 AM	01:19:15	5.29 pH	18.78 °C	0.00 mS/cm	4.71 mg/L	0.00 NTU	163.3 mV	25.40 ft	40.00 ml/min
6/24/2022 10:36 AM	01:22:15	5.31 pH	16.97 °C	0.19 mS/cm	1.70 mg/L	161.15 NTU	166.8 mV	25.40 ft	40.00 ml/min
6/24/2022 10:39 AM	01:25:15	5.36 pH	16.70 °C	0.19 mS/cm	1.27 mg/L	123.59 NTU	163.4 mV	25.40 ft	40.00 ml/min
6/24/2022 10:42 AM	01:28:15	5.42 pH	16.65 °C	0.19 mS/cm	1.10 mg/L	107.24 NTU	161.3 mV	25.40 ft	40.00 ml/min
6/24/2022 10:45 AM	01:31:15	5.50 pH	16.67 °C	0.19 mS/cm	1.05 mg/L	92.10 NTU	158.0 mV	25.40 ft	40.00 ml/min
6/24/2022 10:48 AM	01:34:15	5.50 pH	16.80 °C	0.19 mS/cm	1.02 mg/L	58.14 NTU	158.4 mV	25.40 ft	40.00 ml/min
6/24/2022 10:51 AM	01:37:15	5.51 pH	16.90 °C	0.19 mS/cm	0.92 mg/L	46.36 NTU	158.7 mV	25.40 ft	40.00 ml/min
6/24/2022 10:54 AM	01:40:15	5.52 pH	16.90 °C	0.19 mS/cm	0.88 mg/L	34.73 NTU	158.4 mV	25.40 ft	40.00 ml/min
6/24/2022 10:57 AM	01:43:15	5.55 pH	17.02 °C	0.19 mS/cm	0.83 mg/L	24.35 NTU	157.7 mV	25.40 ft	40.00 ml/min
6/24/2022 11:00 AM	01:46:15	5.58 pH	16.99 °C	0.19 mS/cm	0.80 mg/L	24.96 NTU	156.4 mV	25.40 ft	40.00 ml/min
6/24/2022 11:03 AM	01:49:15	5.62 pH	17.04 °C	0.19 mS/cm	0.79 mg/L	21.75 NTU	155.0 mV	25.40 ft	40.00 ml/min
6/24/2022 11:06 AM	01:52:15	5.66 pH	17.00 °C	0.19 mS/cm	0.77 mg/L	16.12 NTU	153.1 mV	25.40 ft	40.00 ml/min
6/24/2022 11:09 AM	01:55:15	5.71 pH	17.57 °C	0.18 mS/cm	0.74 mg/L	20.70 NTU	150.6 mV	25.40 ft	40.00 ml/min
6/24/2022 11:12 AM	01:58:15	5.76 pH	17.63 °C	0.19 mS/cm	0.71 mg/L	22.96 NTU	148.0 mV	25.40 ft	40.00 ml/min
6/24/2022 11:15 AM	02:01:15	5.81 pH	17.69 °C	0.19 mS/cm	0.71 mg/L	25.27 NTU	145.7 mV	25.40 ft	40.00 ml/min
6/24/2022 11:18 AM	02:04:15	5.86 pH	17.74 °C	0.19 mS/cm	0.75 mg/L	24.86 NTU	141.2 mV	25.40 ft	40.00 ml/min
6/24/2022 11:21 AM	02:07:15	5.90 pH	20.04 °C	0.00 mS/cm	4.18 mg/L	0.00 NTU	122.0 mV	25.40 ft	40.00 ml/min
6/24/2022 11:24 AM	02:10:15	6.02 pH	17.91 °C	0.19 mS/cm	1.19 mg/L	19.96 NTU	125.1 mV	25.40 ft	40.00 ml/min
6/24/2022 11:27 AM	02:13:15	5.99 pH	17.74 °C	0.19 mS/cm	0.92 mg/L	14.72 NTU	127.8 mV	25.40 ft	40.00 ml/min
6/24/2022 11:30 AM	02:16:15	5.98 pH	17.60 °C	0.19 mS/cm	0.78 mg/L	15.50 NTU	130.0 mV	25.40 ft	40.00 ml/min
6/24/2022 11:33 AM	02:19:15	5.97 pH	17.67 °C	0.19 mS/cm	0.72 mg/L	13.45 NTU	131.7 mV	25.40 ft	40.00 ml/min
6/24/2022 11:36 AM	02:22:15	5.95 pH	17.80 °C	0.19 mS/cm	0.71 mg/L	14.28 NTU	132.9 mV	25.40 ft	40.00 ml/min
6/24/2022 11:39 AM	02:25:15	5.94 pH	17.82 °C	0.19 mS/cm	0.67 mg/L	7.97 NTU	134.1 mV	25.40 ft	40.00 ml/min

Samples

Sample ID:	Description:
LL3mw-239-220601-GW	Begin low flow purge at 7:14 AM PSI21/CPMR55 D5/ Stagnant water volume: 1,370 mL Stagnant water removed at: 10:03 AM (49:15). Stable at 11:39 AM (02:25:15) Water is colorless slight odor Measured total volume purged 5,500 mL Sample for explosives/TOC/Sulfide/Nitrate Nitrite Sulfate/Alkalinity at 1140 on 06/24/2022

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Sampled By: Mitchell DeBortoli ,06/24/2022

QA Check By: ,11/08/2022

Low-Flow Test Report:

Test Date / Time: 6/24/2022 11:10:40 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Jon Rokicki

Location Name: LL3mw-241 **Well Diameter: 2 in** **Total Depth: 25.36 ft** **Initial Depth to Water: 12.32 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: 8,029.167 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 250 mL/min** **Final Draw Down: 0.28 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level- 39350** **MP50 Controller - 050494**

Test Notes:
CPM 3 18:2, 20 PSI, 250 mL/min
Weather Conditions:
80°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	+/- 0.3	
6/24/2022 11:10 AM	00:00	6.35 pH	13.15 °C	0.19 mS/cm	5.12 mg/L	1.64 NTU	275.5 mV	12.32 ft	250.00 ml/min
6/24/2022 11:18 AM	08:07	6.35 pH	13.27 °C	0.20 mS/cm	3.96 mg/L	1.69 NTU	278.6 mV	12.54 ft	250.00 ml/min
6/24/2022 11:21 AM	11:07	6.29 pH	13.05 °C	0.20 mS/cm	3.93 mg/L	1.66 NTU	281.4 mV	12.54 ft	250.00 ml/min
6/24/2022 11:24 AM	14:07	6.21 pH	13.26 °C	0.20 mS/cm	3.80 mg/L	1.81 NTU	284.3 mV	12.60 ft	250.00 ml/min
6/24/2022 11:27 AM	17:07	6.14 pH	13.12 °C	0.20 mS/cm	3.85 mg/L	2.28 NTU	287.0 mV	12.60 ft	250.00 ml/min
6/24/2022 11:30 AM	20:07	6.02 pH	13.00 °C	0.20 mS/cm	3.83 mg/L	2.66 NTU	292.5 mV	12.60 ft	250.00 ml/min
6/24/2022 11:33 AM	23:07	5.92 pH	13.09 °C	0.20 mS/cm	3.77 mg/L	3.29 NTU	296.6 mV	12.60 ft	250.00 ml/min
6/24/2022 11:36 AM	26:07	5.85 pH	13.05 °C	0.20 mS/cm	3.79 mg/L	3.94 NTU	298.8 mV	12.60 ft	250.00 ml/min
6/24/2022 11:39 AM	29:07	5.79 pH	13.00 °C	0.20 mS/cm	3.78 mg/L	4.74 NTU	300.3 mV	12.60 ft	250.00 ml/min
6/24/2022 11:42 PM	32:07	5.76 pH	12.88 °C	0.20 mS/cm	3.78 mg/L	6.10 NTU	300.5 mV	12.60 ft	250.00 ml/min

Samples

Sample ID:	Description:
LL3mw-241-220601-GW	Begin low flow purge at 11:10 AM (PSI 20 / CPM 3 /18 /2) Stagnant water volume: 1,500 mL Stagnant water volume removed at 11:21 AM (11:07) Stable at 11:42 AM (32:07) Water is clear, colorless, odorless throughout purge Measured total volume purged: 8,500 mL Sample for explosives at 1150 on 06/24/2022

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Sampled By: ,06/24/2022

QA Check By: Melissa Rego ,09/02/2022

Low-Flow Test Report:

Test Date / Time: 6/27/2022 11:38:59 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Mitchell DeBortoli

Location Name: LL3mw-245 **Well Diameter: 2 in** **Total Depth: 49.25 ft** **Initial Depth to Water: 12.62 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: 5,726.667 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 175 mL/min** **Final Draw Down: 0.08 ft**	**Instrument Used:** **AquaTROLL 600: 518813** **Water Level: 09872** **MP10: 1143** **Compressor: 18239**

Test Notes:
CPM 4 11:4, PSI 38, 175 mL/min

Weather Conditions:
70°F mostly 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	+/- 0.3	
6/27/2022 11:38 AM	00:00	7.46 pH	16.90 °C	0.73 mS/cm	6.12 mg/L	5.06 NTU	217.9 mV	12.62 ft	400.00 mL/min
6/27/2022 11:41 AM	03:00	7.02 pH	13.73 °C	0.76 mS/cm	1.07 mg/L	6.96 NTU	213.0 mV	12.70 ft	175.00 mL/min
6/27/2022 11:44 AM	06:00	6.95 pH	13.92 °C	0.77 mS/cm	0.47 mg/L	5.05 NTU	208.1 mV	12.70 ft	175.00 mL/min
6/27/2022 11:47 AM	09:00	6.94 pH	13.75 °C	0.77 mS/cm	0.35 mg/L	1.93 NTU	203.6 mV	12.70 ft	175.00 mL/min
6/27/2022 11:50 AM	12:00	6.96 pH	13.76 °C	0.77 mS/cm	0.29 mg/L	1.11 NTU	188.1 mV	12.70 ft	175.00 mL/min
6/27/2022 11:53 AM	15:00	6.97 pH	13.80 °C	0.77 mS/cm	0.25 mg/L	1.75 NTU	111.5 mV	12.70 ft	175.00 mL/min
6/27/2022 11:56 AM	18:00	6.99 pH	13.52 °C	0.77 mS/cm	0.23 mg/L	1.55 NTU	79.0 mV	12.70 ft	175.00 mL/min
6/27/2022 11:58 AM	19:52	6.99 pH	13.51 °C	0.76 mS/cm	0.23 mg/L	2.00 NTU	54.3 mV	12.70 ft	175.00 mL/min
6/27/2022 12:01 PM	22:52	7.00 pH	13.56 °C	0.75 mS/cm	0.19 mg/L	3.57 NTU	56.1 mV	12.70 ft	175.00 mL/min
6/27/2022 12:04 PM	25:52	7.01 pH	13.63 °C	0.75 mS/cm	0.18 mg/L	4.53 NTU	47.4 mV	12.70 ft	175.00 mL/min
6/27/2022 12:07 PM	28:52	7.02 pH	13.54 °C	0.75 mS/cm	0.15 mg/L	8.43 NTU	48.6 mV	12.70 ft	175.00 mL/min

Samples

Sample ID:	Description:
LL3mw-245-220601-GW	Begin prepurge at 11:39 AM Stagnant water volume: 1,900 mL Stagnant water removed at 11:58 AM Stable and begin sample collection at 12:08 PM Water is clear colorless and odorless Measured total vol purged: 2,100 mL Sample for explosives

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Completed By Mitchell DeBortoli
06/27/2022

QA Check By _____
08/31/2022

RVAAP-12 LOAD LINE 12

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Low-Flow Test Report:

Test Date / Time: 6/27/2022 1:43:25 PM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Jon Rokicki

Location Name: LL12mw-185 **Well Diameter: 2 in** **Initial Depth to Water: 6.87 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: 3,365 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 25 mL/min** **Final Draw Down: 2.58 ft**	**Instrument Used:** **AquaTROLL 600: 513266** **MP10: 1143** **Compressor: 18421** **Water level: 39350**

Test Notes:
CPM 1 59:1, 18 PSI, 25 mL/min

Weather Conditions:
78°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	+/- 0.3	
6/27/2022 1:43 PM	00:00	6.55 pH	24.33 °C	4.31 mS/cm	3.03 mg/L	6.49 NTU	240.5 mV	6.87 ft	75.00 mL/min
6/27/2022 2:22 PM	38:52	6.63 pH	18.26 °C	4.00 mS/cm	0.37 mg/L	1.54 NTU	247.2 mV	9.34 ft	25.00 mL/min
6/27/2022 2:25 PM	41:52	6.62 pH	19.18 °C	3.98 mS/cm	0.36 mg/L	1.48 NTU	246.8 mV	9.34 ft	25.00 mL/min
6/27/2022 2:28 PM	44:52	6.62 pH	20.15 °C	3.93 mS/cm	0.39 mg/L	1.87 NTU	246.0 mV	9.34 ft	25.00 mL/min
6/27/2022 2:31 PM	47:52	6.61 pH	21.32 °C	3.88 mS/cm	0.38 mg/L	1.81 NTU	245.5 mV	9.45 ft	25.00 mL/min
6/27/2022 2:34 PM	50:52	6.61 pH	21.90 °C	3.92 mS/cm	0.39 mg/L	3.05 NTU	245.6 mV	9.45 ft	25.00 mL/min
6/27/2022 2:37 PM	53:52	6.61 pH	21.86 °C	3.92 mS/cm	0.43 mg/L	3.98 NTU	245.8 mV	9.45 ft	25.00 mL/min
6/27/2022 2:40 PM	56:52	6.61 pH	21.85 °C	3.93 mS/cm	0.45 mg/L	5.08 NTU	246.3 mV	9.45 ft	25.00 mL/min

Samples

Sample ID:	Description:
LL12mw-185-220601-GW LL12mw-185-220601-GWMSD LL12mw-185-220602-GW	Begin prepurge at 1:41 PM Stagnant water volume: 2,700 mL Stagnant water volume removed at 2:21 PM Stable at 2:42 PM Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 4,750 mL Sample for nitrate and ammonia at 2:45 PM

Created using VuSitu from In-Situ, Inc.

Completed By _____
06/27/2022

QA Check By _____
08/31/2022

Re-QA Check By _____
11/08/2022

Low-Flow Test Report:

Test Date / Time: 6/28/2022 8:48:25 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Jon Rokicki

Location Name: LL12mw-187 **Well Diameter: 2 in** **Initial Depth to Water: 9.66 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: 4,794.583 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 200 mL/min** **Final Draw Down: 0.71 ft**	**Instrument Used:** **MP10: 1143** **Compressor: 18421** **Water level: 39350** **Aquatroll 600: 513266**

Test Notes:
CPM 2 26:4, PSI 25, 200 mL/min

Weather Conditions:
Sunny 65°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	+/- 0.3	
6/28/2022 8:48 AM	00:00	6.21 pH	16.63 °C	9.40 mS/cm	2.13 mg/L	3.48 NTU	260.3 mV	9.66 ft	175.00 mL/min
6/28/2022 9:01 AM	13:05	6.20 pH	11.98 °C	12.46 mS/cm	0.07 mg/L	6.64 NTU	269.4 mV	9.66 ft	175.00 mL/min
6/28/2022 9:02 AM	13:41	6.20 pH	11.92 °C	12.48 mS/cm	0.06 mg/L	13.49 NTU	270.5 mV	10.37 ft	200.00 mL/min
6/28/2022 9:05 AM	16:41	6.20 pH	11.67 °C	12.54 mS/cm	0.06 mg/L	25.39 NTU	272.3 mV	10.37 ft	200.00 mL/min
6/28/2022 9:08 AM	19:41	6.20 pH	11.59 °C	12.08 mS/cm	0.05 mg/L	1.38 NTU	271.8 mV	10.37 ft	200.00 mL/min
6/28/2022 9:11 AM	22:41	6.20 pH	11.47 °C	12.10 mS/cm	0.05 mg/L	1.80 NTU	272.0 mV	10.37 ft	200.00 mL/min
6/28/2022 9:14 AM	25:41	6.20 pH	11.62 °C	12.08 mS/cm	0.05 mg/L	4.63 NTU	273.7 mV	10.37 ft	200.00 mL/min

Samples

Sample ID:	Description:
LL12mw-187-220601-GW	Begin prepurge at 8:48 AM Stagnant water volume: 2,600 mL Stagnant water volume removed at 9:02 AM Stable at 9:14 AM Water is clear, colorless, and odorless throughout purge Measured total volume purged: 5,300 mL Sample for nitrate and ammonia at 9:15 AM

Created using VuSitu from In-Situ, Inc.

Completed By _____
06/28/2022

QA Check By _____
09/01/2022

Low-Flow Test Report:

Test Date / Time: 6/27/2022 11:53:55 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Carter James

Location Name: LL12mw-244 **Well Diameter: 2 in** **Total Depth: 32.05 ft** **Initial Depth to Water: 9.78 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: 18,163.334 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 4.83 ft**	**Instrument Used:** **AquaTROLL 600: 513574** **MP50: 2325** **Water Level: 41832**

Test Notes:

CPM 3 19:1, 25 PSI, 100 mL/min

Turbidity sensor suspected to be inaccurate for the duration of sampling. NTU sensor reads <50 NTU after 12:30 PM, however, the water remained muddied and opaque into sampling. Sampler assumes the true NTU is >50 and continues purge for two hours. All other parameters were within range at time of sampling.

Weather Conditions:

70°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	+/- 0.3	
6/27/2022 11:53 AM	00:00	7.64 pH	19.01 °C	0.56 mS/cm	6.49 mg/L	4,151.1 NTU	197.7 mV	9.78 ft	250.00 mL/min
6/27/2022 12:00 PM	06:57	6.93 pH	13.06 °C	0.44 mS/cm	0.16 mg/L	1.36 NTU	12.3 mV	9.78 ft	250.00 mL/min
6/27/2022 12:03 PM	09:08	8.00 pH	11.86 °C	0.34 mS/cm	1.64 mg/L	110.10 NTU	0.3 mV	13.40 ft	250.00 mL/min
6/27/2022 12:06 PM	12:08	8.56 pH	11.85 °C	0.32 mS/cm	2.55 mg/L	1,195.8 NTU	29.6 mV	13.40 ft	250.00 mL/min
6/27/2022 12:09 PM	15:08	8.62 pH	12.38 °C	0.32 mS/cm	2.85 mg/L	2,030.4 NTU	77.0 mV	13.40 ft	250.00 mL/min
6/27/2022 12:12 PM	18:08	8.28 pH	12.89 °C	0.35 mS/cm	2.55 mg/L	1,988.3 NTU	106.7 mV	13.40 ft	250.00 mL/min
6/27/2022 12:15 PM	21:08	8.10 pH	15.12 °C	0.37 mS/cm	2.37 mg/L	2,882.6 NTU	129.0 mV	13.40 ft	250.00 mL/min
6/27/2022 12:18 PM	24:08	7.92 pH	15.03 °C	0.38 mS/cm	2.25 mg/L	1,810.2 NTU	147.6 mV	14.61 ft	100.00 mL/min
6/27/2022 12:21 PM	27:08	7.45 pH	15.76 °C	0.42 mS/cm	1.92 mg/L	1,290.4 NTU	137.7 mV	14.61 ft	100.00 mL/min

6/27/2022 12:24 PM	30:08	7.21 pH	14.93 °C	0.45 mS/cm	1.58 mg/L	1,023.9 NTU	115.0 mV	14.61 ft	100.00 mL/min
6/27/2022 12:27 PM	33:08	7.24 pH	16.06 °C	0.45 mS/cm	1.49 mg/L	202.29 NTU	97.9 mV	14.61 ft	100.00 mL/min
6/27/2022 12:30 PM	36:08	7.23 pH	15.13 °C	0.45 mS/cm	1.38 mg/L	0.72 NTU	92.8 mV	14.61 ft	100.00 mL/min
6/27/2022 12:33 PM	39:08	7.21 pH	15.44 °C	0.47 mS/cm	1.18 mg/L	0.72 NTU	72.9 mV	14.61 ft	100.00 mL/min
6/27/2022 12:36 PM	42:08	7.26 pH	15.94 °C	0.48 mS/cm	1.05 mg/L	0.70 NTU	60.9 mV	14.61 ft	100.00 mL/min
6/27/2022 12:39 PM	45:08	7.24 pH	15.57 °C	0.49 mS/cm	0.90 mg/L	0.71 NTU	44.4 mV	14.61 ft	100.00 mL/min
6/27/2022 12:42 PM	48:08	7.25 pH	15.33 °C	0.49 mS/cm	0.74 mg/L	0.68 NTU	31.4 mV	14.61 ft	100.00 mL/min
6/27/2022 12:45 PM	51:08	7.24 pH	15.76 °C	0.49 mS/cm	1.16 mg/L	0.00 NTU	22.2 mV	14.61 ft	100.00 mL/min
6/27/2022 12:48 PM	54:08	7.24 pH	15.06 °C	0.53 mS/cm	1.40 mg/L	0.72 NTU	24.4 mV	14.61 ft	100.00 mL/min
6/27/2022 12:49 PM	55:26	7.26 pH	15.34 °C	0.53 mS/cm	1.26 mg/L	0.69 NTU	36.2 mV	14.61 ft	100.00 mL/min
6/27/2022 12:52 PM	58:26	7.29 pH	15.01 °C	0.54 mS/cm	0.79 mg/L	0.73 NTU	18.6 mV	14.61 ft	100.00 mL/min
6/27/2022 12:55 PM	01:01:26	7.32 pH	15.00 °C	0.56 mS/cm	0.69 mg/L	0.73 NTU	4.8 mV	14.61 ft	100.00 mL/min
6/27/2022 12:58 PM	01:04:26	7.33 pH	14.65 °C	0.56 mS/cm	0.66 mg/L	0.72 NTU	-2.7 mV	14.61 ft	100.00 mL/min
6/27/2022 1:01 PM	01:07:26	7.32 pH	15.38 °C	0.56 mS/cm	0.59 mg/L	0.66 NTU	-7.5 mV	14.61 ft	100.00 mL/min
6/27/2022 1:04 PM	01:10:26	7.28 pH	16.81 °C	0.57 mS/cm	0.62 mg/L	0.70 NTU	-5.1 mV	14.61 ft	100.00 mL/min
6/27/2022 1:07 PM	01:13:26	7.28 pH	15.39 °C	0.56 mS/cm	0.56 mg/L	0.71 NTU	-7.3 mV	14.61 ft	100.00 mL/min
6/27/2022 1:10 PM	01:16:26	7.33 pH	14.85 °C	0.55 mS/cm	0.49 mg/L	0.67 NTU	-14.2 mV	14.61 ft	100.00 mL/min
6/27/2022 1:13 PM	01:19:26	7.35 pH	14.91 °C	0.54 mS/cm	0.44 mg/L	0.70 NTU	-20.4 mV	14.61 ft	100.00 mL/min
6/27/2022 1:16 PM	01:22:26	7.35 pH	14.62 °C	0.56 mS/cm	1.11 mg/L	0.72 NTU	-17.7 mV	14.61 ft	100.00 mL/min
6/27/2022 1:19 PM	01:25:26	7.28 pH	14.65 °C	0.57 mS/cm	0.52 mg/L	0.70 NTU	-22.5 mV	14.61 ft	100.00 mL/min
6/27/2022 1:22 PM	01:28:26	7.26 pH	15.36 °C	0.57 mS/cm	0.42 mg/L	0.71 NTU	-27.3 mV	14.61 ft	100.00 mL/min
6/27/2022 1:25 PM	01:31:26	7.25 pH	16.05 °C	0.56 mS/cm	0.41 mg/L	0.74 NTU	-27.7 mV	14.61 ft	100.00 mL/min
6/27/2022 1:28 PM	01:34:26	7.26 pH	15.05 °C	0.54 mS/cm	0.40 mg/L	0.71 NTU	-28.8 mV	14.61 ft	100.00 mL/min
6/27/2022 1:31 PM	01:37:26	7.27 pH	14.61 °C	0.53 mS/cm	0.37 mg/L	0.70 NTU	-30.8 mV	14.61 ft	100.00 mL/min
6/27/2022 1:34 PM	01:40:26	7.28 pH	14.78 °C	0.52 mS/cm	0.31 mg/L	0.74 NTU	-34.9 mV	14.61 ft	100.00 mL/min
6/27/2022 1:37 PM	01:43:26	7.29 pH	14.56 °C	0.49 mS/cm	0.27 mg/L	0.72 NTU	-38.5 mV	14.61 ft	100.00 mL/min

6/27/2022 1:40 PM	01:46:26	7.30 pH	14.48 °C	0.48 mS/cm	0.24 mg/L	0.72 NTU	-44.0 mV	14.61 ft	100.00 mL/min
6/27/2022 1:43 PM	01:49:26	7.30 pH	14.36 °C	0.50 mS/cm	0.22 mg/L	0.69 NTU	-49.8 mV	14.61 ft	100.00 mL/min
6/27/2022 1:46 PM	01:52:26	7.30 pH	14.43 °C	0.50 mS/cm	0.21 mg/L	0.67 NTU	-54.1 mV	14.61 ft	100.00 mL/min
6/27/2022 1:49 PM	01:55:26	7.31 pH	14.53 °C	0.49 mS/cm	0.20 mg/L	0.67 NTU	-57.2 mV	14.61 ft	100.00 mL/min
6/27/2022 1:52 PM	01:58:26	7.29 pH	14.49 °C	0.49 mS/cm	0.20 mg/L	0.67 NTU	-59.2 mV	14.61 ft	100.00 mL/min
6/27/2022 1:55 PM	02:01:26	7.31 pH	14.39 °C	0.50 mS/cm	0.19 mg/L	0.69 NTU	-59.0 mV	14.61 ft	100.00 mL/min
6/27/2022 1:58 PM	02:04:26	7.31 pH	14.40 °C	0.52 mS/cm	0.18 mg/L	0.68 NTU	-50.5 mV	14.61 ft	100.00 mL/min
6/27/2022 2:01 PM	02:07:26	7.30 pH	14.54 °C	0.54 mS/cm	0.18 mg/L	0.70 NTU	-47.3 mV	14.61 ft	100.00 mL/min
6/27/2022 2:04 PM	02:10:26	7.31 pH	14.48 °C	0.51 mS/cm	0.18 mg/L	0.69 NTU	-47.9 mV	14.61 ft	100.00 mL/min
6/27/2022 2:07 PM	02:13:26	7.31 pH	14.50 °C	0.48 mS/cm	0.17 mg/L	0.65 NTU	-50.8 mV	14.61 ft	100.00 mL/min
6/27/2022 2:10 PM	02:16:26	7.32 pH	14.55 °C	0.47 mS/cm	0.17 mg/L	0.69 NTU	-53.1 mV	14.61 ft	100.00 mL/min
6/27/2022 2:13 PM	02:19:26	7.33 pH	15.50 °C	0.48 mS/cm	0.16 mg/L	0.68 NTU	-55.0 mV	14.61 ft	100.00 mL/min
6/27/2022 2:16 PM	02:22:26	7.35 pH	15.80 °C	0.48 mS/cm	0.16 mg/L	0.67 NTU	-56.5 mV	14.61 ft	100.00 mL/min
6/27/2022 2:19 PM	02:25:26	7.38 pH	15.64 °C	0.48 mS/cm	0.17 mg/L	0.69 NTU	-59.4 mV	14.61 ft	100.00 mL/min

Samples

Sample ID:	Description:
LL12mw-244-220601-GW	Begin prepurge at 11:59 AM Stagnant water volume: 1,664 mL Stagnant water volume removed at 12:08 PM Turbidity sensor suspected to be inaccurate, as water remains muddied throughout purge. Two hours of purging pass at 2:25 PM Measured total volume purged: 15,000 mL Sample for Nitrate and Ammonia at 2:27 PM

Created using VuSitu from In-Situ, Inc.

Completed By _____
06/27/2022

QA Check By _____
08/31/2022

Low-Flow Test Report:

Test Date / Time: 6/27/2022 1:01:06 PM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Mitchell DeBortoli

Location Name: LL12mw-245 **Well Diameter: 2 in** **Total Depth: 30.5 ft** **Initial Depth to Water: 7.55 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: 4,397.683 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 40 mL/min** **Final Draw Down: 3.85 ft**	**Instrument Used:** **MP10: 1143** **Compressor: 18239** **Water level: 09872** **Aquatroll 600: 518813**

Test Notes:

CPM 1 59:1, PSI 29, 40 mL/min

True prepurge began at 12:49 PM while the AquaTROLL was still shut off. The pump ran for 10 minutes before the water quality meter was active. The unrecorded time is considered with Total Volume Pumped.

Sampler had difficulty reaching equal recharge/discharge of well water and changed PSI and CPM on the MP10 a few times. A balance was eventually met at 40 mL/min, however, the pump had pulled from a rate of 9 to 300 mL/min throughout the purge process.

Weather Conditions:

71°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	+/- 0.3	
6/27/2022 1:01 PM	00:00	6.99 pH	15.20 °C	1.14 mS/cm	3.28 mg/L	6.39 NTU	209.6 mV	7.55 ft	300.00 mL/min
6/27/2022 1:01 PM	00:52	6.95 pH	14.35 °C	1.15 mS/cm	1.97 mg/L	13.06 NTU	204.6 mV	8.50 ft	300.00 mL/min
6/27/2022 1:04 PM	03:25	6.87 pH	14.39 °C	1.17 mS/cm	1.16 mg/L	22.83 NTU	194.7 mV	9.10 ft	30.00 mL/min
6/27/2022 1:07 PM	05:58	6.85 pH	15.76 °C	1.18 mS/cm	1.14 mg/L	11.72 NTU	191.3 mV	9.10 ft	30.00 mL/min
6/27/2022 1:09 PM	08:31	6.87 pH	18.00 °C	1.19 mS/cm	1.15 mg/L	11.42 NTU	180.0 mV	9.24 ft	30.00 mL/min
6/27/2022 1:12 PM	11:04	6.89 pH	18.72 °C	1.18 mS/cm	1.14 mg/L	13.09 NTU	173.7 mV	9.34 ft	30.00 mL/min

6/27/2022 1:14 PM	13:37	6.92 pH	19.39 °C	1.19 mS/cm	1.02 mg/L	11.28 NTU	168.6 mV	9.39 ft	30.00 mL/min
6/27/2022 1:17 PM	16:10	6.93 pH	19.95 °C	1.19 mS/cm	0.95 mg/L	12.33 NTU	164.8 mV	9.44 ft	30.00 mL/min
6/27/2022 1:19 PM	18:43	6.93 pH	20.68 °C	1.18 mS/cm	0.92 mg/L	16.60 NTU	162.8 mV	9.47 ft	30.00 mL/min
6/27/2022 1:22 PM	21:16	6.93 pH	21.13 °C	1.18 mS/cm	0.90 mg/L	12.51 NTU	162.2 mV	9.49 ft	30.00 mL/min
6/27/2022 1:24 PM	23:49	6.92 pH	21.52 °C	1.18 mS/cm	0.88 mg/L	14.69 NTU	162.0 mV	9.52 ft	30.00 mL/min
6/27/2022 1:27 PM	26:22	6.92 pH	21.79 °C	1.18 mS/cm	0.82 mg/L	11.05 NTU	162.0 mV	9.60 ft	20.00 mL/min
6/27/2022 1:30 PM	28:55	6.91 pH	22.17 °C	1.18 mS/cm	0.77 mg/L	15.77 NTU	159.4 mV	9.62 ft	20.00 mL/min
6/27/2022 1:32 PM	31:28	6.91 pH	22.57 °C	1.18 mS/cm	0.74 mg/L	13.04 NTU	155.4 mV	9.66 ft	20.00 mL/min
6/27/2022 1:35 PM	34:01	6.90 pH	22.99 °C	1.18 mS/cm	0.73 mg/L	15.75 NTU	151.8 mV	9.70 ft	20.00 mL/min
6/27/2022 1:37 PM	36:34	6.91 pH	23.26 °C	1.18 mS/cm	0.73 mg/L	21.71 NTU	147.1 mV	9.72 ft	20.00 mL/min
6/27/2022 1:40 PM	39:07	6.90 pH	23.50 °C	1.18 mS/cm	0.73 mg/L	11.80 NTU	144.3 mV	9.75 ft	20.00 mL/min
6/27/2022 1:42 PM	41:40	6.90 pH	23.77 °C	1.18 mS/cm	0.72 mg/L	15.34 NTU	139.7 mV	9.77 ft	20.00 mL/min
6/27/2022 1:45 PM	44:13	6.90 pH	23.98 °C	1.18 mS/cm	0.71 mg/L	4.28 NTU	135.9 mV	9.82 ft	20.00 mL/min
6/27/2022 1:47 PM	46:46	6.90 pH	24.13 °C	1.18 mS/cm	0.70 mg/L	6.19 NTU	130.6 mV	9.84 ft	20.00 mL/min
6/27/2022 1:50 PM	49:19	6.90 pH	24.29 °C	1.18 mS/cm	0.69 mg/L	3.57 NTU	127.3 mV	9.89 ft	20.00 mL/min
6/27/2022 1:52 PM	51:52	6.90 pH	24.32 °C	1.18 mS/cm	0.69 mg/L	5.14 NTU	120.2 mV	9.94 ft	20.00 mL/min
6/27/2022 1:55 PM	54:25	6.90 pH	24.46 °C	1.18 mS/cm	0.69 mg/L	7.19 NTU	115.5 mV	9.96 ft	20.00 mL/min
6/27/2022 1:58 PM	56:58	6.90 pH	24.42 °C	1.18 mS/cm	0.69 mg/L	6.95 NTU	106.0 mV	9.99 ft	20.00 mL/min
6/27/2022 2:00 PM	59:31	6.90 pH	24.52 °C	1.18 mS/cm	0.67 mg/L	12.18 NTU	99.0 mV	10.01 ft	20.00 mL/min
6/27/2022 2:03 PM	01:02:04	6.91 pH	24.44 °C	1.18 mS/cm	0.67 mg/L	12.46 NTU	90.8 mV	10.07 ft	20.00 mL/min
6/27/2022 2:05 PM	01:04:37	6.91 pH	24.56 °C	1.18 mS/cm	0.66 mg/L	17.07 NTU	84.4 mV	10.09 ft	20.00 mL/min
6/27/2022 2:08 PM	01:07:10	6.91 pH	24.55 °C	1.17 mS/cm	0.67 mg/L	21.27 NTU	81.6 mV	10.16 ft	20.00 mL/min
6/27/2022 2:10 PM	01:09:43	6.91 pH	24.66 °C	1.17 mS/cm	0.66 mg/L	5.37 NTU	78.2 mV	10.18 ft	20.00 mL/min
6/27/2022 2:13 PM	01:12:16	6.91 pH	24.91 °C	1.18 mS/cm	0.65 mg/L	1.06 NTU	77.4 mV	10.18 ft	20.00 mL/min
6/27/2022 2:15 PM	01:14:49	6.90 pH	25.25 °C	1.18 mS/cm	0.65 mg/L	0.87 NTU	76.8 mV	10.18 ft	20.00 mL/min
6/27/2022 2:18 PM	01:17:22	6.91 pH	25.63 °C	1.18 mS/cm	0.65 mg/L	1.07 NTU	75.2 mV	10.15 ft	20.00 mL/min
6/27/2022 2:21 PM	01:19:55	6.90 pH	26.03 °C	1.18 mS/cm	0.65 mg/L	1.79 NTU	70.3 mV	10.07 ft	9.00 mL/min

6/27/2022 2:23 PM	01:22:28	6.91 pH	26.37 °C	1.18 mS/cm	0.64 mg/L	6.98 NTU	68.0 mV	10.01 ft	9.00 mL/min
6/27/2022 2:26 PM	01:25:01	6.90 pH	26.76 °C	1.19 mS/cm	0.65 mg/L	10.14 NTU	67.4 mV	10.01 ft	9.00 mL/min
6/27/2022 2:28 PM	01:27:34	6.91 pH	27.05 °C	1.19 mS/cm	0.66 mg/L	13.80 NTU	60.8 mV	10.25 ft	100.00 mL/min
6/27/2022 2:31 PM	01:30:07	6.90 pH	25.76 °C	1.18 mS/cm	0.72 mg/L	7.60 NTU	48.7 mV	10.50 ft	100.00 mL/min
6/27/2022 2:33 PM	01:32:40	6.94 pH	16.34 °C	1.13 mS/cm	0.94 mg/L	9.03 NTU	38.7 mV	10.90 ft	50.00 mL/min
6/27/2022 2:36 PM	01:34:56	6.88 pH	15.15 °C	1.14 mS/cm	0.85 mg/L	3.48 NTU	30.5 mV	11.10 ft	40.00 mL/min
6/27/2022 2:39 PM	01:37:56	6.82 pH	16.59 °C	1.16 mS/cm	0.73 mg/L	5.77 NTU	33.5 mV	11.10 ft	40.00 mL/min
6/27/2022 2:42 PM	01:40:56	6.79 pH	18.49 °C	1.17 mS/cm	0.77 mg/L	9.56 NTU	35.8 mV	11.12 ft	9.00 mL/min
6/27/2022 2:45 PM	01:43:56	6.82 pH	19.76 °C	1.17 mS/cm	0.74 mg/L	14.01 NTU	38.8 mV	11.15 ft	9.00 mL/min
6/27/2022 2:48 PM	01:46:56	6.85 pH	20.83 °C	1.17 mS/cm	0.74 mg/L	19.10 NTU	39.2 mV	11.19 ft	9.00 mL/min
6/27/2022 2:51 PM	01:49:56	6.88 pH	21.37 °C	1.17 mS/cm	0.67 mg/L	23.42 NTU	39.3 mV	11.22 ft	40.00 mL/min
6/27/2022 2:54 PM	01:52:56	6.91 pH	21.74 °C	1.18 mS/cm	0.59 mg/L	3.71 NTU	39.2 mV	11.26 ft	40.00 mL/min
6/27/2022 2:57 PM	01:55:56	6.92 pH	21.85 °C	1.17 mS/cm	0.53 mg/L	0.76 NTU	31.0 mV	11.34 ft	40.00 mL/min
6/27/2022 3:00 PM	01:58:56	6.92 pH	21.90 °C	1.17 mS/cm	0.50 mg/L	1.49 NTU	27.1 mV	11.40 ft	40.00 mL/min
6/27/2022 3:03 PM	02:01:56	6.92 pH	21.89 °C	1.17 mS/cm	0.47 mg/L	1.90 NTU	22.4 mV	11.40 ft	40.00 mL/min
6/27/2022 3:06 PM	02:04:56	6.93 pH	21.86 °C	1.17 mS/cm	0.45 mg/L	4.86 NTU	19.8 mV	11.40 ft	40.00 mL/min

Samples

Sample ID:	Description:
LL12mw-245-220601-GW	Begin prepurge (Machine was still shut off when pump began. True start time was 12:49 PM) at 1:01 PM Stagnant water volume: 1,574 mL Stagnant water removed at 2:28 PM Stable at 3:06 PM Water is clear colorless and odorless Measured total vol purged: 4,125 mL Sample for ammonia and nitrate at 3:08 PM

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Completed By Mitchell DeBortoli
06/27/2022

QA Check By Catherine Joe
08/31/2022

Low-Flow Test Report:

Test Date / Time: 6/27/2022 11:58:39 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Jon Rokicki

Location Name: LL12mw-246 **Well Diameter: 2 in** **Total Depth: 34.33 ft** **Initial Depth to Water: 15.85 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: 7,246.667 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 125 mL/min** **Final Draw Down: 1.21 ft**	**Instrument Used:** **AquaTROLL 600: 513266** **MP10: 1143** **Water Level: 39350** **Compressor: 18421**

Test Notes:

CPM 2 25:5, PSI 30, 125 mL/min

Weather Conditions:

Sunny 68° F light 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	+/- 0.3	
6/27/2022 11:58 AM	00:00	7.55 pH	17.60 °C	0.78 mS/cm	6.79 mg/L	266.56 NTU	214.5 mV	15.85 ft	200.00 mL/min
6/27/2022 12:01 PM	03:11	7.11 pH	13.85 °C	0.86 mS/cm	1.59 mg/L	144.84 NTU	114.0 mV	15.85 ft	200.00 mL/min
6/27/2022 12:05 PM	06:22	7.10 pH	12.33 °C	0.76 mS/cm	0.78 mg/L	70.13 NTU	101.8 mV	16.60 ft	200.00 mL/min
6/27/2022 12:08 PM	09:33	7.10 pH	11.92 °C	0.74 mS/cm	0.45 mg/L	53.60 NTU	97.1 mV	16.60 ft	200.00 mL/min
6/27/2022 12:09 PM	10:44	7.10 pH	12.03 °C	0.74 mS/cm	0.35 mg/L	44.69 NTU	97.4 mV	16.83 ft	200.00 mL/min
6/27/2022 12:12 PM	13:44	7.09 pH	12.49 °C	0.70 mS/cm	0.28 mg/L	46.41 NTU	76.2 mV	16.95 ft	125.00 mL/min
6/27/2022 12:15 PM	16:44	7.06 pH	13.22 °C	0.70 mS/cm	0.27 mg/L	39.70 NTU	85.2 mV	16.95 ft	125.00 mL/min
6/27/2022 12:18 PM	19:44	7.06 pH	13.01 °C	0.84 mS/cm	0.29 mg/L	50.27 NTU	90.9 mV	16.95 ft	125.00 mL/min
6/27/2022 12:21 PM	22:44	7.05 pH	12.83 °C	0.80 mS/cm	0.28 mg/L	14.89 NTU	78.0 mV	16.95 ft	125.00 mL/min
6/27/2022 12:24 PM	25:44	7.02 pH	12.78 °C	0.80 mS/cm	0.27 mg/L	16.00 NTU	72.6 mV	16.95 ft	125.00 mL/min
6/27/2022 12:27 PM	28:44	7.00 pH	12.60 °C	0.81 mS/cm	0.27 mg/L	11.19 NTU	61.9 mV	16.95 ft	125.00 mL/min
6/27/2022 12:30 PM	31:44	6.98 pH	12.71 °C	0.84 mS/cm	0.29 mg/L	13.15 NTU	57.8 mV	16.95 ft	125.00 mL/min

6/27/2022 12:33 PM	34:44	6.94 pH	13.11 °C	0.79 mS/cm	2.65 mg/L	38.88 NTU	16.5 mV	17.06 ft	125.00 mL/min
6/27/2022 12:36 PM	37:44	6.90 pH	12.65 °C	0.88 mS/cm	0.35 mg/L	11.65 NTU	-4.2 mV	17.06 ft	125.00 mL/min
6/27/2022 12:39 PM	40:44	6.87 pH	12.52 °C	0.87 mS/cm	0.28 mg/L	19.19 NTU	-8.9 mV	17.06 ft	125.00 mL/min
6/27/2022 12:42 PM	43:44	6.85 pH	12.42 °C	0.93 mS/cm	0.31 mg/L	22.15 NTU	-19.0 mV	17.06 ft	125.00 mL/min
6/27/2022 12:45 PM	46:44	6.83 pH	12.55 °C	0.92 mS/cm	0.29 mg/L	7.44 NTU	-24.1 mV	17.06 ft	125.00 mL/min
6/27/2022 12:48 PM	49:44	6.80 pH	12.60 °C	0.93 mS/cm	0.26 mg/L	5.35 NTU	-28.3 mV	17.06 ft	125.00 mL/min

Samples

Sample ID:	Description:
LL12mw-246-220601-GW	Begin prepurge at 11:58 AM Stagnant water volume: 1,600 mL Stagnant water volume removed at 12:09 PM Change to PSI 30 CPM 2 26:4 at 12:12 PM Stable at 12:49 PM Water was yellowish at beginning and cleared up Measured total volume purged: 7,500 mL Sample for ammonia and nitrate at 12:50 PM

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Completed By _____ 06/27/2022

QA Check By _____ 08/31/2020

RVAAP-16 FUZE AND BOOSTER QUARRY LANDFILL/PONDS

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Low-Flow Test Report:

Test Date / Time: 6/28/2022 9:45:28 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Carter James

Location Name: FBQmw-173 **Well Diameter: 2 in** **Total Depth: 53.51 ft** **Initial Depth to Water: 42.6 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: 11,753 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 300 mL/min** **Final Draw Down: 43.76 ft**	**Instrument Used:** **AquaTROLL 600: 513574 MP10: 1143** **Compressor: 22817** **Solinst: 42832**

Test Notes:

CPM 3 15.5:4.5, PSI 60, 300 mL/min

Upon arrival, a wasp nest was spotted at the well and was sprayed with wasp killer spray.

At 10:30 AM during sample collected, the air compressor overheated and shut off. It was left to cool and turned back on at 10:54 AM. The time lag occurred during sampling for the Alkalinity, sulfate, Nitrate, Nitrite sample (duplicate sample only) and both Sulfide samples.

Weather Conditions:

Clear, 65°F, 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	+/- 0.3	
6/28/2022 9:45 AM	00:00	6.59 pH	16.56 °C	0.12 mS/cm	8.45 mg/L	27.93 NTU	188.8 mV	42.60 ft	350.00 mL/min
6/28/2022 9:50 AM	04:34	5.49 pH	14.84 °C	0.00 mS/cm	9.57 mg/L	2.14 NTU	209.9 mV	42.60 ft	350.00 mL/min
6/28/2022 9:51 AM	05:33	5.03 pH	12.02 °C	0.11 mS/cm	5.56 mg/L	23.85 NTU	210.0 mV	43.76 ft	300.00 mL/min
6/28/2022 9:54 AM	08:33	4.82 pH	11.60 °C	0.11 mS/cm	2.77 mg/L	7.21 NTU	189.0 mV	43.76 ft	300.00 mL/min
6/28/2022 9:57 AM	11:33	4.86 pH	11.84 °C	0.11 mS/cm	1.69 mg/L	3.15 NTU	167.5 mV	43.76 ft	300.00 mL/min
6/28/2022 10:00 AM	14:33	4.92 pH	11.81 °C	0.11 mS/cm	1.44 mg/L	1.19 NTU	160.0 mV	43.76 ft	300.00 mL/min
6/28/2022 10:03 AM	17:33	4.96 pH	11.67 °C	0.11 mS/cm	1.14 mg/L	0.92 NTU	137.0 mV	43.76 ft	300.00 mL/min

6/28/2022 10:06 AM	20:33	4.98 pH	11.49 °C	0.12 mS/cm	1.09 mg/L	0.93 NTU	127.8 mV	43.76 ft	300.00 mL/min
6/28/2022 10:09 AM	23:33	5.03 pH	11.85 °C	0.12 mS/cm	1.01 mg/L	1.19 NTU	112.8 mV	43.76 ft	300.00 mL/min
6/28/2022 10:12 AM	26:33	5.02 pH	11.75 °C	0.12 mS/cm	0.98 mg/L	0.77 NTU	109.2 mV	43.76 ft	300.00 mL/min

Samples

Sample ID:	Description:
FBQmw-173-220601-GW FBQmw-173-220602-GW	Begin prepurge at 9:45 AM Stagnant water volume: 1,403 mL Stagnant water volume removed at 9:52 AM Stable at 10:17 AM Water is clear, colorless, odorless throughout purge Measured total volume purged: 11,753 mL Sample for Explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC at 10:17 AM

Created using VuSitu from In-Situ, Inc.

Completed By Carter Young
06/28/2022

QA Check By Catherine Lee
09/01/2022

Low-Flow Test Report:

Test Date / Time: 6/28/2022 11:47:02 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Carter James

Location Name: FBQmw-174 **Well Diameter: 2 in** **Initial Depth to Water: 19.69 ft**	**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: 4,654 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 125 mL/min** **Final Draw Down: 19.69 ft**	**Instrument Used:** **AquaTROLL 600: 513574** **MP10: 1143** **Compressor: 22817** **Solinst Water Meter: 42832**

Test Notes:

CPM 3 18.5:1.5, PSI 32, 125 mL/min

Upon gauging well, an obstruction was encountered at 15.54' below TOC assumed to be the top of the dedicated pump. No GW was detected. Therefore the DTW is assumed to be the pump intake depth of 19.69' below TOC.

Since DTW is below the top of pump, pump hose is void or water. Therefore the pre-purge volume is assumed to be twice the pump volume or 1,244 mL.

Weather Conditions:
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	+/- 0.3	
6/28/2022 11:47 AM	00:00	5.93 pH	19.59 °C	0.17 mS/cm	9.51 mg/L	43.96 NTU	200.7 mV	19.69 ft	125.00 mL/min
6/28/2022 11:57 AM	10:41	4.99 pH	15.92 °C	0.16 mS/cm	8.07 mg/L	3.33 NTU	231.9 mV	19.69 ft	125.00 mL/min
6/28/2022 12:00 PM	13:41	4.90 pH	15.95 °C	0.16 mS/cm	7.84 mg/L	3.93 NTU	241.2 mV	19.69 ft	125.00 mL/min
6/28/2022 12:03 PM	16:41	4.91 pH	15.83 °C	0.15 mS/cm	7.80 mg/L	3.90 NTU	239.7 mV	19.69 ft	125.00 mL/min
6/28/2022 12:06 PM	19:41	4.88 pH	16.07 °C	0.15 mS/cm	7.76 mg/L	5.89 NTU	242.7 mV	19.69 ft	125.00 mL/min

Samples

Sample ID:	Description:
FBQmw-174-220601-GW	Begin prepurge at 11:52 AM (Actual 11:47 AM) Stagnant water volume: 1,244 mL Stagnant water volume removed at 11:57 AM Stable at 12:12 PM Water is clear, colorless, odorless throughout purge Measured total volume purged: 4,654 mL Sample for Explosives, Sulfide, Nitrate/Nitrite/Sulfate, Alkalinity, and TOC at 12:12 PM

Created using VuSitu from In-Situ, Inc.

Completed By Carter Young
06/28/2022

QA Check By Catherine Lee
09/01/2022

Low-Flow Test Report:

Test Date / Time: 6/28/2022 11:41:16 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Mitchell DeBortoli

Location Name: FBQmw-175 **Well Diameter: 2 in** **Initial Depth to Water: 17.33 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: 13,280.417 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 125 mL/min** **Final Draw Down: 0.56 ft**	**Instrument Used:** **MP50: 050494** **Aquatroll 600: 518813** **Water level: 09872**

Test Notes:
CPM 2 28:2, PSI 20, 125 mL/min

Weather Conditions:
68°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	+/- 0.3	
6/28/2022 11:41 AM	00:00	6.48 pH	18.53 °C	0.09 mS/cm	8.71 mg/L	5.71 NTU	100.8 mV	17.45 ft	150.00 mL/min
6/28/2022 11:55 AM	14:43	5.52 pH	12.95 °C	0.06 mS/cm	9.51 mg/L	17.18 NTU	202.0 mV	17.70 ft	125.00 mL/min
6/28/2022 11:57 AM	16:18	5.52 pH	12.98 °C	0.06 mS/cm	9.50 mg/L	19.25 NTU	205.1 mV	17.70 ft	125.00 mL/min
6/28/2022 12:00 PM	19:18	5.53 pH	13.10 °C	0.06 mS/cm	9.54 mg/L	20.56 NTU	208.7 mV	17.80 ft	125.00 mL/min
6/28/2022 12:03 PM	22:18	5.55 pH	13.49 °C	0.06 mS/cm	9.55 mg/L	26.73 NTU	209.2 mV	17.80 ft	125.00 mL/min
6/28/2022 12:06 PM	25:18	5.57 pH	13.76 °C	0.07 mS/cm	9.51 mg/L	22.41 NTU	209.7 mV	17.83 ft	125.00 mL/min
6/28/2022 12:09 PM	28:18	5.60 pH	13.54 °C	0.07 mS/cm	9.51 mg/L	32.31 NTU	211.4 mV	17.83 ft	125.00 mL/min
6/28/2022 12:12 PM	31:18	5.71 pH	14.86 °C	0.00 mS/cm	9.47 mg/L	0.00 NTU	200.0 mV	17.83 ft	125.00 mL/min
6/28/2022 12:15 PM	34:18	5.66 pH	13.13 °C	0.07 mS/cm	9.56 mg/L	30.78 NTU	208.0 mV	17.83 ft	125.00 mL/min
6/28/2022 12:18 PM	37:18	5.66 pH	12.92 °C	0.07 mS/cm	9.56 mg/L	27.15 NTU	212.5 mV	17.83 ft	125.00 mL/min
6/28/2022 12:21 PM	40:18	5.68 pH	13.21 °C	0.07 mS/cm	9.53 mg/L	21.11 NTU	214.4 mV	17.83 ft	125.00 mL/min

6/28/2022 12:24 PM	43:18	5.69 pH	13.33 °C	0.07 mS/cm	9.54 mg/L	21.56 NTU	217.0 mV	17.83 ft	125.00 mL/min
6/28/2022 12:27 PM	46:18	5.69 pH	13.13 °C	0.07 mS/cm	9.55 mg/L	21.95 NTU	219.3 mV	17.83 ft	125.00 ml/min
6/28/2022 12:30 PM	49:18	5.68 pH	13.20 °C	0.07 mS/cm	9.56 mg/L	21.64 NTU	221.6 mV	17.86 ft	125.00 mL/min
6/28/2022 12:33 PM	52:18	5.68 pH	13.20 °C	0.07 mS/cm	9.57 mg/L	22.46 NTU	223.0 mV	17.86 ft	125.00 mL/min
6/28/2022 12:36 PM	55:18	5.70 pH	13.21 °C	0.07 mS/cm	9.50 mg/L	17.90 NTU	223.0 mV	17.86 ft	125.00 mL/min
6/28/2022 12:39 PM	58:18	5.69 pH	13.13 °C	0.07 mS/cm	9.56 mg/L	16.21 NTU	224.7 mV	17.86 ft	125.00 mL/min
6/28/2022 12:42 PM	01:01:18	5.69 pH	12.97 °C	0.07 mS/cm	9.56 mg/L	16.42 NTU	226.8 mV	17.86 ft	125.00 mL/min
6/28/2022 12:45 PM	01:04:18	5.68 pH	13.05 °C	0.07 mS/cm	9.59 mg/L	17.79 NTU	228.6 mV	17.86 ft	125.00 mL/min
6/28/2022 12:48 PM	01:07:18	5.68 pH	13.14 °C	0.07 mS/cm	9.58 mg/L	19.84 NTU	230.1 mV	17.86 ft	125.00 mL/min
6/28/2022 12:51 PM	01:10:18	5.69 pH	13.12 °C	0.07 mS/cm	9.55 mg/L	17.17 NTU	230.5 mV	17.86 ft	125.00 mL/min
6/28/2022 12:54 PM	01:13:18	5.70 pH	13.11 °C	0.07 mS/cm	9.58 mg/L	13.93 NTU	232.2 mV	17.87 ft	125.00 mL/min
6/28/2022 12:57 PM	01:16:18	5.69 pH	13.02 °C	0.07 mS/cm	9.57 mg/L	15.10 NTU	234.4 mV	17.88 ft	125.00 ml/min
6/28/2022 1:00 PM	01:19:18	5.68 pH	13.11 °C	0.07 mS/cm	9.59 mg/L	13.17 NTU	236.2 mV	17.89 ft	125.00 mL/min
6/28/2022 1:03 PM	01:22:18	5.67 pH	13.15 °C	0.07 mS/cm	9.59 mg/L	17.93 NTU	238.0 mV	17.89 ft	125.00 mL/min
6/28/2022 1:06 PM	01:25:18	5.66 pH	13.17 °C	0.07 mS/cm	9.60 mg/L	14.69 NTU	239.6 mV	17.89 ft	125.00 mL/min
6/28/2022 1:09 PM	01:28:18	5.69 pH	13.26 °C	0.07 mS/cm	9.57 mg/L	11.25 NTU	238.9 mV	17.89 ft	125.00 mL/min
6/28/2022 1:12 PM	01:31:18	5.68 pH	13.15 °C	0.07 mS/cm	9.59 mg/L	11.50 NTU	240.4 mV	17.89 ft	125.00 mL/min
6/28/2022 1:15 PM	01:34:18	5.68 pH	13.13 °C	0.07 mS/cm	9.58 mg/L	10.53 NTU	242.2 mV	17.89 ft	125.00 mL/min
6/28/2022 1:18 PM	01:37:18	5.66 pH	12.98 °C	0.07 mS/cm	9.59 mg/L	15.31 NTU	243.8 mV	17.89 ft	125.00 mL/min
6/28/2022 1:21 PM	01:40:18	5.64 pH	13.02 °C	0.07 mS/cm	9.61 mg/L	14.39 NTU	245.8 mV	17.89 ft	125.00 mL/min
6/28/2022 1:24 PM	01:43:18	5.68 pH	13.10 °C	0.07 mS/cm	9.58 mg/L	8.10 NTU	243.3 mV	17.89 ft	125.00 mL/min

Samples

Sample ID:	Description:
FBQmw-175-220601-GW FBQmw-175-220601-GWMSD FBQmw-175-220602-GW	Begin prepurge at 11:41 AM Stagnantwatwr volume 1,350 mL Stagnant water removed at 11:57 AM Stable at 1:24 PM Water is clear colorless and odorless Measured total vol purged: 14,517 mL Sample for explosives/MSD at 1:24 PM

Created using VuSitu from In-Situ, Inc.

Completed By Mitchell DeBortoli
06/28/2022

QA Check By Catherine Lee
09/01/2022

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RVAAP-43 LOAD LINE 10

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Low-Flow Test Report:

Test Date / Time: 6/28/2022 8:14:08 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Mitchell DeBortoli

Location Name: LL10mw-003 **Well Diameter: 2 in** **Initial Depth to Water: 21.04 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: 3,375 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 0.15 ft**	**Instrument Used:** **AquaTROLL 600: 518813** **MP50: 050493** **Water Level: 09872**

Test Notes:

CPM 3 18:2, PSI 20, 100 mL/min

Weather Conditions:

65°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	+/- 0.3	
6/28/2022 10:14 AM	00:00	7.12 pH	15.89 °C	0.41 mS/cm	8.05 mg/L	0.09 NTU	82.3 mV	21.13 ft	75.00 mL/min
6/28/2022 10:21 AM	07:38	6.85 pH	12.85 °C	0.39 mS/cm	3.76 mg/L	1.23 NTU	83.0 mV	21.13 ft	75.00 mL/min
6/28/2022 10:29 AM	15:16	6.82 pH	12.47 °C	0.38 mS/cm	3.07 mg/L	0.68 NTU	81.5 mV	21.15 ft	150.00 mL/min
6/28/2022 10:37 AM	22:54	6.72 pH	11.89 °C	0.35 mS/cm	2.06 mg/L	0.19 NTU	90.3 mV	21.15 ft	150.00 mL/min
6/28/2022 10:38 AM	24:08	6.72 pH	11.99 °C	0.35 mS/cm	2.01 mg/L	0.61 NTU	92.2 mV	21.19 ft	100.00 mL/min
6/28/2022 10:41 AM	27:08	6.72 pH	12.31 °C	0.35 mS/cm	1.97 mg/L	0.27 NTU	93.0 mV	21.19 ft	100.00 mL/min
6/28/2022 10:44 AM	30:08	6.72 pH	12.58 °C	0.35 mS/cm	1.97 mg/L	0.27 NTU	93.2 mV	21.19 ft	100.00 mL/min
6/28/2022 10:47 AM	33:08	6.73 pH	12.69 °C	0.35 mS/cm	1.98 mg/L	0.36 NTU	97.1 mV	21.19 ft	100.00 mL/min

Samples

Sample ID:	Description:
LL1mw-080-220601-GW	Begin prepurge at 10:14 AM Stagnant water volume: 1,360 mL Stagnant water removed at 10:38 AM Stable at 10:47 AM Water is clear colorless and odorless Measured total vol purged: 4,850 mL Sample for VOCs at 10:47 AM

Created using VuSitu from In-Situ, Inc.

Completed By Mitchell DeBortoli
06/28/2022

QA Check By Catherine Lee
09/01/2022

RVAAP-66 FACILITY-WIDE GROUNDWATER

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Low-Flow Test Report:

Test Date / Time: 6/22/2022 1:49:25 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Mitchell DeBortoli

Location Name: FWGmw-004 **Well Diameter: 2 in** **Initial Depth to Water: 13.96 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: 3,902.5 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 150 mL/min** **Final Draw Down: 0.44 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **Water Level - 09872** **MP50 Controller - 2325**

Test Notes:
CPM 2 29:1, 30 PSI, 150 mL/min

Weather Conditions:
92°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	+/- 0.3	
6/22/2022 1:49 PM	00:00	7.36 pH	20.40 °C	0.65 mS/cm	7.20 mg/L	23.48 NTU	213.2 mV	13.96 ft	150.00 ml/min
6/22/2022 1:53 PM	04:03	7.23 pH	12.49 °C	0.59 mS/cm	0.86 mg/L	148.84 NTU	205.4 mV	14.40 ft	150.00 ml/min
6/22/2022 2:06 PM	17:01	6.92 pH	16.07 °C	0.70 mS/cm	0.46 mg/L	4.85 NTU	204.2 mV	14.40 ft	150.00 ml/min
6/22/2022 2:09 PM	20:01	6.88 pH	16.33 °C	0.71 mS/cm	0.42 mg/L	4.61 NTU	204.0 mV	14.40 ft	150.00 ml/min
6/22/2022 2:12 PM	23:01	6.84 pH	16.65 °C	0.71 mS/cm	0.39 mg/L	3.22 NTU	203.6 mV	14.40 ft	150.00 ml/min
6/22/2022 2:15 PM	26:01	6.83 pH	16.60 °C	0.72 mS/cm	0.35 mg/L	1.50 NTU	202.4 mV	14.40 ft	150.00 ml/min

Samples

Sample ID:	Description:
FWGmw-004-220601-GW FWGmw-004-220601-GWMSD FWGmw-004-220602-GW	Begin low flow purge at 1:49 PM (PSI 30 / CPM 2 /29 /1) Stagnant water volume: 1,370 mL Stagnant water volume removed at 2:06 PM (17:01) Stable at 2:15 PM (26:01) Water is colorless, odorless throughout purge Measured total volume purged: 10,800 mL Sample for explosives at 2:17 PM on 06/22/2022

Created using VuSitu from In-Situ, Inc.

Sampled By: Mitchell DeBortoli ,06/22/2022

QA Check By: Melissa Rego ,09/01/2022

Low-Flow Test Report:

Test Date / Time: 6/28/2022 8:29:43 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Jon Rokicki

Location Name: FWGmw-007 **Well Diameter: 2 in** **Initial Depth to Water: 23.62 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: 2,355 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 0.23 ft**	**Instrument Used:** **MP10: 1143** **Compressor: 18421** **Water level: 39350** **Aquatroll 600: 513266**

Test Notes:
CPM 2 28:2, 20 PSI, 100 mL/min

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	+/- 0.3	
6/28/2022 10:29 AM	00:00	7.29 pH	19.59 °C	0.90 mS/cm	6.77 mg/L	5.39 NTU	206.6 mV	23.62 ft	100.00 mL/min
6/28/2022 10:41 AM	11:39	7.29 pH	13.76 °C	0.72 mS/cm	1.45 mg/L	5.59 NTU	216.1 mV	23.85 ft	100.00 mL/min
6/28/2022 10:44 AM	14:33	7.28 pH	14.34 °C	0.75 mS/cm	1.31 mg/L	7.02 NTU	214.7 mV	23.85 ft	100.00 mL/min
6/28/2022 10:47 AM	17:33	7.27 pH	13.87 °C	0.72 mS/cm	1.30 mg/L	5.21 NTU	213.7 mV	23.85 ft	100.00 mL/min
6/28/2022 10:50 AM	20:33	7.26 pH	13.77 °C	0.72 mS/cm	1.29 mg/L	10.60 NTU	212.8 mV	23.85 ft	100.00 mL/min
6/28/2022 10:53 AM	23:33	7.25 pH	13.91 °C	0.70 mS/cm	1.22 mg/L	8.90 NTU	211.9 mV	23.85 ft	100.00 mL/min

Samples

Sample ID:	Description:
FWGmw-007-220601-GW	Begin prepurge at 10:29 AM Stagnant water volume: 1,400 mL Stagnant water volume removed at 10:43 AM Stable at 10:55 AM Water is clear, colorless, and odorless throughout purge Measured total volume purged: 3,300 mL Sample for explosives at 10:57 AM

Created using VuSitu from In-Situ, Inc.

Completed By _____
06/28/2022

QA Check By _____
09/01/2022

Low-Flow Test Report:

Test Date / Time: 6/14/2022 1:37:39 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: FWGmw-010 **Well Diameter: 2 in** **Total Depth: 18.9 ft** **Initial Depth to Water: 10.35 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: 7,985.417 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 0.5 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 2 28:2, 23 PSI, 100 mL/min

Weather Conditions:
Party cloudy, 74°F, 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	+/- 0.3	
6/14/2022 1:37 PM	00:00	5.63 pH	27.25 °C	0.09 mS/cm	6.23 mg/L	7.11 NTU	173.6 mV	10.35 ft	125.00 ml/min
6/14/2022 1:52 PM	15:53	4.70 pH	16.41 °C	0.05 mS/cm	7.33 mg/L	17.85 NTU	265.8 mV	10.85 ft	100.00 ml/min
6/14/2022 1:55 PM	18:53	4.59 pH	17.87 °C	0.04 mS/cm	7.17 mg/L	22.11 NTU	270.9 mV	10.85 ft	100.00 ml/min
6/14/2022 1:58 PM	21:53	4.56 pH	16.36 °C	0.04 mS/cm	7.37 mg/L	23.09 NTU	277.4 mV	10.85 ft	100.00 ml/min
6/14/2022 2:01 PM	24:53	4.54 pH	15.94 °C	0.05 mS/cm	7.41 mg/L	22.55 NTU	281.1 mV	10.85 ft	100.00 ml/min
6/14/2022 2:04 PM	27:53	4.50 pH	15.74 °C	0.04 mS/cm	7.44 mg/L	27.80 NTU	285.0 mV	10.85 ft	100.00 ml/min
6/14/2022 2:07 PM	30:53	4.47 pH	16.53 °C	0.04 mS/cm	7.18 mg/L	27.63 NTU	288.2 mV	10.85 ft	100.00 ml/min
6/14/2022 2:10 PM	33:53	4.47 pH	17.50 °C	0.05 mS/cm	7.07 mg/L	39.83 NTU	289.8 mV	10.85 ft	100.00 ml/min
6/14/2022 2:13 PM	36:53	4.48 pH	17.13 °C	0.04 mS/cm	7.14 mg/L	43.06 NTU	292.0 mV	10.85 ft	100.00 ml/min
6/14/2022 2:16 PM	39:53	4.57 pH	17.54 °C	0.05 mS/cm	7.59 mg/L	2.06 NTU	284.9 mV	10.85 ft	100.00 ml/min

6/14/2022 2:19 PM	42:53	4.63 pH	16.62 °C	0.04 mS/cm	7.54 mg/L	3.21 NTU	283.0 mV	10.85 ft	100.00 ml/min
6/14/2022 2:22 PM	45:53	4.63 pH	16.33 °C	0.04 mS/cm	7.46 mg/L	4.63 NTU	285.4 mV	10.85 ft	100.00 ml/min
6/14/2022 2:25 PM	48:53	4.61 pH	16.69 °C	0.04 mS/cm	7.23 mg/L	10.92 NTU	287.9 mV	10.85 ft	100.00 ml/min
6/14/2022 2:28 PM	51:53	4.60 pH	16.65 °C	0.04 mS/cm	7.28 mg/L	13.01 NTU	289.7 mV	10.85 ft	100.00 ml/min
6/14/2022 2:31 PM	54:53	4.58 pH	16.52 °C	0.04 mS/cm	7.27 mg/L	17.45 NTU	291.8 mV	10.85 ft	100.00 ml/min
6/14/2022 2:34 PM	57:53	4.57 pH	16.32 °C	0.04 mS/cm	7.29 mg/L	24.33 NTU	293.4 mV	10.85 ft	100.00 ml/min
6/14/2022 2:37 PM	01:00:53	4.56 pH	15.98 °C	0.04 mS/cm	7.52 mg/L	1.50 NTU	294.9 mV	10.85 ft	100.00 ml/min
6/14/2022 2:40 PM	01:03:53	4.56 pH	15.40 °C	0.04 mS/cm	7.47 mg/L	1.42 NTU	296.1 mV	10.85 ft	100.00 ml/min
6/14/2022 4:43 PM	01:06:53	4.56 pH	15.28 °C	0.05 mS/cm	7.33 mg/L	3.15 NTU	297.9 mV	10.85 ft	100.00 ml/min
6/14/2022 2:46 PM	01:09:53	4.55 pH	15.26 °C	0.04 mS/cm	7.38 mg/L	3.37 NTU	299.2 mV	10.85 ft	100.00 ml/min
6/14/2022 2:49 PM	01:12:53	4.52 pH	15.31 °C	0.04 mS/cm	7.41 mg/L	3.94 NTU	300.8 mV	10.85 ft	100.00 ml/min
6/14/2022 2:52 PM	01:15:53	4.50 pH	15.68 °C	0.04 mS/cm	7.39 mg/L	6.18 NTU	302.4 mV	10.85 ft	100.00 ml/min

Samples

Sample ID:	Description:
FWGmw-010-220601-GW	Begin low flow purge at 1:37 PM Stagnant water volume: 1,371.71 mL Stagnant water volume removed at 1:52 PM (15:53) Stable at 2:53 PM (01:15:53). Flow cell emptied due to erroneous turbidity at 2:15 PM (Minutes 36:53-39:57) Water is clear, colorless, odorless throughout purge Measured total volume purged: 8,971.71 mL Sample for explosives at 2:53 PM on 06/14/22

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Sampled By: Chris McFarland ,06/14/2022

QA Check By: Daill Ad ,07/08/2022

Low-Flow Test Report:

Test Date / Time: 6/17/2022 9:39:08 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Danielle Anderson

Location Name: FWGmw-011 **Well Diameter: 2 in** **Initial Depth to Water: 2.54 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: 37,480 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 300 mL/min** **Final Draw Down: 1.28 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 09872** **MP50 Controller - 050494**

Test Notes:
CPM 4 13:2, 20 PSI, 300 mL/min

Weather Conditions:
76°F 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	
6/17/2022 9:39 AM	00:00	7.30 pH	19.16 °C	0.33 mS/cm	7.85 mg/L	19.93 NTU	218.8 mV	2.54 ft	300.00 ml/min
6/17/2022 9:44 AM	04:56	6.54 pH	11.99 °C	0.33 mS/cm	1.00 mg/L	873.48 NTU	-34.4 mV	3.81 ft	300.00 ml/min
6/17/2022 9:47 AM	07:56	6.50 pH	12.03 °C	0.33 mS/cm	0.38 mg/L	518.31 NTU	-42.6 mV	3.81 ft	300.00 ml/min
6/17/2022 9:50 AM	10:56	6.50 pH	12.06 °C	0.33 mS/cm	0.41 mg/L	573.30 NTU	-44.7 mV	3.81 ft	300.00 ml/min
6/17/2022 9:53 AM	13:56	6.54 pH	12.09 °C	0.33 mS/cm	0.44 mg/L	436.22 NTU	-45.1 mV	3.81 ft	300.00 ml/min
6/17/2022 9:56 AM	16:56	6.53 pH	12.03 °C	0.33 mS/cm	0.32 mg/L	362.92 NTU	-47.2 mV	3.81 ft	300.00 ml/min
6/17/2022 9:59 AM	19:56	6.55 pH	11.99 °C	0.33 mS/cm	0.49 mg/L	345.86 NTU	-43.6 mV	3.81 ft	300.00 ml/min
6/17/2022 10:02 AM	22:56	6.55 pH	11.91 °C	0.33 mS/cm	0.25 mg/L	192.16 NTU	-47.9 mV	3.81 ft	300.00 ml/min
6/17/2022 10:05 AM	25:56	6.56 pH	11.95 °C	0.33 mS/cm	0.18 mg/L	138.40 NTU	-51.6 mV	3.81 ft	300.00 ml/min
6/17/2022 10:08 AM	28:56	6.57 pH	11.99 °C	0.33 mS/cm	0.15 mg/L	93.40 NTU	-54.3 mV	3.81 ft	300.00 ml/min
6/17/2022 10:11 AM	31:56	6.59 pH	11.96 °C	0.33 mS/cm	0.13 mg/L	99.20 NTU	-57.6 mV	3.81 ft	300.00 ml/min
6/17/2022 10:14 AM	34:56	6.59 pH	12.01 °C	0.33 mS/cm	0.11 mg/L	131.97 NTU	-58.5 mV	3.81 ft	300.00 ml/min

6/17/2022 10:17 AM	37:56	6.61 pH	11.87 °C	0.33 mS/cm	0.11 mg/L	68.24 NTU	-60.3 mV	3.81 ft	300.00 ml/min
6/17/2022 10:20 AM	40:56	6.63 pH	11.87 °C	0.33 mS/cm	0.10 mg/L	71.49 NTU	-62.1 mV	3.81 ft	300.00 ml/min
6/17/2022 10:23 AM	43:56	6.65 pH	11.88 °C	0.33 mS/cm	0.10 mg/L	47.91 NTU	-64.0 mV	3.82 ft	300.00 ml/min
6/17/2022 10:26 AM	46:56	6.68 pH	12.02 °C	0.33 mS/cm	0.10 mg/L	44.71 NTU	-66.0 mV	3.82 ft	300.00 ml/min
6/17/2022 10:29 AM	49:56	6.73 pH	12.01 °C	0.33 mS/cm	0.09 mg/L	53.77 NTU	-68.9 mV	3.82 ft	300.00 ml/min
6/17/2022 10:32 AM	52:56	6.75 pH	11.96 °C	0.34 mS/cm	0.09 mg/L	49.21 NTU	-70.5 mV	3.82 ft	300.00 ml/min
6/17/2022 10:35 AM	55:56	6.78 pH	11.95 °C	0.34 mS/cm	0.08 mg/L	35.20 NTU	-72.4 mV	3.82 ft	300.00 ml/min
6/17/2022 10:38 AM	58:56	6.82 pH	12.03 °C	0.34 mS/cm	0.08 mg/L	41.97 NTU	-74.8 mV	3.82 ft	300.00 ml/min
6/17/2022 10:41 AM	01:01:56	6.86 pH	12.03 °C	0.34 mS/cm	0.08 mg/L	37.18 NTU	-77.3 mV	3.82 ft	300.00 ml/min
6/17/2022 10:44 AM	01:04:56	6.90 pH	12.08 °C	0.34 mS/cm	0.08 mg/L	43.05 NTU	-79.5 mV	3.82 ft	300.00 ml/min
6/17/2022 10:47 AM	01:07:56	6.93 pH	12.13 °C	0.34 mS/cm	0.08 mg/L	26.62 NTU	-81.6 mV	3.82 ft	300.00 ml/min
6/17/2022 10:50 AM	01:10:56	6.96 pH	12.12 °C	0.34 mS/cm	0.07 mg/L	35.74 NTU	-83.1 mV	3.82 ft	300.00 ml/min
6/17/2022 10:53 AM	01:13:56	6.99 pH	12.00 °C	0.34 mS/cm	0.08 mg/L	26.85 NTU	-84.9 mV	3.82 ft	300.00 ml/min
6/17/2022 10:56 AM	01:16:56	7.02 pH	12.03 °C	0.34 mS/cm	0.08 mg/L	23.48 NTU	-86.5 mV	3.82 ft	300.00 ml/min
6/17/2022 10:59 AM	01:19:56	7.04 pH	12.12 °C	0.34 mS/cm	0.08 mg/L	22.10 NTU	-87.7 mV	3.82 ft	300.00 ml/min
6/17/2022 11:02 AM	01:22:56	7.06 pH	12.09 °C	0.34 mS/cm	0.08 mg/L	29.58 NTU	-88.6 mV	3.82 ft	300.00 ml/min
6/17/2022 11:05 AM	01:25:56	7.06 pH	12.17 °C	0.34 mS/cm	0.08 mg/L	29.69 NTU	-88.7 mV	3.82 ft	300.00 ml/min
6/17/2022 11:08 AM	01:28:56	7.08 pH	12.06 °C	0.34 mS/cm	0.08 mg/L	35.19 NTU	-89.4 mV	3.82 ft	300.00 ml/min
6/17/2022 11:11 AM	01:31:56	7.08 pH	11.99 °C	0.34 mS/cm	0.08 mg/L	28.02 NTU	-89.7 mV	3.82 ft	300.00 ml/min
6/17/2022 11:14 AM	01:34:56	7.08 pH	12.13 °C	0.34 mS/cm	0.08 mg/L	22.44 NTU	-89.9 mV	3.82 ft	300.00 ml/min
6/17/2022 11:17 AM	01:37:56	7.10 pH	12.08 °C	0.34 mS/cm	0.07 mg/L	22.49 NTU	-90.8 mV	3.82 ft	300.00 ml/min
6/17/2022 11:20 AM	01:40:56	7.11 pH	12.16 °C	0.34 mS/cm	0.07 mg/L	22.45 NTU	-91.3 mV	3.82 ft	300.00 ml/min
6/17/2022 11:23 AM	01:43:56	7.10 pH	12.22 °C	0.34 mS/cm	0.07 mg/L	18.99 NTU	-91.1 mV	3.82 ft	300.00 ml/min
6/17/2022 11:26 AM	01:46:56	7.10 pH	12.19 °C	0.34 mS/cm	0.06 mg/L	23.38 NTU	-91.5 mV	3.82 ft	300.00 ml/min
6/17/2022 11:29 AM	01:49:56	7.12 pH	12.04 °C	0.34 mS/cm	0.07 mg/L	12.72 NTU	-92.2 mV	3.82 ft	300.00 ml/min
6/17/2022 11:32 AM	01:52:56	7.12 pH	12.13 °C	0.34 mS/cm	0.07 mg/L	14.13 NTU	-92.6 mV	3.82 ft	300.00 ml/min
6/17/2022 11:35 AM	01:55:56	7.13 pH	12.14 °C	0.34 mS/cm	0.07 mg/L	17.05 NTU	-93.1 mV	3.82 ft	300.00 ml/min
6/17/2022 11:38 AM	01:58:56	7.14 pH	12.20 °C	0.34 mS/cm	0.07 mg/L	13.42 NTU	-93.4 mV	3.82 ft	300.00 ml/min
6/17/2022 11:41 AM	02:01:56	7.14 pH	12.20 °C	0.34 mS/cm	0.07 mg/L	17.31 NTU	-93.2 mV	3.82 ft	300.00 ml/min

6/17/2022 11:44 AM	02:04:56	7.13 pH	12.19 °C	0.34 mS/cm	0.07 mg/L	17.74 NTU	-92.8 mV	3.82 ft	300.00 ml/min

Samples

Sample ID:	Description:
FWGmw-011-220601-GW	Begin low flow purge at 9:39 AM (PSI 20 CPM4/13/2) Stagnant water volume: 1,738.52 mL Stagnant water volume removed at 9:44 AM (04:56) Stable except for turbidity after 2 hour purge at 11:44 AM (02:04:56) Water is orange, turbid, and odorless but became slightly turbid, white, and odorless throughout purge Measured total volume purged: 50,000 mL Sample for explosives at 11:44 AM on 06/17/2022.

Created using VuSitu from In-Situ, Inc.

Sampled By: ,06/17/2022

QA Check By: ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/17/2022 12:03:28 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Danielle Anderson

Location Name: FWGmw-012 **Well Diameter: 2 in** **Initial Depth to Water: 0.93 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: 5,420 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 400 mL/min** **Final Draw Down: 0.64 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 09872** **MP50 Controller - 050494**

Test Notes:
CPM 4 12.5:2.5, 30 PSI, 400 mL/min

Weather Conditions:
76°F mostly 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	
6/17/2022 12:03 PM	00:00	6.41 pH	22.59 °C	0.27 mS/cm	1.45 mg/L	8.93 NTU	107.0 mV	0.93 ft	400.00 ml/min
6/17/2022 12:10 PM	07:21	5.26 pH	13.00 °C	0.20 mS/cm	0.13 mg/L	35.10 NTU	126.2 mV	1.57 ft	400.00 ml/min
6/17/2022 12:11 PM	07:33	5.26 pH	13.36 °C	0.19 mS/cm	0.12 mg/L	32.57 NTU	126.7 mV	1.57 ft	400.00 ml/min
6/17/2022 12:14 PM	10:33	5.22 pH	13.10 °C	0.19 mS/cm	0.06 mg/L	17.09 NTU	129.6 mV	1.57 ft	400.00 ml/min
6/17/2022 12:17 PM	13:33	5.22 pH	13.40 °C	0.19 mS/cm	0.04 mg/L	7.92 NTU	129.2 mV	1.57 ft	400.00 ml/min

Samples

Sample ID:	Description:
FWGmw-012-220601-GW	Begin low flow purge at 12:04 PM (PSI 30/ CPM 4/12.5/2.5) Stagnant water volume: 2,800.49 mL Stagnant water volume removed at 12:11 PM (07:33) Stable at 12:17 PM (13:33) Water is slightly turbid, orange, odorless but becomes clear and slightly orange throughout purge Measured total volume purged: 7,250 mL Sample for explosives at 12:17 PM on 06/17/2022.

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Sampled By: ,06/17/2022 QA Check By: ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/16/2022 1:30:45 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Rich Sprinzl

Location Name: FWGmw-015 **Well Diameter: 2 in** **Initial Depth to Water: 5.85 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: 4,147.5 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 75 mL/min** **Final Draw Down: 2.58 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **Water Level - 39350** **MP10 Controller - 1143** **Compressor - 18239**

Test Notes:
CPM 1 57:3, 20 PSI, 75 mL/min

Weather Conditions:
90°F partly sunny, breezy, humid

Low-Flow Readings:

Date Time	Elapsed Time	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth to Water	Flow
		+/- 0.5	+/- 3 %	+/- 0.2	+/- 10 %	+/- 20	+/- 5	
6/16/2022 1:30 PM	00:00	22.87 °C	2.33 mS/cm	4.26 mg/L	0.72 NTU	136.8 mV	5.85 ft	75.00 ml/min
6/16/2022 1:59 PM	28:30	17.35 °C	2.35 mS/cm	0.58 mg/L	25.13 NTU	165.0 mV	6.32 ft	75.00 ml/min
6/16/2022 1:59 PM	28:55	17.63 °C	2.35 mS/cm	0.58 mg/L	25.11 NTU	165.0 mV	6.32 ft	75.00 ml/min
6/16/2022 2:02 PM	31:55	17.61 °C	2.34 mS/cm	0.55 mg/L	68.21 NTU	166.6 mV	8.65 ft	75.00 ml/min
6/16/2022 2:05 PM	34:55	17.65 °C	2.32 mS/cm	0.57 mg/L	85.70 NTU	168.3 mV	8.90 ft	75.00 ml/min
6/16/2022 2:08 PM	37:18	17.99 °C	2.31 mS/cm	0.56 mg/L	90.00 NTU	169.5 mV	8.90 ft	75.00 ml/min
6/16/2022 2:11 PM	40:18	18.71 °C	2.32 mS/cm	0.61 mg/L	112.66 NTU	170.7 mV	8.90 ft	75.00 ml/min
6/16/2022 2:14 PM	43:18	19.39 °C	2.31 mS/cm	0.67 mg/L	126.42 NTU	171.5 mV	8.90 ft	75.00 ml/min
6/16/2022 2:17 PM	46:18	21.56 °C	0.00 mS/cm	8.40 mg/L	30.05 NTU	165.9 mV	8.90 ft	75.00 ml/min
6/16/2022 2:20 PM	49:18	19.42 °C	2.40 mS/cm	1.03 mg/L	4.03 NTU	181.2 mV	8.85 ft	75.00 ml/min
6/16/2022 2:23 PM	52:18	19.23 °C	2.40 mS/cm	1.07 mg/L	6.05 NTU	180.6 mV	8.90 ft	75.00 ml/min
6/16/2022 2:26 PM	55:18	19.24 °C	2.40 mS/cm	1.00 mg/L	9.53 NTU	180.1 mV	8.90 ft	75.00 ml/min

Samples

Sample ID:	Description:
FWGmw-015-220601-GW	Initial low flow purge at 11:21 AM Initial DTW 5.85 ft BTOC 11:42 AM/11:50 AM sensors disconnected. Discontinued purge to call tech support Rechecked DTW 6.32' BTOC Begin low flow purge at 1:30 PM (PSI 20/CPM 1/57/3) Stagnant water volume: 2,175 mL Stagnant water volume removed at 1:59 PM (28:30) Stable at 2:26 PM (55:18) Water is clear, colorless, and odorless throughout purge. Measured total volume purged: 5,200 mL Sample for explosives at 2:27 PM on 06/16/2022.

Created using VuSitu from In-Situ, Inc.

Sampled By: ,06/16/2022

QA Check By: ,07/08/2022

Low-Flow Test Report:

Test Date / Time: 6/16/2022 9:38:51 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Ryan Laurich

Location Name: FWGmw-016 **Well Diameter: 2 in** **Initial Depth to Water: 17.2 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: 4,875 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 125 mL/min** **Final Draw Down: 0.05 ft**	**Instrument Used:** **Aqua TROLL 600 - 518813** **MP10 Controller - 1143** **Compressor - 18239** **Water level - 39350**

Test Notes:
CPM 1 52:8, 40psi, 150 mL/min

Weather Conditions:
82°F sun hazy humid 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	
6/16/2022 9:43 AM	00:00	7.59 pH	18.06 °C	0.67 mS/cm	8.47 mg/L	0.25 NTU	219.8 mV	17.20 ft	150.00 ml/min
6/16/2022 10:09 AM	26:18	6.65 pH	15.07 °C	0.70 mS/cm	0.89 mg/L	0.00 NTU	-23.0 mV	17.20 ft	125.00 ml/min
6/16/2022 10:10 AM	26:43	6.65 pH	15.28 °C	0.70 mS/cm	0.92 mg/L	0.32 NTU	-22.7 mV	17.20 ft	125.00 ml/min
6/16/2022 10:13 AM	29:43	6.65 pH	15.26 °C	0.70 mS/cm	0.98 mg/L	0.00 NTU	-21.9 mV	17.25 ft	125.00 ml/min
6/16/2022 10:16 AM	32:43	6.65 pH	15.14 °C	0.70 mS/cm	0.86 mg/L	0.18 NTU	-22.9 mV	17.25 ft	125.00 ml/min
6/16/2022 10:19 AM	35:43	6.65 pH	15.06 °C	0.70 mS/cm	0.77 mg/L	0.43 NTU	-22.4 mV	17.25 ft	125.00 ml/min
6/16/2022 10:22 AM	38:43	6.65 pH	15.02 °C	0.70 mS/cm	0.78 mg/L	0.50 NTU	-22.2 mV	17.25 ft	125.00 ml/min

Samples

Sample ID:	Description:
FWGmw-016-220601-GW	Begin Low flow purge at 9:43 AM (CPM1 52/8, 40psi) First readings at 9:38 AM were not taken Stagnant water volume: 3,272.5 mL Stagnant water volume removed at 10:09 AM (26:18) Stable at 10:22 AM (38:43) Measured total volume purged: 6,624 mL Sample for explosives at 10:22 AM on 06/16/2022.

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Sampled By: ,06/17/2022

QA Check By: ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/16/2022 8:42:57 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Danielle Anderson

Location Name: FWGmw-018 **Well Diameter: 2 in** **Initial Depth to Water: 19.97 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: 11,420 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 450 mL/min** **Final Draw Down: 1.38 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 42832** **MP50 Controller - 050494**

Test Notes:
CPM 3 13.5:1.5, 80 PSI, 450 mL/min

Weather Conditions:
80°F mostly 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	
6/16/2022 8:42 AM	00:00	7.38 pH	16.42 °C	0.58 mS/cm	8.10 mg/L	1.74 NTU	209.5 mV	19.97 ft	600.00 ml/min
6/16/2022 8:55 AM	12:17	6.79 pH	12.01 °C	0.62 mS/cm	0.15 mg/L	1.06 NTU	-61.7 mV	21.35 ft	450.00 ml/min
6/16/2022 8:58 AM	15:17	6.75 pH	11.96 °C	0.62 mS/cm	0.16 mg/L	1.03 NTU	-59.1 mV	21.35 ft	450.00 ml/min
6/16/2022 9:01 AM	18:17	6.76 pH	12.01 °C	0.62 mS/cm	0.14 mg/L	0.94 NTU	-57.8 mV	21.35 ft	450.00 ml/min
6/16/2022 9:04 AM	21:17	6.76 pH	11.99 °C	0.62 mS/cm	0.14 mg/L	1.00 NTU	-56.5 mV	21.35 ft	450.00 ml/min

Samples

Sample ID:	Description:
FWGmw-018-220601-GW	Begin low flow purge at 8:42 AM (PSI 80/ CPM4/13.5/1.5) Stagnant water volume: 6,466.68 mL Stagnant water volume removed at 8:55 AM (12:17) Stable at 9:04 AM (21:17) Water is clear, colorless, with a sulfuric odor throughout purge Measured total volume purged: 10,700 mL Sample for nitrate at 0904 on 06/16/2022

Created using VuSitu from In-Situ, Inc.

Sampled By: ,06/16/2022

QA Check By: ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/16/2022 8:58:38 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Chris McFarland

Location Name: FWGmw-020 **Well Diameter: 2 in** **Initial Depth to Water: 20.86 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: 6,570 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 100 mL/min** **Final Draw Down: 0.26 ft**	**Instrument Used:** **Aqua TROLL 600 - 513574** **Water Level - 42832** **MP10 Controller - 1143** **Compressor - 22817**

Test Notes:
CPM 2 25:5, 120 PSI, 100 mL/min

Weather Conditions:
Clear, 75°F, 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	+/- 0.3	
6/16/2022 8:58 AM	00:00	7.12 pH	22.36 °C	0.79 mS/cm	4.48 mg/L	16.52 NTU	-126.5 mV	20.86 ft	150.00 ml/min
6/16/2022 9:12 AM	14:41	6.75 pH	14.76 °C	0.72 mS/cm	1.95 mg/L	24.32 NTU	-22.1 mV	20.86 ft	150.00 ml/min
6/16/2022 9:17 AM	19:43	6.75 pH	14.42 °C	0.71 mS/cm	1.66 mg/L	19.28 NTU	-23.5 mV	21.12 ft	100.00 ml/min
6/16/2022 9:20 AM	22:43	6.74 pH	14.95 °C	0.72 mS/cm	1.72 mg/L	22.47 NTU	-24.6 mV	21.12 ft	100.00 ml/min
6/16/2022 9:23 AM	25:43	6.74 pH	14.62 °C	0.73 mS/cm	1.53 mg/L	18.76 NTU	-27.8 mV	21.12 ft	100.00 ml/min
6/16/2022 9:26 AM	28:43	6.74 pH	14.88 °C	0.73 mS/cm	1.42 mg/L	20.63 NTU	-28.4 mV	21.12 ft	100.00 ml/min
6/16/2022 9:29 AM	31:43	6.75 pH	14.55 °C	0.72 mS/cm	1.34 mg/L	25.47 NTU	-28.3 mV	21.12 ft	100.00 ml/min
6/16/2022 9:32 AM	34:43	6.75 pH	14.18 °C	0.72 mS/cm	1.34 mg/L	33.69 NTU	-27.9 mV	21.12 ft	100.00 ml/min
6/16/2022 9:35 AM	37:43	6.76 pH	14.46 °C	0.72 mS/cm	1.25 mg/L	42.22 NTU	-27.7 mV	21.12 ft	100.00 ml/min
6/16/2022 9:38 AM	39:57	6.83 pH	15.34 °C	0.74 mS/cm	6.23 mg/L	17.46 NTU	-38.8 mV	21.12 ft	100.00 ml/min
6/16/2022 9:41 AM	42:57	6.77 pH	15.09 °C	0.73 mS/cm	0.77 mg/L	6.95 NTU	-41.9 mV	21.12 ft	100.00 ml/min

6/16/2022 9:44 AM	45:57	6.78 pH	14.95 °C	0.73 mS/cm	0.50 mg/L	6.62 NTU	-41.6 mV	21.12 ft	100.00 ml/min
6/16/2022 9:47 AM	48:57	6.79 pH	15.07 °C	0.73 mS/cm	0.66 mg/L	7.39 NTU	-38.4 mV	21.12 ft	100.00 ml/min
6/16/2022 9:50 AM	51:57	6.79 pH	14.91 °C	0.73 mS/cm	0.64 mg/L	7.87 NTU	-36.9 mV	21.12 ft	100.00 ml/min

Samples

Sample ID:	Description:
FWGmw-020-220601-GW	Begin low flow purge at 8:58 AM (PSI 120 / CPM 2/25/5) Stagnant water volume: 2,070 mL Stagnant water volume removed at 9:17 AM (19:43) Disconnected at 9:38 AM (39:57) Stable at 9:50 AM (51:57) Water began purge a light orange with a sulfur odor, and purge ended with clear water with a sulfur odor. Measured total volume purged: 6,570.00 mL Sample for nitrates at 9:50 AM on 6/16/22.

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Sampled By: Chris McFarland ,06/16/2022

QA Check By: Daill Adl ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/16/2022 10:33:08 AM
Project: FWGWMP-June 2022 Event
Sampler Name: Danielle Anderson

Location Name: FWGmw-021 **Well Diameter: 2 in** **Initial Depth to Water: 19.87 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: 38,162.082 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 425 mL/min** **Final Draw Down: 0.96 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 42832** **MP50 Controller - 050494**

Test Notes:
CPM 4 12.5:2.5, 35 PSI, 425 mL/min

Weather Conditions:
80°F mostly 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	
6/16/2022 10:33 AM	00:00	7.07 pH	14.72 °C	0.17 mS/cm	8.56 mg/L	13.41 NTU	137.8 mV	19.87 ft	475.00 ml/min
6/16/2022 10:38 AM	05:11	5.42 pH	11.85 °C	0.18 mS/cm	1.56 mg/L	562.28 NTU	95.5 mV	20.71 ft	425.00 ml/min
6/16/2022 10:41 AM	08:11	5.37 pH	11.74 °C	0.17 mS/cm	1.36 mg/L	144.83 NTU	94.4 mV	20.71 ft	425.00 ml/min
6/16/2022 10:44 AM	11:11	5.38 pH	11.56 °C	0.17 mS/cm	1.47 mg/L	75.21 NTU	99.6 mV	20.78 ft	425.00 ml/min
6/16/2022 10:47 AM	14:11	5.37 pH	11.55 °C	0.17 mS/cm	1.29 mg/L	61.05 NTU	102.6 mV	20.78 ft	425.00 ml/min
6/16/2022 10:50 AM	17:11	5.38 pH	11.62 °C	0.17 mS/cm	1.20 mg/L	33.04 NTU	104.3 mV	20.83 ft	425.00 ml/min
6/16/2022 10:53 AM	20:11	5.38 pH	11.93 °C	0.17 mS/cm	1.16 mg/L	43.31 NTU	105.3 mV	20.83 ft	425.00 ml/min
6/16/2022 10:56 AM	23:11	5.40 pH	11.93 °C	0.17 mS/cm	1.07 mg/L	37.52 NTU	104.4 mV	20.83 ft	425.00 ml/min
6/16/2022 10:59 AM	26:11	5.39 pH	11.62 °C	0.17 mS/cm	1.01 mg/L	31.46 NTU	105.7 mV	20.83 ft	425.00 ml/min
6/16/2022 11:02 AM	29:11	5.39 pH	11.81 °C	0.17 mS/cm	0.93 mg/L	31.37 NTU	106.1 mV	20.83 ft	425.00 ml/min
6/16/2022 11:05 AM	32:11	5.40 pH	11.81 °C	0.17 mS/cm	0.91 mg/L	27.43 NTU	106.9 mV	20.83 ft	425.00 ml/min
6/16/2022 11:08 AM	35:11	5.42 pH	11.60 °C	0.17 mS/cm	0.89 mg/L	20.18 NTU	107.6 mV	20.83 ft	425.00 ml/min

6/16/2022 11:11 AM	38:11	5.44 pH	11.82 °C	0.17 mS/cm	0.88 mg/L	20.29 NTU	107.1 mV	20.83 ft	425.00 ml/min
6/16/2022 11:14 AM	41:11	5.45 pH	11.70 °C	0.17 mS/cm	0.85 mg/L	21.42 NTU	106.8 mV	20.83 ft	425.00 ml/min
6/16/2022 11:17 AM	44:11	5.46 pH	11.75 °C	0.17 mS/cm	0.83 mg/L	17.37 NTU	106.6 mV	20.83 ft	425.00 ml/min
6/16/2022 11:20 AM	47:11	5.49 pH	11.70 °C	0.17 mS/cm	0.81 mg/L	17.38 NTU	105.7 mV	20.83 ft	425.00 ml/min
6/16/2022 11:23 AM	50:11	5.51 pH	11.70 °C	0.17 mS/cm	0.79 mg/L	13.63 NTU	105.1 mV	20.83 ft	425.00 ml/min
6/16/2022 11:26 AM	53:11	5.54 pH	11.80 °C	0.17 mS/cm	0.77 mg/L	17.99 NTU	103.7 mV	20.83 ft	425.00 ml/min
6/16/2022 11:29 AM	56:11	5.56 pH	11.77 °C	0.17 mS/cm	0.77 mg/L	17.09 NTU	102.9 mV	20.83 ft	425.00 ml/min
6/16/2022 11:32 AM	59:11	5.59 pH	11.87 °C	0.17 mS/cm	0.77 mg/L	17.77 NTU	102.2 mV	20.83 ft	425.00 ml/min
6/16/2022 11:35 AM	01:02:11	5.62 pH	11.83 °C	0.17 mS/cm	0.75 mg/L	16.05 NTU	100.5 mV	20.83 ft	425.00 ml/min
6/16/2022 11:38 AM	01:05:11	5.64 pH	11.74 °C	0.17 mS/cm	0.73 mg/L	16.18 NTU	99.4 mV	20.83 ft	425.00 ml/min
6/16/2022 11:41 AM	01:08:11	5.67 pH	11.70 °C	0.17 mS/cm	0.73 mg/L	18.88 NTU	98.3 mV	20.83 ft	425.00 ml/min
6/16/2022 11:44 AM	01:11:11	5.69 pH	11.87 °C	0.17 mS/cm	0.72 mg/L	11.72 NTU	97.7 mV	20.83 ft	425.00 ml/min
6/16/2022 11:47 AM	01:14:11	5.72 pH	11.89 °C	0.17 mS/cm	0.70 mg/L	14.79 NTU	95.9 mV	20.83 ft	425.00 ml/min
6/16/2022 11:50 AM	01:17:11	5.74 pH	11.86 °C	0.17 mS/cm	0.69 mg/L	11.68 NTU	94.6 mV	20.83 ft	425.00 ml/min
6/16/2022 11:53 AM	01:20:11	5.78 pH	11.94 °C	0.17 mS/cm	0.95 mg/L	7.56 NTU	91.9 mV	20.83 ft	425.00 ml/min
6/16/2022 11:56 AM	01:23:11	5.81 pH	11.85 °C	0.17 mS/cm	0.68 mg/L	9.00 NTU	90.8 mV	20.83 ft	425.00 ml/min
6/16/2022 11:59 AM	01:26:11	5.82 pH	11.80 °C	0.17 mS/cm	0.66 mg/L	10.30 NTU	90.6 mV	20.83 ft	425.00 ml/min
6/16/2022 12:02 AM	01:29:11	5.86 pH	11.89 °C	0.17 mS/cm	0.65 mg/L	8.20 NTU	88.9 mV	20.83 ft	425.00 ml/min

Samples

Sample ID:	Description:
FWGmw-021-226061-GW	Begin low flow purge at 10:33 AM (PSI 35 CPM 4/12.5/2.5) Stagnant water volume: 2,112.65 mL Stagnant water volume removed at 10:38 AM (05:11) Stable at 12:02 PM (01:29:11) Water is orange, turbid, and odorless throughout pre-purge became clear and colorless throughout purge Measured total volume purged: 34,000 mL Sample for explosives at 1202 on 06/16/2022.

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Sampled By: Daill Ad ,06/16/2022

QA Check By: Catherine Lee ,07/12/2022

Low-Flow Test Report:

Test Date / Time: 6/28/2022 8:58:04 AM
Project: FWGWMP-June 2022 Sampling Event
Sampler Name: Mitchell DeBortoli

Location Name: FWGmw-023 **Well Diameter: 2 in** **Total Depth: 216.2 ft** **Initial Depth to Water: 116.79 ft**	**Pump Type: QED Well Wizard Bladder Pump** **Tubing Type: PTFE** **Tubing Inner Diameter: 0.375 in** **Tubing Length: 220 ft** **Pump Intake From TOC: 220 ft** **Estimated Total Volume Pumped: 14,106.667 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 400 mL/min** **Final Draw Down: 0.06 ft**	**Instrument Used:** **Water level: 09872** **MP50: 050494** **Aquatroll 600: 518813**

Test Notes:
CPM 1 20:40, PSI 110, 400 mL/min

Weather Conditions:
60°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	+/- 0.3	
6/28/2022 8:58 AM	00:00	7.36 pH	15.72 °C	0.50 mS/cm	8.80 mg/L	0.77 NTU	235.4 mV	116.85 ft	400.00 mL/min
6/28/2022 9:10 AM	12:35	6.90 pH	11.19 °C	0.53 mS/cm	0.82 mg/L	0.61 NTU	-101.2 mV	116.85 ft	400.00 mL/min
6/28/2022 9:15 AM	17:16	6.89 pH	11.33 °C	0.53 mS/cm	0.70 mg/L	4.14 NTU	-88.9 mV	116.85 ft	400.00 mL/min
6/28/2022 9:18 AM	20:16	6.90 pH	11.31 °C	0.52 mS/cm	0.71 mg/L	4.98 NTU	-87.5 mV	116.85 ft	400.00 mL/min
6/28/2022 9:21 AM	23:16	6.90 pH	11.28 °C	0.51 mS/cm	0.66 mg/L	8.74 NTU	-86.1 mV	116.85 ft	400.00 mL/min
6/28/2022 9:24 AM	26:16	6.91 pH	11.20 °C	0.51 mS/cm	0.67 mg/L	10.97 NTU	-84.3 mV	116.85 ft	400.00 mL/min
6/28/2022 9:27 AM	29:16	6.92 pH	11.07 °C	0.60 mS/cm	0.63 mg/L	0.00 NTU	-83.8 mV	116.85 ft	400.00 mL/min
6/28/2022 9:30 AM	32:16	6.93 pH	11.05 °C	0.60 mS/cm	0.50 mg/L	0.00 NTU	-83.6 mV	116.85 ft	400.00 mL/min
6/28/2022 9:33 AM	35:16	6.94 pH	11.08 °C	0.60 mS/cm	0.49 mg/L	0.00 NTU	-83.6 mV	116.85 ft	400.00 mL/min

Samples

Sample ID:	Description:
FWGmw-023-220601-GW	Begin prepurge at 8:58 AM Stagnant water volume: 5,700 mL Stagnant water removed at 9:15 AM Stable at 9:33 AM Water is clear colorless and odorless Measured total vol purged: 15,200 mL Sample for explosives at 9:33 AM

Created using VuSitu from In-Situ, Inc.

Completed By Mitchell DeBortoli
06/28/2022

QA Check By Catherine Lee
09/01/2022

Low-Flow Test Report:

Test Date / Time: 6/16/2022 12:42:09 PM
Project: FWGWMP-June 2022 Event
Sampler Name: Danielle Anderson

Location Name: FWGmw-024 **Well Diameter: 2 in** **Initial Depth to Water: 12.89 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: 17,810 mL** **Flow Cell Volume: 130 mL** **Final Flow Rate: 450 mL/min** **Final Draw Down: 0.15 ft**	**Instrument Used:** **Aqua TROLL 600 - 513266** **Water Level - 42832** **MP50 Controller - 050494**

Test Notes:
CPM4 12.5:2.5, 30 PSI, 450 mL/min

Weather Conditions:
89°F partly cloudy, 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	
6/16/2022 12:42 PM	00:00	6.95 pH	15.40 °C	0.40 mS/cm	4.90 mg/L	41.01 NTU	90.9 mV	12.89 ft	600.00 ml/min
6/16/2022 12:46 PM	04:13	6.70 pH	12.35 °C	0.46 mS/cm	1.19 mg/L	2,316.5 NTU	31.8 mV	12.89 ft	600.00 ml/min
6/16/2022 12:47 PM	05:17	6.58 pH	12.24 °C	0.46 mS/cm	0.49 mg/L	1,072.8 NTU	37.6 mV	13.04 ft	450.00 ml/min
6/16/2022 12:50 PM	08:17	6.46 pH	12.39 °C	0.46 mS/cm	0.22 mg/L	84.62 NTU	26.0 mV	13.04 ft	450.00 ml/min
6/16/2022 12:53 PM	11:17	6.45 pH	12.46 °C	0.47 mS/cm	0.17 mg/L	88.02 NTU	18.3 mV	13.04 ft	450.00 ml/min
6/16/2022 12:56 PM	14:17	6.47 pH	12.50 °C	0.47 mS/cm	0.12 mg/L	51.48 NTU	12.9 mV	13.04 ft	450.00 ml/min
6/16/2022 12:59 PM	17:17	6.52 pH	12.67 °C	0.47 mS/cm	0.28 mg/L	40.34 NTU	13.1 mV	13.04 ft	450.00 ml/min
6/16/2022 1:02 PM	20:17	6.55 pH	12.48 °C	0.47 mS/cm	0.13 mg/L	36.83 NTU	4.6 mV	13.04 ft	450.00 ml/min
6/16/2022 1:04 PM	22:49	6.58 pH	12.41 °C	0.47 mS/cm	0.12 mg/L	25.65 NTU	1.5 mV	13.04 ft	450.00 ml/min
6/16/2022 1:07 PM	25:49	6.60 pH	12.33 °C	0.47 mS/cm	0.12 mg/L	24.99 NTU	-2.2 mV	13.04 ft	450.00 ml/min
6/16/2022 1:10 PM	28:49	6.67 pH	12.44 °C	0.48 mS/cm	0.11 mg/L	19.29 NTU	-6.1 mV	13.04 ft	450.00 ml/min

6/16/2022 1:13 PM	31:49	6.70 pH	12.32 °C	0.48 mS/cm	0.11 mg/L	13.84 NTU	-9.0 mV	13.04 ft	450.00 ml/min
6/16/2022 1:16 PM	34:49	6.75 pH	12.43 °C	0.48 mS/cm	0.11 mg/L	10.97 NTU	-12.7 mV	13.04 ft	450.00 ml/min
6/16/2022 1:19 PM	37:49	6.78 pH	12.30 °C	0.48 mS/cm	0.10 mg/L	7.99 NTU	-16.1 mV	13.04 ft	450.00 ml/min

Samples

Sample ID:	Description:
FWGmw-024-220601-GW	Begin low flow purge at 12:41 PM (PSI 30/ CPM 4/12.5/2.5) Stagnant water volume: 2,025.48 mL reading at 12:46 PM (04:13) was taken before pre-purge was complete Stagnant water volume removed at 12:47 PM (05:17) Aquatroll disconnected at 1:02 PM (20:17) and reconnected at 1:04 PM (22:49) Stable at 1:19 PM (37:49) Water is orange, turbid, and odorless initially but became clear and colorless throughout purge Measured total volume purged: 20,000 mL Sample for explosives at 1:19 PM on 06/16/2022.

Created using VuSitu from In-Situ, Inc.

Sampled By: ,06/16/2022

QA Check By: ,07/12/2022

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B.3 Chains of Custody

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Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP- 9 -TA
Date: 6/14/22

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)
Chris McFarland

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-089-220601-GW			6/14/22	1200	W	2		2	
	LL1mw-089-220602-GW	CM 6/14/22		↓	↓	W	2		2	
		CM		6/14/22						

280-163489 Chain of Custody

Relinquished by	Date	Received by	Date
Signature: Ryan Lacher	6/14/2022	Signature: Jerry Lee	6/15/22
Printed Name: Leidos	Time: 1700	Printed Name: ETA/DEN	Time: 950
Company		Company	
Relinquished by	Date	Received by	Date
Signature		Signature	
Printed Name	Time	Printed Name	Time
Company		Company	

Notes: Total Number of Containers: 4

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

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

5708 4889 7674

0.2 1212 Ft.1

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: 6/14/22

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)

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-010-220601-GW			6/14/22	1453	W	2		2	

CM 6/14/22
CM 6/14/22
CM 6/14/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2
Signature: Ryan Lawson	6/14/2022	Signature: Jerry Lee	6/15/22	A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: Leidos	Time: 1700	Printed Name: ETA/DEN	Time: 950	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B
Company		Company		
Relinquished by	Date	Received by	Date	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A
Signature		Signature		
Printed Name	Time	Printed Name	Time	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Company		Company		

Notes:

Shipment Method: Courier

5708 4889 7674

0 2 1R12 CF-0.1

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

280-163487 Chain of Custody

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-193-TA
Date: ~~5/15/22~~ CM 6/15/22 6/15/2022

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)
Chris McFadden ~~5/15/22~~ CM 6/15/22

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-064-220601-GW	CM		~~5/19/22~~ 6/15/22	0:50	W	2		2	

CM 6/15/22

Relinquished by: Ryan Laurie — Date: 6/15/2022 — Time: 1700
Received by: Josh Gystrom — Date: 6/16/22 — Time: 0945
Relinquished by — Date — Time
Received by — Date — Time

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

Shipment Method: Courier
5708 4889 7663

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos 1.3 1R 12 CF 40.1

White Laboratory Pink Project Manager Yellow Project QAO Goldenrod Field Project Manager

280-163528 Chain of Custody

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP- 194-TA
Date: 6/16/22

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 Andersen

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	VOCs (1)(B)	Nitrate (10)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-018-220601-GW	GW		6/16/22	0904	W		1		1	

DA 6/16/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 1
Signature: Ryan Larsen	6/16/2022 1700	Signature:		A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: Leidos	Time:	Printed Name:	Time:	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B
Company		Company		
Relinquished by	**Date**	**Received by**	**Date**	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A
Signature		Signature		
Printed Name	**Time**	Printed Name	**Time**	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Company		Company		

Shipment Method: Courier

5708 4889 7652

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-195-TA
Date: 6/16/2021

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)
Chris McFarland

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-020-220601-GW			6/16/21	0950	W	~~K~~ ~~Ryu~~ RH 6/16/2021	1		1	
		CM		6/16/21							

CM 6/16/21

Relinquished by: Ryan Lauhala
Signature: Ryan Lauhala
Printed Name
Leidos
Company
Date: 6/16/2021
Time: 1700

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

Notes: Total Number of Containers: 1

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

5708 4889 7652

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-96-TA
Date: 6/16/22

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)
RS Rick Spinnel

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-016-220601-GW	TS 6/16/22		6/16/22	1022	W	2		2	

RS 6/16/22

Relinquished by: RS
Signature: Ryan Launch
Printed Name: Ryan Launch
Company: Leidos
Date: 6/16/2022
Time: 1700

Received by
Signature
Printed Name
Company

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company

Date
Time

Date
Time

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

5708 4889 7652

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-197-TA
Date: 6/16/22

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:

Laboratory No.	Sample ID	Site Type	Depth	Date	Time	Matrix	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-021-220601-GW	DA 6/16/22		6/16/22	1202	W	2		2	

DA 6/16/22

Relinquished by	Date	Received by	Date
Signature: Ryan Laurich	6/16/2022	Signature	
Printed Name: Leidos	Time: 1700	Printed Name	Time
Company		Company	
Relinquished by	Date	Received by	Date
Signature		Signature	
Printed Name	Time	Printed Name	Time
Company		Company	

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

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

5708 4889 7652

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-198-TA
Date: 06/16/22

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	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-024-220601-GW			06/16/22	1319	W	2		2	

DA 6/16/22

Relinquished by: Tyler Laurich
Date: 6/16/2022
Time: 1700
Signature
Printed Name
Leidos
Company

Received by
Date
Signature
Time
Printed Name
Company

Relinquished by
Date
Signature
Time
Printed Name
Company

Received by
Date
Signature
Time
Printed Name
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

5708 4889 7652

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-199-TA
Date: 6/16/22

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)
RSmal RichSpramel

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-015-220601-GW	~~[illegible]~~		6/16/22	1427	W	2		2	

Relinquished by: Signature: Ryan Langla; Printed Name: Leidos; Company: Date: 6/16/2022; Time: 1700

Received by: Signature: ; Printed Name: ; Company: Date: ; Time:

Relinquished by: Signature: ; Printed Name: ; Company: Date: ; Time:

Received by: Signature: ; Printed Name: ; Company: Date: ; Time:

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

5708 4889 7652

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-280-TA
Date: 6/16/22

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)
Chris McFarland

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-004-220601-GW			6/16/22	1430	W	2		2	
	SCFmw-004-220602-GW			6/16/22	1430	W	2		2	

CM 6/16/22

CM 6/16/22

Relinquished by
Signature: Ryan Lawrence
Printed Name: Leidos
Company:
Date: 6/16/2022
Time: 1700

Received by
Signature:
Printed Name:
Company:
Date:
Time:

Relinquished by
Signature:
Printed Name:
Company:
Date:
Time:

Received by
Signature:
Printed Name:
Company:
Date:
Time:

Notes: Total Number of Containers: 4

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

1. SW 8260B
2. SW 8270D
3. SW 8270D SIM
4. SW 8082A
5. SW 8081B
6. SW 8330
7. SW 6010/6020/7470
8. SW 9012B
9. SW 9034
10. SW 9056/9056A
11. SW 6860
12. EPA 353.2
13. SW 7196
14. SM2320B

Notes:

Shipment Method: Courier

5708 4889 7652
5708 4889 7641

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

Page 1 of 1

COC No.: RVAAP-201 -TA

Date: 6/16/21

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)
Chris McFerland

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-087-220601-GW			6/16/21	1058	W	2		2	
	LL1mw-087-220601-GWMSD					W	8		8	extra volume for MS/MSD
	LL1mw-087-220602-GW					W	2		2	

CM 6/16/21

CM 6/16/21

Relinquished by	Date	Received by	Date
Signature: Ryan Laurich	6/16/2021	Signature	
Printed Name: Leidos	Time: 1700	Printed Name	Time
Company		Company	
Relinquished by	Date	Received by	Date
Signature		Signature	
Printed Name	Time	Printed Name	Time
Company		Company	

Notes: Total Number of Containers: 12

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

5708 4889 7641

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Leidos

White: Laboratory Pink: Project Manager Yellow: Project QAC Goldenrod: Field Project Manager

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-202 -TA
Date: 6/17/22

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	Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-011-220601-GW	DA 6/17/22		06/17/22	1144	W	2		2	

DA 6/17/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2
Signature: RSpr	6/17/22	Signature		A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C
Printed Name: Rich Spring	Time 1530	Printed Name	Time	1. SW 8260B 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B
Company: Leidos		Company		
Relinquished by	Date	Received by	Date	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A
Signature		Signature		
Printed Name	Time	Printed Name	Time	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B
Company		Company		

Notes:

Shipment Method: Courier
5708 4889 7549

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-203-TA
Date: 6/17/22

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)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Laboratory No	Sample ID	Sample Type	Depth	Date	Time	Matrix	Requested Parameters: Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-012-220601-GW	DA 6/17/22		06/17/22	1217	W	2		2	

DA 6/17/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2	Shipment Method: Courier
Signature: RSnd	6/17/22	Signature:		A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	5708488 7549
Printed Name: Rich Spring	Time: 1530	Printed Name:	Time:	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	Date	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/8056A	Temperature Blank
Signature:		Signature:			
Printed Name:	Time	Printed Name:	Time	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
Company:		Company:			

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-204-TA
Date: 6/17/22

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)
Chris McFarland

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)	Sulfide (9)(F)	Nitrate/Nitrite/Sulfate (10)(A)	Alkalinity (14)(A)	TOC (13)(E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
1		LL1mw-083-220601-GW	CM 6/17/22		6/17/22	1405	W	2	1	1		1		5	

CM 6/17/22

Relinquished by	Date	Received by	Date
RSpr	6/17/22		
Signature: Rich Spring	Time: 1530	Signature	Time
Printed Name		Printed Name	
Leidos			
Company		Company	
Relinquished by	Date	Received by	Date
Signature	Time	Signature	Time
Printed Name		Printed Name	
Company		Company	

Notes: Total Number of Containers: 5

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
E. NaOH/Zn Acetate, pH>9, Cool 4C

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
51084889 7549

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-205-TA
Date: 6/17/22

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-063-220601-GW	DA 6/17/22		06/17/22	1440	W	2		2	

DA 6/17/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 2	Shipment Method:	Courier
Signature: RSpr	6/17/22	Signature		A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	52084889	7549
Printed Name: Rich Spraul	Time 1530	Printed Name	Time	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B		
Leidos Company		Company				
Relinquished by	Date	Received by	Date	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A	Temperature Blank	
Signature		Signature				
Printed Name	Time	Printed Name	Time	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Lab: 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

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-206-TA
Date: 6/17/2021

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)
Chris McFarland

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-084-220601-GW			6/17/2021	1106	W	2	1	1		1		5	
	LL1mw-084-220601-GWMSD			"	"	W		2	2				4	extra volume for MS/MSD
	LL1mw-084-220602-GW			"	"	W	2	1	1				4	

CM 6/17/2021

Relinquished by	Date	Received by	Date
RSpr	6/17/22		
Signature		Signature	
Rich Sprond	Time 1530		Time
Printed Name		Printed Name	
Leidos			
Company		Company	
Relinquished by	Date	Received by	Date
Signature		Signature	
	Time		Time
Printed Name		Printed Name	
Company		Company	

Notes: Total Number of Containers: 13

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C
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
5708 4889 7550

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

CM 6/21/22

Page 1 of 1

COC No.: RVAAP-107-TA

Date: 6/21/22

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) [signature] (Printed Name) Chris McCoford

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-009-220601-GW	CM 6/21/22		6/21/22	1035	W	2	1	1		1		5	

CM 6/21/22

Relinquished by: [signature] Signature; Ruth Sprinzl Printed Name; Leidos Company; Date 6/21/22; Time 1530

Received by: Signature; Printed Name; Company; Date; Time

Relinquished by: Signature; Printed Name; Company; Date; Time

Received by: Signature; Printed Name; Company; Date; Time

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

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
5708 4889 7560

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-208-TA

Date: 6/21/22

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) [illegible] (Printed Name) [illegible]

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-006-220601-GW			6/21/21	1210	W	2	1	1		1		5	
		CN 6/21/22												
		CN 6/21/22												

Relinquished by: RSL
Signature
Rich Spraul
Printed Name
Leidos
Company
Date: 6/21/22
Time

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
5708488975 60

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-209-TA
Date: 6/21/22

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) [signature] (Printed Name) Michael DeBolt

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-020-220601-GW	Rsampler		6/21/22	11 00	W	2		2	

RS 6/21/22

Relinquished by: RS
Signature: [signature]
Printed Name: Rich Sprouel
Company: Leidos
Date: 6/21/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
5708 4889 7560

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-210-TA
Date: 6/21/22

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)

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-021-220601-GW	RS 6/21/22		6/21/22	1236	W	2		2	

RS 6/21/22

Relinquished by: RS
Signature
Rich Spriml
Printed Name
Leidos
Company
Date: 6/21/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
5708 4889 7560

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-211-TA
Date: 6/21/22

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)
RS Rich Sprinzl

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-RB0621 2022	~~RS 6/21/22~~		6/21/22	1500	W	2	1	1		1		5	

RS 6/21/22

Relinquished by: RS
Signature
Rich Sprinzl
Printed Name
Leidos
Company
Date: 6/21/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
5708 4889 7560

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-212 -TA (1 of 5)
Date: 6/22/22

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) [signature] (Printed Name) Mitchell DeBord

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-016-220601-GW	~~MS/MSD~~		6/22/22	1157	W	2		2	

RS 6/22/22

Relinquished by: [signature]
Signature
Rich Sprinkl
Printed Name
Leidos
Company
Date: 6/22/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
5708 4889 7571

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-213-TA (2 of 5)
Date: 6/22/22

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) Jonathan Rokicki

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-018-220601-GW			6/22/22	1248	W	2	1	1		1		5	

RS 6/22/22

RS 6/22/22

Relinquished by	Date	Received by	Date
Signature: RS	6/22/22	Signature	
Printed Name: Rich Spring	Time: 1530	Printed Name	Time
Company: Leidos		Company	
Relinquished by	Date	Received by	Date
Signature		Signature	
Printed Name	Time	Printed Name	Time
Company		Company	

Notes: Total Number of Containers: 5

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

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
5708 4889 7571

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-214 -TA (3 of 5)
Date: 6/22/22

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) Mitchell DeBoard

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-004-220601-GW			6/22/22	1417	W	2		2	
	FWGmw-004-220601-GWMSD			6/22/22	1417	W	4		4	extra volume for MS/MSD
	FWGmw-004-220602-GW			6/22/22	1412	W	2		2	

RS 6/22/22

RS 6/22/22

Relinquished by: RS
Signature: Rich Sprinzl
Printed Name: Leidos
Company: Date: 6/22/22 Time: 1530

Received by: Signature: Printed Name: Company: Date: Time:

Relinquished by: Signature: Printed Name: Company: Date: Time:

Received by: Signature: Printed Name: Company: Date: Time:

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
5708 4889 7571

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-215-TA (4 of 5)
Date: 6/22/22

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)
Chris McFarland

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-017-220601-GW			6/22/22	1438	W	2		2	
		CM		6/22/22						
		CM		6/22/22						

Relinquished by: Rich Sprunk
Signature
Printed Name
Leidos
Company
Date: 6/22/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
5708 4889 7582

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-216-TA (5 of 5)

Date: 6/22/22

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): [signature] (Printed Name): Chris McFarland

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-014-220601-GW			6/22/22	1455	W	2		2	

CM 6/22/22

CM 6/22/22

Relinquished by	Date	Received by	Date
Signature: [signature]	6/22/22	Signature	
Printed Name: Rich Sprinkel	Time: 1530	Printed Name	Time
Company: Leidos		Company	
Relinquished by	Date	Received by	Date
Signature		Signature	
Printed Name	Time	Printed Name	Time
Company		Company	

Notes: Total Number of Containers: 2

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

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 5708 4889 7582

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

COC No.: RVAAP-217-TA 1 of 5

Page 1 of 1

Date: 6/23/22

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)
Mitchell DeBartolo

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-003-220601-GW			6/23/22	0840	W	3	2	2	2		2	1	1		13	
	DET-003-220601-GWMSD			6/23/22	0840	W	4	4	4	4	4		2	2		24	Extra Volume for MS/MSD see note
	DET-003-220602-GW			6/23/22	0840	W	3	2	2	2			1	1		11	
	~~FWGTB-21040-TB~~ RS 6/23/22 FWGTB220601-TB001			6/23/22	0840	W	2									2	
																	NOTE: If Vol an issue min 8 T-L for SVOC/pest/PCB

RS 6/23/22

RS 6/23/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 50
RS	6/23/22	Signature		A. Cool, 4C
Signature				B. HCl, pH<2, Cool, 4C
Rich Sprnnd	Time	Printed Name	Time	C. HNO3, pH<2, Cool, 4C
Printed Name	1530			D. NaOH, pH>12, Cool 4C
Leidos		Company		1. SW 8260B Notes:
Company				2. SW 8270D
				3. SW 8270D SIM
				4. SW 8082A
				5. SW 8081B
Relinquished by	Date	Received by	Date	6. SW 8330
				7. SW 6010/6020/7470
Signature		Signature		8. SW 9012B
				9. SW 9034
	Time		Time	10. SW 9056/9056A
Printed Name		Printed Name		11. SW 6860
				12. EPA 353.2
Company		Company		13. SW 7196
				14. SM2320B

Shipment Method: Courier
5708 4889 7593
5708 4889 7608
5708 4889 7619
5708 4889 7630

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-218 -TA 2 of 5
Date: 6/23/22

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)

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-081-220601-GW	RS 6/23/22		6/23/22	1932	W	2		2	

RS 6/23/22

Relinquished by: Signature; Printed Name: Rich Spnazl; Company: Leidos — Date: 6/23/22 — Time: 1630

Received by: Signature; Printed Name; Company — Date; Time

Relinquished by: Signature; Printed Name; Company — Date; Time

Received by: Signature; Printed Name; Company — Date; Time

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 3081B
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
5208 4889 7620

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-49-TA 3 OF 5
Date: 06/23/2022

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) Jonathan Roberelli

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-080-220601-GW	~~RS 6/23/22~~		6/23/22	1250	W	2	1	1		1		5	

RS 6/23/22

Relinquished by	Date	Received by	Date	Time
Signature: Rich Sprind	6/23/22	Signature		
Printed Name: Leidos	Time: 1530	Printed Name		
Company		Company		
Relinquished by	Date	Received by	Date	Time
Signature		Signature		
Printed Name	Time	Printed Name		
Company		Company		

Notes: Total Number of Containers: 5

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

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
5708 4889 7620

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-220-TA (4 of 5)
Date: 06/23/22

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)
Jonathan Rukicki

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 (8)(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
	LL2mw-059-220601-GW	~~6/23/22~~		6/23/22	1409	W	2	1	1		1		5	

RS 6/23/22

Relinquished by: Rich Sprand
Signature: Rich Sprand
Printed Name:
Company: Leidos
Date: 6/23/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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

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
570848897620

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-221 -TA (5 of 5)
Date: 06/23/22

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)
Chris McFeland — Chris McFeland

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-004-220601-GW			6/03/22	0923	W	3	2	2	2		2	1							1			13	
	FWGTB-21040 TB			6/23/22		W	2	2	2														2	trip blank tied to FWGWTB-220601-TB001

CM 6/23/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 15	Shipment Method: Courier
Signature: RSmd	6/23/22	Signature		A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	570848897630
Printed Name: Rich Spring	Time: 1530	Printed Name	Time	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	Date	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A	Temperature Blank
Signature		Signature			
Printed Name	Time	Printed Name	Time	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Lab: Leidos 8866 Commons Drive Twinsburg, OH 44087 (330) 405-5802
Company		Company			

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-222-TA (1 of 6)
Date: 06/24/22

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): Carter James (Printed Name)

Laboratory Name: Test America - Canton
Address: 4101 Shuffel St NW
North Canton, OH 44720
Phone: (330) 497-9396
Fax:
Contact:

Requested Parameters

Laboratory No.	Sample ID	Site Type	Depth	Date	Time	Matrix	Expanded Explosives (6)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL1mw-086-220601-GW			06/24/22	1323	W	2		2	
		CJ 6/24								~~extra volume for MS/MSD~~ RS 6/25/22
			CJ 6/24							
							CJ 6/24			

Relinquished by: Rich Sprinel
Signature:
Printed Name:
Company: Leidos
Date: 6/24/22
Time: 1530

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

Relinquished by:
Signature:
Printed Name:
Company:
Date:
Time:

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

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
274751700612

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-223-TA (2 of 6)
Date: 6/24/22

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) Jonathan Rokicki

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-082-220601-GW	~~MS/MSD~~		6/24/22	1400	W	2		2	

RS 6/24/22

Relinquished by: RS
Signature: RichSprinzl
Printed Name:
Leidos
Company:
Date: 6/24/22
Time: 1530

Received by:
Signature:
Printed Name:
Company:

Date:
Time:

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

Shipment Method: Courier
2747577006 12

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company

Date
Time

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-24-TA 3 of 6
Date: 06/24/22

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) Jonathan Rokicki

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-237-220601-GW	[illegible]		6/21/22	0953	W	2		2	

Relinquished by: RSingh
Signature
Rich Sprinzl
Printed Name
Leidos
Company
Date: 6/24/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
2747577006 12

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-225 -TA (4 of 6)
Date: 6/24/22

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) Jonathan Rotsch

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-241-220601-GW	MW	MW	6/24/22	1510	W	2		2	

25 6/24/22

Relinquished by: Rich Spinel
Signature:
Printed Name: Rich Spinel
Company: Leidos
Date: 6/24/22
Time: 1530
Received by:
Signature:
Printed Name:
Company:
Date:
Time:

Relinquished by:
Signature:
Printed Name:
Company:
Date:
Time:
Received by:
Signature:
Printed Name:
Company:
Date:
Time:

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
274957700612

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-226-TA (5 of 6)
Date: 6/24/22

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)
Mitch Orsborn

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-239-220601-GW	NA	NA	6/24/22	1140	W	2	1	1		1		5	

RS 6/24/22

Relinquished by: RSprund
Signature
Rich Sprund
Printed Name
Leidos
Company
Date: 6/24/22
Time: 1530

Received by
Signature
Printed Name
Company

Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company

Date
Time

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
274757700612

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-~~227~~-TA (6/6)
Date: 6/29/22

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)
Mitchell DeBerardo

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-238-220601-GW	NA	NA	6/24/22	1900	W	2	1	1		1		5	

RS

Relinquished by: RS
Signature
Rich Sprinzl
Printed Name
Leidos
Company
Date: 6/24/22
Time: 1530

Received by
Signature
Printed Name
Company

Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company

Date
Time

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
2747577 00612

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-210-TA (1 of 6)
Date: 6/27/22

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)
Mitchell DeBortoli

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-245-220601-GW	NA	NA	6/27/22	1208	W	2		2	

RS 6/27/22

Relinquished by: RS
Signature
Printed Name: R. McSprad
Company: Leidos
Date: 6/27/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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 8860
12. EPA 353.2
13. SW 7196
14. SM2320B

Shipment Method: Courier
2748463134 00

Temperature Blank
Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-229-TA (2 of 6)
Date: 06/27/22

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)
Jonathan Rokicki

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	Nitrate (10)(A)	AMMONIA 15 (E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-246-220601-GW	NA	NA	6/27/22	1250	W	1	1		2	

RS 6/27/22

Relinquished by: RS
Signature: Rick Sprouse
Printed Name:
Company: Leidos
Date: 6/27/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
274846313400

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-230-TA (3 of 6)
Date: 06/27/22

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) Carter Jewel (Printed Name) Carter Jewel

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-244-220601-GW	NA	NA	6/27/22	1427	W	1	1		2	

CJ 6/27

Relinquished by: RSingl
Signature: RichSprinzl
Printed Name:
Company: Leidos
Date: 6/27/22
Time: 1530

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

Relinquished by:
Signature:
Printed Name:
Company:
Date:
Time:

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

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
274 8463134 00

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-231 -TA (4 of 6)
Date: 6/27/22

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)
Mitchell DeSorbo

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-245-220601-GW	NA	NA	6/29/22	1508	W	1	1		2	

RS 6/27/22

Relinquished by: Rich Spring
Signature
Printed Name: Rich Spring
Company: Leidos
Date: 6/27/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
274846313400

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-23L-TA (5 of 6)
Date: 06/27/22

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) Jonathan Brokaw

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-185-220601-GW	NA	NA	6/27/22	1445	W	1	1		2	
	LL12mw-185-220601-GWMSD	NA	NA	6/27/22	1445	W		2		2	
	LL12mw-185-220602-GW	NA	NA	6/27/22	1445	W	1	1		2	

RS 6/27/22

Relinquished by	Date	Received by	Date
RS	6/27/22		
Signature: Rich Sprinzl	Time: 1530	Signature	Time
Printed Name		Printed Name	
Leidos			
Company		Company	
Relinquished by	Date	Received by	Date
Signature		Signature	Time
Printed Name		Printed Name	
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

Shipment Method: Courier
2748463134 00

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-233-TA (6 of 6)
Date: 6/27/22

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)
Rich Sprinzl

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	Nitrate (10)(A)	AMMONIA 15 (E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-RB[redacted]2022	NA	NA	6/27/22	1520	W	1	1		2	Associated with LL12mw-248

RS 6/27/22

Relinquished by: Rich Sprinzl
Signature
Printed Name
Leidos
Company
Date: 6/27/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
274846313400

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-734-TA (1 of 8)
Date: 06/28/22

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)
Jonathan Rokicki

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	Nitrate (10)(A)	AMMONIA 15 (E)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	LL12mw-187-220601-GW	N/A	N/A	6/28/22	0915	W	1	1		2	

RS 6/28/22

Relinquished by: Rich Sprinzl
Signature: Rich Sprinzl
Printed Name:
Leidos
Company:
Date: 6/28/22
Time: 1530

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

Relinquished by:
Signature:
Printed Name:
Company:
Date:
Time:

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

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
8172530566 83

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-~~235~~-TA (2 of 8)
Date: 6/28/22

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)

023 Mitchell DeBonzolo

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	Explosives (8)(A)	Temperature Blank	Total Number of Containers	OBSERVATIONS, COMMENTS SPECIAL INSTRUCTIONS
	FWGmw-021-220601-GW	NA	NA	6/28/22	0932	W	2		2	

Requested Parameters

Relinquished by: Rich Sprinzl
Signature: RSprinzl
Printed Name: Rich Sprinzl
Company: Leidos
Date: 6/28/22
Time: 1530

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

Relinquished by:
Signature:
Printed Name:
Company:
Date:
Time:

Received by:
Signature:
Printed Name:
Company:
Date:
Time:

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
8172534506683

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-236-TA (3 of 8)
Date: 6/28/22

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) Mitchell DeBaldo

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-003-220601-GW	NA	NA	6/28/22	1047	W	3		3	Carbon tetrachloride only
	~~[illegible]~~	NA	NA	6/28/22	1047	W	2		2	trip blank (TB002)
	FWGTB220601-TB002									

RS 6/28/22

Relinquished by	Date	Received by	Date	Notes: Total Number of Containers: 5	Shipment Method: Courier
RS	6/28/22			A. Cool, 4C B. HCl, pH<2, Cool, 4C C. HNO3, pH<2, Cool, 4C D. NaOH, pH>12, Cool 4C	817253056683
Signature: Richjonzl	Time: 1530	Signature	Time	1. SW 8260B Notes: 2. SW 8270D 3. SW 8270D SIM 4. SW 8082A 5. SW 8081B	
Printed Name		Printed Name			
Leidos					
Company		Company			
Relinquished by	Date	Received by	Date	6. SW 8330 7. SW 6010/6020/7470 8. SW 9012B 9. SW 9034 10. SW 9056/9056A	Temperature Blank
Signature		Signature			
	Time		Time	11. SW 6860 12. EPA 353.2 13. SW 7196 14. SM2320B	Lab:
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

Chain of Custody Record

leidos

Page 1 of 1

COC No.: RVAAP-237-TA (4 of 8)
Date: 6/28/22

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)

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-173-220601-GW			6/28/22	1817	W	2	1	1		1		5	
	FBQmw-173-220602-GW			6/28/22	1817	W		1	1				2	

Relinquished by: Signature; Printed Name: Ruth Spruill; Company: Leidos — Date: 6/28/22 — Time: 1530

Received by: Signature; Printed Name; Company — Date; Time

Relinquished by: Signature; Printed Name; Company — Date; Time

Received by: Signature; Printed Name; Company — Date; Time

Notes: Total Number of Containers: 7

A. Cool, 4C
B. HCl, pH<2, Cool, 4C
C. HNO3, pH<2, Cool, 4C
D. NaOH, pH>12, Cool 4C

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
817253056683

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-238-TA (5 of 8)
Date: 6/28/22

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)
Jonathan Rokicki

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-007-220601-GW	N/A	N/A	6/28/22	1057	W	2		2	

RS 6/28/22

Relinquished by: RS
Signature
Rich Sprinkel
Printed Name
Leidos
Company
Date: 6/28/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
8172 5305 6694

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

leidos

Chain of Custody Record

Page 1 of 1

COC No.: RVAAP-239 -TA (6 of 8)
Date: 06/28/22

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)
Carter Carr Carter Jones

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-174-220601-GW			6/28/22	1212	W	2	1	1		1		5	

Relinquished by: Rich Spriml
Signature: Rich Spriml
Printed Name: Rich Spriml
Company: Leidos
Date: 6/28/22
Time: 1530

Received by
Signature
Printed Name
Company
Date
Time

Relinquished by
Signature
Printed Name
Company
Date
Time

Received by
Signature
Printed Name
Company
Date
Time

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
8725305 6683

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Chain of Custody Record

leidos

Page of 1

COC No.: RVAAP-240 -TA (7 of 8)
Date: 6/28/22

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)
Mitchell DeBoldt

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-175-220601-GW	MW	MW	6/28/22	1324	W	2		2	
	FBQmw-175-220601-GWMSD	↓	↓	6/28/22	1324	W	8		8	extra volume for MS/MSD
	FBQmw-175-220602-GW	↓	↓	6/28/22	1324	W	2		2	

RS 6/28/22

Relinquished by: Signature: Rich Sprinzl
Printed Name: Leidos
Company:
Date: 6/28/22
Time: 1530

Received by: Signature: Printed Name: Company:
Date: Time:

Relinquished by: Signature: Printed Name: Company:
Date: Time:

Received by: Signature: Printed Name: Company:
Date: Time:

Notes: Total Number of Containers: 12

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
81725305 6694

Temperature Blank

Lab:
Leidos
8866 Commons Drive
Twinsburg, OH 44087
(330) 405-5802

Eurofins Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing America

(8 of 8)

Client Information	Sampler: Chris McFarland	Lab PM: Rydberg, Donna R	Carrier Tracking No(s): 8172530567 09	COC No: RVAAP-241-TA 280-120847-33875.1
Client Contact: Bette Premo	Phone:	E-Mail: Donna.Rydberg@et.eurofinsus.com	State of Origin: OHIO	Page: Page 1 of 1
Company: White Water Associates	PWSID:			Job #:
Address: 429 River Lane PO BOX 27	Due Date Requested:			
City: Amasa	TAT Requested (days): STANDARD TAT			
State, Zip: MI, 49903	Compliance Project: Δ Yes X No			
Phone: 973-439-2919(Tel)	PO #: P010216426			
Email: bette.premo@white-water-associates.com	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site: RVAAP FWGW Sampling Event 2021	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	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)		8260B_DOD5 - TCLP Volatile Organic Compounds	8270D_DOD5 - (SOD) 8270D Routine Analyte List	9012B_DOD5 - Cyanide, Total	9034 - Local Method	9040C, 9065A_4SH_DOD5	1010A - Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	N	B	CB	N	N	X	
FWGIDW-220601-WW	6/28/22	1440	C	Water	N	N	X	X	X	X	X	X	9	LEIDOS-FWGW-067 to 69-L

AS 6/28/22

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
RSmf	6/28/22 1530	LEIDOS			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

Eurofins Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing America

(8 of 8)

Client Information	Sampler: Chris McFarland	Lab PM: Rydberg, Donna R	Carrier Tracking No(s): 8172530567 09	COC No: RVAAP-241-TA 280-120847-33875.1
Client Contact: Bette Premo	Phone:	E-Mail: Donna.Rydberg@et.eurofinsus.com	State of Origin: OHIO	Page: Page 1 of 1
Company: White Water Associates	PWSID:			Job #:
Address: 429 River Lane PO BOX 27	Due Date Requested:			
City: Amasa	TAT Requested (days): STANDARD TAT			
State, Zip: MI, 49903	Compliance Project: Δ Yes X No			
Phone: 973-439-2919(Tel)	PO #: P010216426			
Email: bette.premo@white-water-associates.com	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site: RVAAP FWGW Sampling Event 2021	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	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)		8260B_DOD5 - TCLP Volatile Organic Compounds	8270D_DOD5 - (SOD) 8270D Routine Analyte List	9012B_DOD5 - Cyanide, Total	9034 - Local Method	9040C, 9065A_4SH_DOD5	1010A - Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	N	B	CB	N	N	X	
FWGIDW-220601-WW	6/28/22	1440	C	Water	N	N	X	X	X	X	X	X	9	LEIDOS-FWGW-067 to 69-L

AS 6/28/22

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
RSmf	6/28/22 1530	LEIDOS			
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

B.4 Calibration Reports

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Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/14/2022

Sensor	**Conductivity**
Serial Number	672232
Last Calibrated	6/14/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.933
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,940.7 µS/cm
Specific Conductivity	8,147.3 µS/cm

Post Measurement

Actual Conductivity	7,797.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	906254
Last Calibrated	6/8/2022

Calibration Details

Slope	1.029675
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.17 mg/L
Temperature	21.64 °C
Barometric Pressure	853.29 mbar

Sensor	**pH/ORP**
Serial Number	858591
Last Calibrated	6/14/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-22.1 mV
Temperature	23.67 °C

Pre Measurement

pH	7.02 pH
pH mV	-21.8 mV

Post Measurement

pH	7.00 pH
pH mV	-22.0 mV

Slope and Offset 1

Slope	-58.9 mV/pH
Offset	-22.1 mV

ORP

ORP Solution	Quick-Cal
Offset	27.5 mV
Temperature	23.67 °C
Pre Measurement	223.8 mV
Post Measurement	225.5 mV

Sensor	**Turbidity**
Serial Number	920705
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/14/2022

Sensor	**Conductivity**
Serial Number	672232
Last Calibrated	6/14/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.933
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,940.7 µS/cm
Specific Conductivity	8,147.3 µS/cm

Post Measurement

Actual Conductivity	7,797.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	906254
Last Calibrated	6/14/2022

Calibration Details

Slope	1.022939
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.00 mg/L
Pre Measurement	100.80 %Sat
Post Measurement	100.00 %Sat
Temperature	23.60 °C
Barometric Pressure	978.42 mbar

Sensor	**pH/ORP**
Serial Number	858591
Last Calibrated	6/14/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-22.1 mV
Temperature	23.67 °C

Pre Measurement

pH	7.02 pH
pH mV	-21.8 mV

Post Measurement

pH	7.00 pH
pH mV	-22.0 mV

Slope and Offset 1

Slope	-58.9 mV/pH
Offset	-22.1 mV

ORP

ORP Solution	Quick-Cal
Offset	27.5 mV
Temperature	23.67 °C
Pre Measurement	223.8 mV
Post Measurement	225.5 mV

Sensor	**Turbidity**
Serial Number	920705
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/14/2022

Sensor	**Conductivity**
Serial Number	867215
Last Calibrated	6/14/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.959
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,985.8 µS/cm
Specific Conductivity	8,048.6 µS/cm

Post Measurement

Actual Conductivity	7,937.6 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	652241
Last Calibrated	6/8/2022

Calibration Details

Slope	1.035913
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.06 mg/L
Temperature	22.13 °C
Barometric Pressure	853.56 mbar

Sensor	**pH/ORP**
Serial Number	723368
Last Calibrated	6/14/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.3 mV
Temperature	24.59 °C

Pre Measurement

pH	7.03 pH
pH mV	-24.8 mV

Post Measurement

pH	7.00 pH
pH mV	-24.3 mV

Slope and Offset 1

Slope	-59.08 mV/pH
Offset	-24.3 mV

ORP

ORP Solution	Quick-Cal
Offset	27.3 mV
Temperature	24.59 °C
Pre Measurement	223.8 mV
Post Measurement	224.1 mV

Sensor	**Turbidity**
Serial Number	931637
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/14/2022

Sensor	**Conductivity**
Serial Number	867215
Last Calibrated	6/14/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.959
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,985.8 µS/cm
Specific Conductivity	8,048.6 µS/cm

Post Measurement

Actual Conductivity	7,937.6 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	652241
Last Calibrated	6/14/2022

Calibration Details

Slope	1.037744
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.81 mg/L
Pre Measurement	99.81 %Sat
Post Measurement	100.00 %Sat
Temperature	24.11 °C
Barometric Pressure	979.30 mbar

Sensor	**pH/ORP**
Serial Number	723368
Last Calibrated	6/14/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.3 mV
Temperature	24.59 °C

Pre Measurement

pH	7.03 pH
pH mV	-24.8 mV

Post Measurement

pH	7.00 pH
pH mV	-24.3 mV

Slope and Offset 1

Slope	-59.08 mV/pH
Offset	-24.3 mV

ORP

ORP Solution	Quick-Cal
Offset	27.3 mV
Temperature	24.59 °C
Pre Measurement	223.8 mV
Post Measurement	224.1 mV

Sensor	**Turbidity**
Serial Number	931637
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/14/2022

Sensor	**Conductivity**
Serial Number	594439
Last Calibrated	6/14/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.992
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,898.4 µS/cm
Specific Conductivity	8,059.5 µS/cm

Post Measurement

Actual Conductivity	7,840.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	915782
Last Calibrated	Factory Defaults

Sensor	**pH/ORP**
Serial Number	808116
Last Calibrated	6/14/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.3 mV
Temperature	23.95 °C

Pre Measurement

pH	7.41 pH
pH mV	-24.4 mV

Post Measurement

pH	7.00 pH
pH mV	-24.2 mV

Slope and Offset 1

Slope	-58.95 mV/pH
Offset	-24.3 mV

ORP

ORP Solution	Quick-Cal
Offset	35.9 mV
Temperature	23.95 °C
Pre Measurement	189.1 mV
Post Measurement	225.1 mV

Sensor	**Turbidity**
Serial Number	869832
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/14/2022

Sensor	**Conductivity**
Serial Number	594439
Last Calibrated	6/14/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.992
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,898.4 µS/cm
Specific Conductivity	8,059.5 µS/cm

Post Measurement

Actual Conductivity	7,840.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	915782
Last Calibrated	6/14/2022

Calibration Details

Slope	0.9993456
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.04 mg/L
Pre Measurement	100.04 %Sat
Post Measurement	100.00 %Sat
Temperature	24.53 °C
Barometric Pressure	977.51 mbar

Sensor	**pH/ORP**
Serial Number	808116
Last Calibrated	6/14/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.3 mV
Temperature	23.95 °C

Pre Measurement

pH	7.41 pH
pH mV	-24.4 mV

Post Measurement

pH	7.00 pH
pH mV	-24.2 mV

Slope and Offset 1

Slope	-58.95 mV/pH
Offset	-24.3 mV

ORP

ORP Solution	Quick-Cal
Offset	35.9 mV
Temperature	23.95 °C
Pre Measurement	189.1 mV
Post Measurement	225.1 mV

Sensor	**Turbidity**
Serial Number	869832
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/15/2022

Sensor	**Conductivity**
Serial Number	672232
Last Calibrated	6/15/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.922
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,164.4 µS/cm
Specific Conductivity	8,089.9 µS/cm

Post Measurement

Actual Conductivity	8,073.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	906254
Last Calibrated	6/14/2022

Calibration Details

Slope	1.022939
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.00 mg/L
Pre Measurement	100.80 %Sat
Post Measurement	100.00 %Sat
Temperature	23.60 °C
Barometric Pressure	978.42 mbar

Sensor	**pH/ORP**
Serial Number	858591
Last Calibrated	6/15/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.9 mV
Temperature	25.48 °C

Pre Measurement

pH	6.99 pH
pH mV	-21.7 mV

Post Measurement

pH	6.98 pH
pH mV	-21.9 mV

Slope and Offset 1

Slope	-59.26 mV/pH
Offset	-23.1 mV

ORP

ORP Solution	Quick-Cal
Offset	28.2 mV
Temperature	25.48 °C
Pre Measurement	222.2 mV
Post Measurement	222.8 mV

Sensor	**Turbidity**
Serial Number	920705
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/15/2022

Sensor	**Conductivity**
Serial Number	672232
Last Calibrated	6/15/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.922
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,164.4 µS/cm
Specific Conductivity	8,089.9 µS/cm

Post Measurement

Actual Conductivity	8,073.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	906254
Last Calibrated	6/15/2022

Calibration Details

Slope	1.030406
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.51 mg/L
Pre Measurement	99.38 %Sat
Post Measurement	100.00 %Sat
Temperature	26.71 °C
Barometric Pressure	979.98 mbar

Sensor	**pH/ORP**
Serial Number	858591
Last Calibrated	6/15/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.9 mV
Temperature	25.48 °C

Pre Measurement

pH	6.99 pH
pH mV	-21.7 mV

Post Measurement

pH	6.98 pH
pH mV	-21.9 mV

Slope and Offset 1

Slope	-59.26 mV/pH
Offset	-23.1 mV

ORP

ORP Solution	Quick-Cal
Offset	28.2 mV
Temperature	25.48 °C
Pre Measurement	222.2 mV
Post Measurement	222.8 mV

Sensor	**Turbidity**
Serial Number	920705
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/15/2022

Sensor	**Conductivity**
Serial Number	867215
Last Calibrated	6/15/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.958
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,217.0 µS/cm
Specific Conductivity	8,006.6 µS/cm

Post Measurement

Actual Conductivity	8,210.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	652241
Last Calibrated	6/14/2022

Calibration Details

Slope	1.037744
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.81 mg/L
Pre Measurement	99.81 %Sat
Post Measurement	100.00 %Sat
Temperature	24.11 °C
Barometric Pressure	979.30 mbar

Sensor	**pH/ORP**
Serial Number	723368
Last Calibrated	6/15/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-25.5 mV
Temperature	26.38 °C

Pre Measurement

pH	7.02 pH
pH mV	-25.5 mV

Post Measurement

pH	6.98 pH
pH mV	-25.6 mV

Slope and Offset 1

Slope	-59.43 mV/pH
Offset	-26.7 mV

ORP

ORP Solution	Quick-Cal
Offset	30.7 mV
Temperature	26.38 °C
Pre Measurement	217.9 mV
Post Measurement	221.4 mV

Sensor	**Turbidity**
Serial Number	931637
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/15/2022

Sensor	**Conductivity**
Serial Number	867215
Last Calibrated	6/15/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.958
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,217.0 µS/cm
Specific Conductivity	8,006.6 µS/cm

Post Measurement

Actual Conductivity	8,210.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	652241
Last Calibrated	6/15/2022

Calibration Details

Slope	1.032262
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.56 mg/L
Pre Measurement	100.58 %Sat
Post Measurement	100.00 %Sat
Temperature	26.31 °C
Barometric Pressure	981.16 mbar

Sensor	**pH/ORP**
Serial Number	723368
Last Calibrated	6/15/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-25.5 mV
Temperature	26.38 °C

Pre Measurement

pH	7.02 pH
pH mV	-25.5 mV

Post Measurement

pH	6.98 pH
pH mV	-25.6 mV

Slope and Offset 1

Slope	-59.43 mV/pH
Offset	-26.7 mV

ORP

ORP Solution	Quick-Cal
Offset	30.7 mV
Temperature	26.38 °C
Pre Measurement	217.9 mV
Post Measurement	221.4 mV

Sensor	**Turbidity**
Serial Number	931637
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/16/2022

Sensor	**Conductivity**
Serial Number	672232
Last Calibrated	6/16/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.933
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,450.8 µS/cm
Specific Conductivity	7,900.5 µS/cm

Post Measurement

Actual Conductivity	8,557.2 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	906254
Last Calibrated	6/15/2022

Calibration Details

Slope	1.030406
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.51 mg/L
Pre Measurement	99.38 %Sat
Post Measurement	100.00 %Sat
Temperature	26.71 °C
Barometric Pressure	979.98 mbar

Sensor	**pH/ORP**
Serial Number	858591
Last Calibrated	6/16/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.7 mV
Temperature	28.65 °C

Pre Measurement

pH	6.97 pH
pH mV	-21.6 mV

Post Measurement

pH	6.98 pH
pH mV	-21.9 mV

Slope and Offset 1

Slope	-59.88 mV/pH
Offset	-22.9 mV

ORP

ORP Solution	Quick-Cal
Offset	30.2 mV
Temperature	28.65 °C
Pre Measurement	216.1 mV
Post Measurement	218.0 mV

Sensor	**Turbidity**
Serial Number	920705
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/16/2022

Sensor	**Conductivity**
Serial Number	672232
Last Calibrated	6/16/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.933
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,450.8 µS/cm
Specific Conductivity	7,900.5 µS/cm

Post Measurement

Actual Conductivity	8,557.2 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	906254
Last Calibrated	6/16/2022

Calibration Details

Slope	1.031333
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.29 mg/L
Pre Measurement	99.99 %Sat
Post Measurement	100.00 %Sat
Temperature	28.31 °C
Barometric Pressure	979.98 mbar

Sensor	**pH/ORP**
Serial Number	858591
Last Calibrated	6/16/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.7 mV
Temperature	28.65 °C

Pre Measurement

pH	6.97 pH
pH mV	-21.6 mV

Post Measurement

pH	6.98 pH
pH mV	-21.9 mV

Slope and Offset 1

Slope	-59.88 mV/pH
Offset	-22.9 mV

ORP

ORP Solution	Quick-Cal
Offset	30.2 mV
Temperature	28.65 °C
Pre Measurement	216.1 mV
Post Measurement	218.0 mV

Sensor	**Turbidity**
Serial Number	920705
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/16/2022

Sensor	**Conductivity**
Serial Number	867215
Last Calibrated	6/16/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.948
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,690.6 µS/cm
Specific Conductivity	8,090.6 µS/cm

Post Measurement

Actual Conductivity	8,593.4 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	652241
Last Calibrated	6/15/2022

Calibration Details

Slope	1.032262
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.56 mg/L
Pre Measurement	100.58 %Sat
Post Measurement	100.00 %Sat
Temperature	26.31 °C
Barometric Pressure	981.16 mbar

Sensor	**pH/ORP**
Serial Number	723368
Last Calibrated	6/16/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-25.9 mV
Temperature	28.88 °C

Pre Measurement

pH	6.99 pH
pH mV	-26.0 mV

Post Measurement

pH	6.98 pH
pH mV	-26.2 mV

Slope and Offset 1

Slope	-59.93 mV/pH
Offset	-27.1 mV

ORP

ORP Solution	Quick-Cal
Offset	31.4 mV
Temperature	28.88 °C
Pre Measurement	216.7 mV
Post Measurement	217.7 mV

Sensor	**Turbidity**
Serial Number	931637
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/16/2022

Sensor	**Conductivity**
Serial Number	867215
Last Calibrated	6/16/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.948
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,690.6 µS/cm
Specific Conductivity	8,090.6 µS/cm

Post Measurement

Actual Conductivity	8,593.4 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	652241
Last Calibrated	6/16/2022

Calibration Details

Slope	1.039333
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.18 mg/L
Pre Measurement	99.34 %Sat
Post Measurement	100.00 %Sat
Temperature	28.79 °C
Barometric Pressure	980.73 mbar

Sensor	**pH/ORP**
Serial Number	723368
Last Calibrated	6/16/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-25.9 mV
Temperature	28.88 °C

Pre Measurement

pH	6.99 pH
pH mV	-26.0 mV

Post Measurement

pH	6.98 pH
pH mV	-26.2 mV

Slope and Offset 1

Slope	-59.93 mV/pH
Offset	-27.1 mV

ORP

ORP Solution	Quick-Cal
Offset	31.4 mV
Temperature	28.88 °C
Pre Measurement	216.7 mV
Post Measurement	217.7 mV

Sensor	**Turbidity**
Serial Number	931637
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/16/2022

Sensor	**Conductivity**
Serial Number	594439
Last Calibrated	6/16/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.969
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,552.8 µS/cm
Specific Conductivity	8,066.3 µS/cm

Post Measurement

Actual Conductivity	8,482.5 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	915782
Last Calibrated	6/14/2022

Calibration Details

Slope	0.9993456
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.04 mg/L
Pre Measurement	100.04 %Sat
Post Measurement	100.00 %Sat
Temperature	24.53 °C
Barometric Pressure	977.51 mbar

Sensor	**pH/ORP**
Serial Number	808116
Last Calibrated	6/16/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-23.6 mV
Temperature	28.16 °C

Pre Measurement

pH	6.99 pH
pH mV	-23.8 mV

Post Measurement

pH	6.98 pH
pH mV	-23.9 mV

Slope and Offset 1

Slope	-59.79 mV/pH
Offset	-24.8 mV

ORP

ORP Solution	Quick-Cal
Offset	37.0 mV
Temperature	28.16 °C
Pre Measurement	217.3 mV
Post Measurement	218.8 mV

Sensor	**Turbidity**
Serial Number	869832
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/16/2022

Sensor	**Conductivity**
Serial Number	594439
Last Calibrated	6/16/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.969
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,552.8 µS/cm
Specific Conductivity	8,066.3 µS/cm

Post Measurement

Actual Conductivity	8,482.5 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	915782
Last Calibrated	6/16/2022

Calibration Details

Slope	1.002163
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.48 mg/L
Pre Measurement	100.13 %Sat
Post Measurement	100.00 %Sat
Temperature	28.37 °C
Barometric Pressure	978.29 mbar

Sensor	**pH/ORP**
Serial Number	808116
Last Calibrated	6/16/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-23.6 mV
Temperature	28.16 °C

Pre Measurement

pH	6.99 pH
pH mV	-23.8 mV

Post Measurement

pH	6.98 pH
pH mV	-23.9 mV

Slope and Offset 1

Slope	-59.79 mV/pH
Offset	-24.8 mV

ORP

ORP Solution	Quick-Cal
Offset	37.0 mV
Temperature	28.16 °C
Pre Measurement	217.3 mV
Post Measurement	218.8 mV

Sensor	**Turbidity**
Serial Number	869832
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/17/2022

[redacted]

Serial Number	672232
Last Calibrated	6/17/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.954
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,298.2 µS/cm
Specific Conductivity	7,872.6 µS/cm

Post Measurement

Actual Conductivity	8,432.5 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/17/2022

Calibration Details

Slope	1.039607
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.32 mg/L
Pre Measurement	99.13 %Sat
Post Measurement	100.00 %Sat
Temperature	27.36 °C
Barometric Pressure	975.79 mbar

[redacted]

Serial Number	858591
Last Calibrated	6/17/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.9 mV
Temperature	27.83 °C

Pre Measurement

pH	6.99 pH
pH mV	-22.4 mV

Post Measurement

pH	6.98 pH
pH mV	-22.1 mV

Slope and Offset 1

Slope	-59.72 mV/pH
Offset	-23.1 mV

ORP

ORP Solution	Quick-Cal
Offset	29.2 mV
Temperature	27.83 °C
Pre Measurement	219.7 mV
Post Measurement	219.3 mV

[redacted]

Serial Number	920705
Last Calibrated	Factory Defaults

[redacted]

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/17/2022

[redacted]

Serial Number	672232
Last Calibrated	6/17/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.954
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,298.2 µS/cm
Specific Conductivity	7,872.6 µS/cm

Post Measurement

Actual Conductivity	8,432.5 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/16/2022

Calibration Details

Slope	1.031333
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.29 mg/L
Pre Measurement	99.99 %Sat
Post Measurement	100.00 %Sat
Temperature	28.31 °C
Barometric Pressure	979.98 mbar

[redacted]

Serial Number	858591
Last Calibrated	6/17/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.9 mV
Temperature	27.83 °C

Pre Measurement

pH	6.99 pH
pH mV	-22.4 mV

Post Measurement

pH	6.98 pH
pH mV	-22.1 mV

Slope and Offset 1

Slope	-59.72 mV/pH
Offset	-23.1 mV

ORP

ORP Solution	Quick-Cal
Offset	29.2 mV
Temperature	27.83 °C
Pre Measurement	219.7 mV
Post Measurement	219.3 mV

[redacted]

Serial Number	920705
Last Calibrated	Factory Defaults

[redacted]

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/17/2022

[redacted]

Serial Number	867215
Last Calibrated	6/17/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.95
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,486.7 µS/cm
Specific Conductivity	7,985.5 µS/cm

Post Measurement

Actual Conductivity	8,502.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/16/2022

Calibration Details

Slope	1.039333
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.18 mg/L
Pre Measurement	99.34 %Sat
Post Measurement	100.00 %Sat
Temperature	28.79 °C
Barometric Pressure	980.73 mbar

Serial Number	723368
Last Calibrated	6/17/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-26.2 mV
Temperature	28.29 °C

Pre Measurement

pH	6.99 pH
pH mV	-26.3 mV

Post Measurement

pH	6.98 pH
pH mV	-26.5 mV

Slope and Offset 1

Slope	-59.81 mV/pH
Offset	-27.4 mV

ORP

ORP Solution	Quick-Cal
Offset	32.2 mV
Temperature	28.29 °C
Pre Measurement	217.6 mV
Post Measurement	218.6 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/21/2022

[redacted]

Serial Number	867215
Last Calibrated	6/21/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.958
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,569.2 µS/cm
Specific Conductivity	7,932.7 µS/cm

Post Measurement

Actual Conductivity	7,633.4 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/17/2022

Calibration Details

Slope	1.041018
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.21 mg/L
Pre Measurement	99.96 %Sat
Post Measurement	100.00 %Sat
Temperature	28.25 °C
Barometric Pressure	976.72 mbar

Serial Number	723368
Last Calibrated	6/21/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-25.6 mV
Temperature	22.60 °C

Pre Measurement

pH	6.98 pH
pH mV	-25.6 mV

Post Measurement

pH	7.00 pH
pH mV	-25.4 mV

Slope and Offset 1

Slope	-58.68 mV/pH
Offset	-25.6 mV

ORP

ORP Solution	Quick-Cal
Offset	30.7 mV
Temperature	22.60 °C
Pre Measurement	228.4 mV
Post Measurement	227.1 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/21/2022

[redacted]

Serial Number	867215
Last Calibrated	6/21/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.958
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,569.2 µS/cm
Specific Conductivity	7,932.7 µS/cm

Post Measurement

Actual Conductivity	7,633.4 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/21/2022

Calibration Details

Slope	1.031805
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.12 mg/L
Pre Measurement	100.93 %Sat
Post Measurement	100.00 %Sat
Temperature	22.72 °C
Barometric Pressure	984.79 mbar

Serial Number	723368
Last Calibrated	6/21/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-25.6 mV
Temperature	22.60 °C

Pre Measurement

pH	6.98 pH
pH mV	-25.6 mV

Post Measurement

pH	7.00 pH
pH mV	-25.4 mV

Slope and Offset 1

Slope	-58.68 mV/pH
Offset	-25.6 mV

ORP

ORP Solution	Quick-Cal
Offset	30.7 mV
Temperature	22.60 °C
Pre Measurement	228.4 mV
Post Measurement	227.1 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/21/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/21/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.5 mV
Temperature	22.49 °C

Pre Measurement

pH	7.00 pH
pH mV	-24.4 mV

Post Measurement

pH	7.00 pH
pH mV	-24.3 mV

Slope and Offset 1

Slope	-58.66 mV/pH
Offset	-24.5 mV

ORP

ORP Solution	Quick-Cal
Offset	36.7 mV
Temperature	22.49 °C
Pre Measurement	227.2 mV
Post Measurement	227.3 mV

[redacted]

Serial Number	915782
Last Calibrated	6/21/2022

Calibration Details

Slope	0.989601
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.40 mg/L
Pre Measurement	101.29 %Sat
Post Measurement	100.00 %Sat
Temperature	22.75 °C
Barometric Pressure	978.29 mbar

[redacted]

Serial Number	594439
Last Calibrated	6/21/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.013
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,354.8 µS/cm
Specific Conductivity	7,725.3 µS/cm

Post Measurement

Actual Conductivity	7,616.4 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/21/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/21/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.5 mV
Temperature	22.49 °C

Pre Measurement

pH	7.00 pH
pH mV	-24.4 mV

Post Measurement

pH	7.00 pH
pH mV	-24.3 mV

Slope and Offset 1

Slope	-58.66 mV/pH
Offset	-24.5 mV

ORP

ORP Solution	Quick-Cal
Offset	36.7 mV
Temperature	22.49 °C
Pre Measurement	227.2 mV
Post Measurement	227.3 mV

[redacted]

Serial Number	915782
Last Calibrated	6/16/2022

Calibration Details

Slope	1.002163
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.48 mg/L
Pre Measurement	100.13 %Sat
Post Measurement	100.00 %Sat
Temperature	28.37 °C
Barometric Pressure	978.29 mbar

[redacted]

Serial Number	594439
Last Calibrated	6/21/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.013
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,354.8 µS/cm
Specific Conductivity	7,725.3 µS/cm

Post Measurement

Actual Conductivity	7,616.4 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/22/2022

[redacted]

Serial Number	672232
Last Calibrated	6/22/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.946
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,442.0 µS/cm
Specific Conductivity	8,073.8 µS/cm

Post Measurement

Actual Conductivity	8,364.8 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/17/2022

Calibration Details

Slope	1.039607
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.32 mg/L
Pre Measurement	99.13 %Sat
Post Measurement	100.00 %Sat
Temperature	27.36 °C
Barometric Pressure	975.79 mbar

Serial Number	858591
Last Calibrated	6/22/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-22.2 mV
Temperature	27.39 °C

Pre Measurement

pH	6.99 pH
pH mV	-22.2 mV

Post Measurement

pH	6.98 pH
pH mV	-22.4 mV

Slope and Offset 1

Slope	-59.63 mV/pH
Offset	-23.4 mV

ORP

ORP Solution	Quick-Cal
Offset	27.9 mV
Temperature	27.39 °C
Pre Measurement	221.2 mV
Post Measurement	219.9 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/22/2022

[redacted]

Serial Number	672232
Last Calibrated	6/22/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.946
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,442.0 µS/cm
Specific Conductivity	8,073.8 µS/cm

Post Measurement

Actual Conductivity	8,364.8 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/22/2022

Calibration Details

Slope	1.029021
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.44 mg/L
Pre Measurement	100.97 %Sat
Post Measurement	100.00 %Sat
Temperature	27.23 °C
Barometric Pressure	978.43 mbar

Serial Number	858591
Last Calibrated	6/22/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-22.2 mV
Temperature	27.39 °C

Pre Measurement

pH	6.99 pH
pH mV	-22.2 mV

Post Measurement

pH	6.98 pH
pH mV	-22.4 mV

Slope and Offset 1

Slope	-59.63 mV/pH
Offset	-23.4 mV

ORP

ORP Solution	Quick-Cal
Offset	27.9 mV
Temperature	27.39 °C
Pre Measurement	221.2 mV
Post Measurement	219.9 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/22/2022

[redacted]

Serial Number	867215
Last Calibrated	6/22/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.963
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,309.1 µS/cm
Specific Conductivity	7,962.7 µS/cm

Post Measurement

Actual Conductivity	8,348.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/22/2022

Calibration Details

Slope	1.033964
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.44 mg/L
Pre Measurement	99.78 %Sat
Post Measurement	100.00 %Sat
Temperature	27.00 °C
Barometric Pressure	979.57 mbar

Serial Number	723368
Last Calibrated	6/22/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-26.3 mV
Temperature	27.28 °C

Pre Measurement

pH	7.01 pH
pH mV	-26.3 mV

Post Measurement

pH	6.98 pH
pH mV	-26.5 mV

Slope and Offset 1

Slope	-59.61 mV/pH
Offset	-27.5 mV

ORP

ORP Solution	Quick-Cal
Offset	33.1 mV
Temperature	27.28 °C
Pre Measurement	217.3 mV
Post Measurement	220.1 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/22/2022

[redacted]

Serial Number	867215
Last Calibrated	6/22/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.963
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,309.1 µS/cm
Specific Conductivity	7,962.7 µS/cm

Post Measurement

Actual Conductivity	8,348.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/21/2022

Calibration Details

Slope	1.031805
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.12 mg/L
Pre Measurement	100.93 %Sat
Post Measurement	100.00 %Sat
Temperature	22.72 °C
Barometric Pressure	984.79 mbar

Serial Number	723368
Last Calibrated	6/22/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-26.3 mV
Temperature	27.28 °C

Pre Measurement

pH	7.01 pH
pH mV	-26.3 mV

Post Measurement

pH	6.98 pH
pH mV	-26.5 mV

Slope and Offset 1

Slope	-59.61 mV/pH
Offset	-27.5 mV

ORP

ORP Solution	Quick-Cal
Offset	33.1 mV
Temperature	27.28 °C
Pre Measurement	217.3 mV
Post Measurement	220.1 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/22/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/22/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-23.9 mV
Temperature	27.60 °C

Pre Measurement

pH	6.98 pH
pH mV	-23.9 mV

Post Measurement

pH	6.98 pH
pH mV	-24.1 mV

Slope and Offset 1

Slope	-59.68 mV/pH
Offset	-25.0 mV

ORP

ORP Solution	Quick-Cal
Offset	38.3 mV
Temperature	27.60 °C
Pre Measurement	217.9 mV
Post Measurement	219.6 mV

[redacted]

Serial Number	915782
Last Calibrated	6/21/2022

Calibration Details

Slope	0.989601
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.40 mg/L
Pre Measurement	101.29 %Sat
Post Measurement	100.00 %Sat
Temperature	22.75 °C
Barometric Pressure	978.29 mbar

[redacted]

Serial Number	594439
Last Calibrated	6/22/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.969
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,776.0 µS/cm
Specific Conductivity	8,360.9 µS/cm

Post Measurement

Actual Conductivity	8,397.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/22/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/22/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-23.9 mV
Temperature	27.60 °C

Pre Measurement

pH	6.98 pH
pH mV	-23.9 mV

Post Measurement

pH	6.98 pH
pH mV	-24.1 mV

Slope and Offset 1

Slope	-59.68 mV/pH
Offset	-25.0 mV

ORP

ORP Solution	Quick-Cal
Offset	38.3 mV
Temperature	27.60 °C
Pre Measurement	217.9 mV
Post Measurement	219.6 mV

Serial Number	915782
Last Calibrated	6/22/2022

Calibration Details

Slope	1.008661
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.56 mg/L
Pre Measurement	98.29 %Sat
Post Measurement	100.00 %Sat
Temperature	27.35 °C
Barometric Pressure	977.49 mbar

Serial Number	594439
Last Calibrated	6/22/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.969
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,776.0 µS/cm
Specific Conductivity	8,360.9 µS/cm

Post Measurement

Actual Conductivity	8,397.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/23/2022

[redacted]

Serial Number	672232
Last Calibrated	6/23/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.014
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,235.0 µS/cm
Specific Conductivity	7,458.5 µS/cm

Post Measurement

Actual Conductivity	7,760.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/22/2022

Calibration Details

Slope	1.029021
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.44 mg/L
Pre Measurement	100.97 %Sat
Post Measurement	100.00 %Sat
Temperature	27.23 °C
Barometric Pressure	978.43 mbar

Serial Number	858591
Last Calibrated	6/23/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-20.3 mV
Temperature	23.43 °C

Pre Measurement

pH	6.95 pH
pH mV	-20.3 mV

Post Measurement

pH	7.00 pH
pH mV	-20.2 mV

Slope and Offset 1

Slope	-58.85 mV/pH
Offset	-20.3 mV

ORP

ORP Solution	Quick-Cal
Offset	28.2 mV
Temperature	23.43 °C
Pre Measurement	225.6 mV
Post Measurement	225.9 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/23/2022

[redacted]

Serial Number	672232
Last Calibrated	6/23/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	1.014
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,235.0 µS/cm
Specific Conductivity	7,458.5 µS/cm

Post Measurement

Actual Conductivity	7,760.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/23/2022

Calibration Details

Slope	1.017061
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.01 mg/L
Pre Measurement	101.14 %Sat
Post Measurement	100.00 %Sat
Temperature	23.82 °C
Barometric Pressure	978.43 mbar

[redacted]

Serial Number	858591
Last Calibrated	6/23/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-20.3 mV
Temperature	23.43 °C

Pre Measurement

pH	6.95 pH
pH mV	-20.3 mV

Post Measurement

pH	7.00 pH
pH mV	-20.2 mV

Slope and Offset 1

Slope	-58.85 mV/pH
Offset	-20.3 mV

ORP

ORP Solution	Quick-Cal
Offset	28.2 mV
Temperature	23.43 °C
Pre Measurement	225.6 mV
Post Measurement	225.9 mV

[redacted]

Serial Number	920705
Last Calibrated	Factory Defaults

[redacted]

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/23/2022

[redacted]

Serial Number	867215
Last Calibrated	6/23/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.965
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,456.3 µS/cm
Specific Conductivity	7,982.3 µS/cm

Post Measurement

Actual Conductivity	8,475.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/22/2022

Calibration Details

Slope	1.033964
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.44 mg/L
Pre Measurement	99.78 %Sat
Post Measurement	100.00 %Sat
Temperature	27.00 °C
Barometric Pressure	979.57 mbar

Serial Number	723368
Last Calibrated	6/23/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-25.9 mV
Temperature	28.11 °C

Pre Measurement

pH	6.97 pH
pH mV	-25.9 mV

Post Measurement

pH	6.98 pH
pH mV	-26.2 mV

Slope and Offset 1

Slope	-59.78 mV/pH
Offset	-27.1 mV

ORP

ORP Solution	Quick-Cal
Offset	34.1 mV
Temperature	28.11 °C
Pre Measurement	217.7 mV
Post Measurement	218.8 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/23/2022

[redacted]

Serial Number	867215
Last Calibrated	6/23/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.965
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,456.3 µS/cm
Specific Conductivity	7,982.3 µS/cm

Post Measurement

Actual Conductivity	8,475.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/23/2022

Calibration Details

Slope	1.038183
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.38 mg/L
Pre Measurement	99.55 %Sat
Post Measurement	100.00 %Sat
Temperature	27.25 °C
Barometric Pressure	979.46 mbar

Serial Number	723368
Last Calibrated	6/23/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-25.9 mV
Temperature	28.11 °C

Pre Measurement

pH	6.97 pH
pH mV	-25.9 mV

Post Measurement

pH	6.98 pH
pH mV	-26.2 mV

Slope and Offset 1

Slope	-59.78 mV/pH
Offset	-27.1 mV

ORP

ORP Solution	Quick-Cal
Offset	34.1 mV
Temperature	28.11 °C
Pre Measurement	217.7 mV
Post Measurement	218.8 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/23/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/23/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-26.1 mV
Temperature	27.40 °C

Pre Measurement

pH	7.02 pH
pH mV	-26.2 mV

Post Measurement

pH	6.98 pH
pH mV	-26.4 mV

Slope and Offset 1

Slope	-59.64 mV/pH
Offset	-27.3 mV

ORP

ORP Solution	Quick-Cal
Offset	40.2 mV
Temperature	27.40 °C
Pre Measurement	217.8 mV
Post Measurement	219.9 mV

Serial Number	915782
Last Calibrated	6/22/2022

Calibration Details

Slope	1.008661
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.56 mg/L
Pre Measurement	98.29 %Sat
Post Measurement	100.00 %Sat
Temperature	27.35 °C
Barometric Pressure	977.49 mbar

Serial Number	594439
Last Calibrated	6/23/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.971
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,353.6 µS/cm
Specific Conductivity	7,987.5 µS/cm

Post Measurement

Actual Conductivity	8,366.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/23/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/23/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-26.1 mV
Temperature	27.40 °C

Pre Measurement

pH	7.02 pH
pH mV	-26.2 mV

Post Measurement

pH	6.98 pH
pH mV	-26.4 mV

Slope and Offset 1

Slope	-59.64 mV/pH
Offset	-27.3 mV

ORP

ORP Solution	Quick-Cal
Offset	40.2 mV
Temperature	27.40 °C
Pre Measurement	217.8 mV
Post Measurement	219.9 mV

Serial Number	915782
Last Calibrated	6/23/2022

Calibration Details

Slope	1.001848
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.83 mg/L
Pre Measurement	100.87 %Sat
Post Measurement	100.00 %Sat
Temperature	25.82 °C
Barometric Pressure	977.41 mbar

Serial Number	594439
Last Calibrated	6/23/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.971
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,353.6 µS/cm
Specific Conductivity	7,987.5 µS/cm

Post Measurement

Actual Conductivity	8,366.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/24/2022

[redacted]

Serial Number	672232
Last Calibrated	6/24/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.949
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,758.2 µS/cm
Specific Conductivity	8,554.3 µS/cm

Post Measurement

Actual Conductivity	8,190.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/23/2022

Calibration Details

Slope	1.017061
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.01 mg/L
Pre Measurement	101.14 %Sat
Post Measurement	100.00 %Sat
Temperature	23.82 °C
Barometric Pressure	978.43 mbar

Serial Number	858591
Last Calibrated	6/24/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.8 mV
Temperature	26.25 °C

Pre Measurement

pH	7.02 pH
pH mV	-21.9 mV

Post Measurement

pH	6.98 pH
pH mV	-21.9 mV

Slope and Offset 1

Slope	-59.41 mV/pH
Offset	-23.0 mV

ORP

ORP Solution	Quick-Cal
Offset	29.8 mV
Temperature	26.25 °C
Pre Measurement	220.1 mV
Post Measurement	221.6 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/24/2022

[redacted]

Serial Number	672232
Last Calibrated	6/24/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.949
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,758.2 µS/cm
Specific Conductivity	8,554.3 µS/cm

Post Measurement

Actual Conductivity	8,190.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/24/2022

Calibration Details

Slope	1.021767
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.83 mg/L
Pre Measurement	99.49 %Sat
Post Measurement	100.00 %Sat
Temperature	24.95 °C
Barometric Pressure	981.19 mbar

Serial Number	858591
Last Calibrated	6/24/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-21.8 mV
Temperature	26.25 °C

Pre Measurement

pH	7.02 pH
pH mV	-21.9 mV

Post Measurement

pH	6.98 pH
pH mV	-21.9 mV

Slope and Offset 1

Slope	-59.41 mV/pH
Offset	-23.0 mV

ORP

ORP Solution	Quick-Cal
Offset	29.8 mV
Temperature	26.25 °C
Pre Measurement	220.1 mV
Post Measurement	221.6 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/24/2022

[redacted]

Serial Number	867215
Last Calibrated	6/24/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.973
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,158.4 µS/cm
Specific Conductivity	7,935.9 µS/cm

Post Measurement

Actual Conductivity	8,224.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/24/2022

Calibration Details

Slope	1.039586
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.58 mg/L
Pre Measurement	99.85 %Sat
Post Measurement	100.00 %Sat
Temperature	25.81 °C
Barometric Pressure	982.15 mbar

Serial Number	723368
Last Calibrated	6/24/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-26.3 mV
Temperature	26.47 °C

Pre Measurement

pH	6.99 pH
pH mV	-26.4 mV

Post Measurement

pH	6.98 pH
pH mV	-26.5 mV

Slope and Offset 1

Slope	-59.45 mV/pH
Offset	-27.5 mV

ORP

ORP Solution	Quick-Cal
Offset	34.1 mV
Temperature	26.47 °C
Pre Measurement	221.2 mV
Post Measurement	221.3 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/24/2022

[redacted]

Serial Number	867215
Last Calibrated	6/24/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.973
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,158.4 µS/cm
Specific Conductivity	7,935.9 µS/cm

Post Measurement

Actual Conductivity	8,224.3 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/23/2022

Calibration Details

Slope	1.038183
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.38 mg/L
Pre Measurement	99.55 %Sat
Post Measurement	100.00 %Sat
Temperature	27.25 °C
Barometric Pressure	979.46 mbar

Serial Number	723368
Last Calibrated	6/24/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-26.3 mV
Temperature	26.47 °C

Pre Measurement

pH	6.99 pH
pH mV	-26.4 mV

Post Measurement

pH	6.98 pH
pH mV	-26.5 mV

Slope and Offset 1

Slope	-59.45 mV/pH
Offset	-27.5 mV

ORP

ORP Solution	Quick-Cal
Offset	34.1 mV
Temperature	26.47 °C
Pre Measurement	221.2 mV
Post Measurement	221.3 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/24/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/24/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-24.0 mV
Temperature	26.18 °C

Pre Measurement

pH	6.95 pH
pH mV	-24.0 mV

Post Measurement

pH	6.98 pH
pH mV	-24.1 mV

Slope and Offset 1

Slope	-59.39 mV/pH
Offset	-25.2 mV

ORP

ORP Solution	Quick-Cal
Offset	38.0 mV
Temperature	26.18 °C
Pre Measurement	224.0 mV
Post Measurement	221.7 mV

Serial Number	915782
Last Calibrated	6/24/2022

Calibration Details

Slope	1.00382
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.84 mg/L
Pre Measurement	99.78 %Sat
Post Measurement	100.00 %Sat
Temperature	25.76 °C
Barometric Pressure	980.11 mbar

Serial Number	594439
Last Calibrated	6/24/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.983
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,084.0 µS/cm
Specific Conductivity	7,906.1 µS/cm

Post Measurement

Actual Conductivity	8,180.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/24/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/24/2022

Calibration Details

Calibration Point 1

pH of Buffer	6.98 pH
pH mV	-24.0 mV
Temperature	26.18 °C

Pre Measurement

pH	6.95 pH
pH mV	-24.0 mV

Post Measurement

pH	6.98 pH
pH mV	-24.1 mV

Slope and Offset 1

Slope	-59.39 mV/pH
Offset	-25.2 mV

ORP

ORP Solution	Quick-Cal
Offset	38.0 mV
Temperature	26.18 °C
Pre Measurement	224.0 mV
Post Measurement	221.7 mV

Serial Number	915782
Last Calibrated	6/23/2022

Calibration Details

Slope	1.001848
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.83 mg/L
Pre Measurement	100.87 %Sat
Post Measurement	100.00 %Sat
Temperature	25.82 °C
Barometric Pressure	977.41 mbar

Serial Number	594439
Last Calibrated	6/24/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.983
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,084.0 µS/cm
Specific Conductivity	7,906.1 µS/cm

Post Measurement

Actual Conductivity	8,180.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/27/2022

[redacted]

Serial Number	672232
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.981
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,646.5 µS/cm
Specific Conductivity	7,729.6 µS/cm

Post Measurement

Actual Conductivity	6,879.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/24/2022

Calibration Details

Slope	1.021767
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.83 mg/L
Pre Measurement	99.49 %Sat
Post Measurement	100.00 %Sat
Temperature	24.95 °C
Barometric Pressure	981.19 mbar

Serial Number	858591
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-24.1 mV
Temperature	17.66 °C

Pre Measurement

pH	7.03 pH
pH mV	-24.1 mV

Post Measurement

pH	7.02 pH
pH mV	-23.5 mV

Slope and Offset 1

Slope	-57.7 mV/pH
Offset	-22.9 mV

ORP

ORP Solution	Quick-Cal
Offset	8.0 mV
Temperature	21.17 °C
Pre Measurement	251.1 mV
Post Measurement	229.3 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/27/2022

[redacted]

Serial Number	672232
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.981
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,646.5 µS/cm
Specific Conductivity	7,729.6 µS/cm

Post Measurement

Actual Conductivity	6,879.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/24/2022

Calibration Details

Slope	1.021767
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.83 mg/L
Pre Measurement	99.49 %Sat
Post Measurement	100.00 %Sat
Temperature	24.95 °C
Barometric Pressure	981.19 mbar

Serial Number	858591
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-24.1 mV
Temperature	17.66 °C

Pre Measurement

pH	7.03 pH
pH mV	-24.1 mV

Post Measurement

pH	7.02 pH
pH mV	-23.5 mV

Slope and Offset 1

Slope	-57.7 mV/pH
Offset	-22.9 mV

ORP

ORP Solution	Quick-Cal
Offset	29.8 mV
Temperature	26.25 °C
Pre Measurement	220.1 mV
Post Measurement	221.6 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/27/2022

[redacted]

Serial Number	672232
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.981
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	6,646.5 µS/cm
Specific Conductivity	7,729.6 µS/cm

Post Measurement

Actual Conductivity	6,879.0 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/27/2022

Calibration Details

Slope	1.017983
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.44 mg/L
Pre Measurement	100.14 %Sat
Post Measurement	100.00 %Sat
Temperature	21.48 °C
Barometric Pressure	985.84 mbar

Serial Number	858591
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.02 pH
pH mV	-24.1 mV
Temperature	17.66 °C

Pre Measurement

pH	7.03 pH
pH mV	-24.1 mV

Post Measurement

pH	7.02 pH
pH mV	-23.5 mV

Slope and Offset 1

Slope	-57.7 mV/pH
Offset	-22.9 mV

ORP

ORP Solution	Quick-Cal
Offset	8.0 mV
Temperature	21.17 °C
Pre Measurement	251.1 mV
Post Measurement	229.3 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/27/2022

Sensor	**Conductivity**
Serial Number	867215
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.994
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,367.3 µS/cm
Specific Conductivity	7,833.6 µS/cm

Post Measurement

Actual Conductivity	7,523.9 µS/cm
Specific Conductivity	8,000.0 µS/cm

Sensor	**RDO**
Serial Number	652241
Last Calibrated	6/24/2022

Calibration Details

Slope	1.039586
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.58 mg/L
Pre Measurement	99.85 %Sat
Post Measurement	100.00 %Sat
Temperature	25.81 °C
Barometric Pressure	982.15 mbar

Sensor	**pH/ORP**
Serial Number	723368
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.9 mV
Temperature	21.88 °C

Pre Measurement

pH	6.96 pH
pH mV	-24.8 mV

Post Measurement

pH	7.00 pH
pH mV	-24.7 mV

Slope and Offset 1

Slope	-58.54 mV/pH
Offset	-24.9 mV

ORP

ORP Solution	Quick-Cal
Offset	8.2 mV
Temperature	22.30 °C
Pre Measurement	253.4 mV
Post Measurement	227.6 mV

Sensor	**Turbidity**
Serial Number	931637
Last Calibrated	Factory Defaults

Sensor	**Barometric Pressure**
Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/27/2022

[redacted]

Serial Number	867215
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.994
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,367.3 µS/cm
Specific Conductivity	7,833.6 µS/cm

Post Measurement

Actual Conductivity	7,523.9 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/24/2022

Calibration Details

Slope	1.039586
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.58 mg/L
Pre Measurement	99.85 %Sat
Post Measurement	100.00 %Sat
Temperature	25.81 °C
Barometric Pressure	982.15 mbar

[redacted]

Serial Number	723368
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.9 mV
Temperature	21.88 °C

Pre Measurement

pH	6.96 pH
pH mV	-24.8 mV

Post Measurement

pH	7.00 pH
pH mV	-24.7 mV

Slope and Offset 1

Slope	-58.54 mV/pH
Offset	-24.9 mV

ORP

ORP Solution	Quick-Cal
Offset	34.1 mV
Temperature	26.47 °C
Pre Measurement	221.2 mV
Post Measurement	221.3 mV

[redacted]

Serial Number	931637
Last Calibrated	Factory Defaults

[redacted]

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/27/2022

[redacted]

Serial Number	867215
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.994
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,367.3 µS/cm
Specific Conductivity	7,833.6 µS/cm

Post Measurement

Actual Conductivity	7,523.9 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/27/2022

Calibration Details

Slope	1.038653
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.39 mg/L
Pre Measurement	100.04 %Sat
Post Measurement	100.00 %Sat
Temperature	20.68 °C
Barometric Pressure	984.66 mbar

Serial Number	723368
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-24.9 mV
Temperature	21.88 °C

Pre Measurement

pH	6.96 pH
pH mV	-24.8 mV

Post Measurement

pH	7.00 pH
pH mV	-24.7 mV

Slope and Offset 1

Slope	-58.54 mV/pH
Offset	-24.9 mV

ORP

ORP Solution	Quick-Cal
Offset	8.2 mV
Temperature	22.30 °C
Pre Measurement	253.4 mV
Post Measurement	227.6 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/27/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	0.3 mV
Temperature	20.69 °C

Pre Measurement

pH	7.00 pH
pH mV	0.2 mV

Post Measurement

pH	7.00 pH
pH mV	0.3 mV

Slope and Offset 1

Slope	-58.31 mV/pH
Offset	0.3 mV

ORP

ORP Solution	Quick-Cal
Offset	-16.1 mV
Temperature	22.25 °C
Pre Measurement	243.4 mV
Post Measurement	227.7 mV

Serial Number	915782
Last Calibrated	6/24/2022

Calibration Details

Slope	1.00382
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.84 mg/L
Pre Measurement	99.78 %Sat
Post Measurement	100.00 %Sat
Temperature	25.76 °C
Barometric Pressure	980.11 mbar

Serial Number	594439
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.931
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,736.4 µS/cm
Specific Conductivity	8,429.6 µS/cm

Post Measurement

Actual Conductivity	7,342.2 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/27/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	0.3 mV
Temperature	20.69 °C

Pre Measurement

pH	7.00 pH
pH mV	0.2 mV

Post Measurement

pH	7.00 pH
pH mV	0.3 mV

Slope and Offset 1

Slope	-58.31 mV/pH
Offset	0.3 mV

ORP

ORP Solution	Quick-Cal
Offset	0.0 mV
Temperature	25.00 °C

Serial Number	915782
Last Calibrated	6/24/2022

Calibration Details

Slope	1.00382
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.84 mg/L
Pre Measurement	99.78 %Sat
Post Measurement	100.00 %Sat
Temperature	25.76 °C
Barometric Pressure	980.11 mbar

Serial Number	594439
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.931
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,736.4 µS/cm
Specific Conductivity	8,429.6 µS/cm

Post Measurement

Actual Conductivity	7,342.2 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/27/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/27/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	0.3 mV
Temperature	20.69 °C

Pre Measurement

pH	7.00 pH
pH mV	0.2 mV

Post Measurement

pH	7.00 pH
pH mV	0.3 mV

Slope and Offset 1

Slope	-58.31 mV/pH
Offset	0.3 mV

ORP

ORP Solution	Quick-Cal
Offset	-16.1 mV
Temperature	22.25 °C
Pre Measurement	243.4 mV
Post Measurement	227.7 mV

Serial Number	915782
Last Calibrated	6/27/2022

Calibration Details

Slope	1.004653
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.51 mg/L
Pre Measurement	100.02 %Sat
Post Measurement	100.00 %Sat
Temperature	21.53 °C
Barometric Pressure	982.76 mbar

Serial Number	594439
Last Calibrated	6/27/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.931
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,736.4 µS/cm
Specific Conductivity	8,429.6 µS/cm

Post Measurement

Actual Conductivity	7,342.2 µS/cm
Specific Conductivity	8,000.0 µS/cm

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/28/2022

[redacted]

Serial Number	672232
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.947
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,142.3 µS/cm
Specific Conductivity	8,284.5 µS/cm

Post Measurement

Actual Conductivity	7,862.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/27/2022

Calibration Details

Slope	1.017983
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.44 mg/L
Pre Measurement	100.14 %Sat
Post Measurement	100.00 %Sat
Temperature	21.48 °C
Barometric Pressure	985.84 mbar

Serial Number	858591
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-23.5 mV
Temperature	24.10 °C

Pre Measurement

pH	7.00 pH
pH mV	-23.5 mV

Post Measurement

pH	7.00 pH
pH mV	-23.4 mV

Slope and Offset 1

Slope	-58.98 mV/pH
Offset	-23.5 mV

ORP

ORP Solution	Quick-Cal
Offset	7.0 mV
Temperature	23.96 °C
Pre Measurement	226.0 mV
Post Measurement	225.1 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/28/2022

[redacted]

Serial Number	672232
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.947
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,142.3 µS/cm
Specific Conductivity	8,284.5 µS/cm

Post Measurement

Actual Conductivity	7,862.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/28/2022

Calibration Details

Slope	1.022189
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.08 mg/L
Pre Measurement	99.58 %Sat
Post Measurement	100.00 %Sat
Temperature	23.63 °C
Barometric Pressure	987.65 mbar

Serial Number	858591
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-23.5 mV
Temperature	24.10 °C

Pre Measurement

pH	7.00 pH
pH mV	-23.5 mV

Post Measurement

pH	7.00 pH
pH mV	-23.4 mV

Slope and Offset 1

Slope	-58.98 mV/pH
Offset	-23.5 mV

ORP

ORP Solution	Quick-Cal
Offset	7.0 mV
Temperature	23.96 °C
Pre Measurement	226.0 mV
Post Measurement	225.1 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513266
Created	6/28/2022

[redacted]

Serial Number	672232
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.947
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	8,142.3 µS/cm
Specific Conductivity	8,284.5 µS/cm

Post Measurement

Actual Conductivity	7,862.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	906254
Last Calibrated	6/27/2022

Calibration Details

Slope	1.017983
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.44 mg/L
Pre Measurement	100.14 %Sat
Post Measurement	100.00 %Sat
Temperature	21.48 °C
Barometric Pressure	985.84 mbar

Serial Number	858591
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-23.5 mV
Temperature	24.10 °C

Pre Measurement

pH	7.00 pH
pH mV	-23.5 mV

Post Measurement

pH	7.00 pH
pH mV	-23.4 mV

Slope and Offset 1

Slope	-58.98 mV/pH
Offset	-23.5 mV

ORP

ORP Solution	Quick-Cal
Offset	8.0 mV
Temperature	21.17 °C
Pre Measurement	251.1 mV
Post Measurement	229.3 mV

Serial Number	920705
Last Calibrated	Factory Defaults

Serial Number	513266
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/28/2022

[redacted]

Serial Number	867215
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.993
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,797.2 µS/cm
Specific Conductivity	8,007.2 µS/cm

Post Measurement

Actual Conductivity	7,790.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/28/2022

Calibration Details

Slope	1.039648
Offset	0.00 mg/L

Calibration point 100%

Concentration	7.87 mg/L
Pre Measurement	99.89 %Sat
Post Measurement	100.00 %Sat
Temperature	24.15 °C
Barometric Pressure	988.58 mbar

Serial Number	723368
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-27.8 mV
Temperature	23.63 °C

Pre Measurement

pH	7.05 pH
pH mV	-27.8 mV

Post Measurement

pH	7.00 pH
pH mV	-27.7 mV

Slope and Offset 1

Slope	-58.89 mV/pH
Offset	-27.8 mV

ORP

ORP Solution	Quick-Cal
Offset	6.3 mV
Temperature	23.21 °C
Pre Measurement	228.0 mV
Post Measurement	226.2 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/28/2022

[redacted]

Serial Number	867215
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.993
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,797.2 µS/cm
Specific Conductivity	8,007.2 µS/cm

Post Measurement

Actual Conductivity	7,790.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/27/2022

Calibration Details

Slope	1.038653
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.39 mg/L
Pre Measurement	100.04 %Sat
Post Measurement	100.00 %Sat
Temperature	20.68 °C
Barometric Pressure	984.66 mbar

Serial Number	723368
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-27.8 mV
Temperature	23.63 °C

Pre Measurement

pH	7.05 pH
pH mV	-27.8 mV

Post Measurement

pH	7.00 pH
pH mV	-27.7 mV

Slope and Offset 1

Slope	-58.89 mV/pH
Offset	-27.8 mV

ORP

ORP Solution	Quick-Cal
Offset	6.3 mV
Temperature	23.21 °C
Pre Measurement	228.0 mV
Post Measurement	226.2 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	513574
Created	6/28/2022

[redacted]

Serial Number	867215
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.993
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,797.2 µS/cm
Specific Conductivity	8,007.2 µS/cm

Post Measurement

Actual Conductivity	7,790.1 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	652241
Last Calibrated	6/27/2022

Calibration Details

Slope	1.038653
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.39 mg/L
Pre Measurement	100.04 %Sat
Post Measurement	100.00 %Sat
Temperature	20.68 °C
Barometric Pressure	984.66 mbar

Serial Number	723368
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	-27.8 mV
Temperature	23.63 °C

Pre Measurement

pH	7.05 pH
pH mV	-27.8 mV

Post Measurement

pH	7.00 pH
pH mV	-27.7 mV

Slope and Offset 1

Slope	-58.89 mV/pH
Offset	-27.8 mV

ORP

ORP Solution	Quick-Cal
Offset	8.2 mV
Temperature	22.30 °C
Pre Measurement	253.4 mV
Post Measurement	227.6 mV

Serial Number	931637
Last Calibrated	Factory Defaults

Serial Number	513574
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/28/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	5.6 mV
Temperature	23.89 °C

Pre Measurement

pH	6.92 pH
pH mV	5.8 mV

Post Measurement

pH	7.00 pH
pH mV	5.6 mV

Slope and Offset 1

Slope	-58.94 mV/pH
Offset	5.6 mV

ORP

ORP Solution	Quick-Cal
Offset	-12.9 mV
Temperature	24.33 °C
Pre Measurement	221.2 mV
Post Measurement	224.5 mV

[redacted]

Serial Number	915782
Last Calibrated	6/28/2022

Calibration Details

Slope	1.006902
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.19 mg/L
Pre Measurement	99.70 %Sat
Post Measurement	100.00 %Sat
Temperature	23.64 °C
Barometric Pressure	986.65 mbar

[redacted]

Serial Number	594439
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.977
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,871.5 µS/cm
Specific Conductivity	8,041.6 µS/cm

Post Measurement

Actual Conductivity	7,830.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/28/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	5.6 mV
Temperature	23.89 °C

Pre Measurement

pH	6.92 pH
pH mV	5.8 mV

Post Measurement

pH	7.00 pH
pH mV	5.6 mV

Slope and Offset 1

Slope	-58.94 mV/pH
Offset	5.6 mV

ORP

ORP Solution	Quick-Cal
Offset	-12.9 mV
Temperature	24.33 °C
Pre Measurement	221.2 mV
Post Measurement	224.5 mV

[redacted]

Serial Number	915782
Last Calibrated	6/27/2022

Calibration Details

Slope	1.004653
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.51 mg/L
Pre Measurement	100.02 %Sat
Post Measurement	100.00 %Sat
Temperature	21.53 °C
Barometric Pressure	982.76 mbar

[redacted]

Serial Number	594439
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.977
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,871.5 µS/cm
Specific Conductivity	8,041.6 µS/cm

Post Measurement

Actual Conductivity	7,830.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/28/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	0.9 mV
Temperature	24.54 °C

Pre Measurement

pH	6.99 pH
pH mV	0.9 mV

Post Measurement

pH	7.00 pH
pH mV	0.9 mV

Slope and Offset 1

Slope	-59.07 mV/pH
Offset	0.9 mV

ORP

ORP Solution	Quick-Cal
Offset	-12.9 mV
Temperature	24.33 °C
Pre Measurement	221.2 mV
Post Measurement	224.5 mV

[redacted]

Serial Number	915782
Last Calibrated	6/27/2022

Calibration Details

Slope	1.004653
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.51 mg/L
Pre Measurement	100.02 %Sat
Post Measurement	100.00 %Sat
Temperature	21.53 °C
Barometric Pressure	982.76 mbar

[redacted]

Serial Number	594439
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.982
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,524.2 µS/cm
Specific Conductivity	7,590.8 µS/cm

Post Measurement

Actual Conductivity	7,929.8 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	518813
Last Calibrated	Factory Defaults

Calibration Report

Instrument	Aqua TROLL 600
Serial Number	518813
Created	6/28/2022

[redacted]

Serial Number	869832
Last Calibrated	Factory Defaults

[redacted]

Serial Number	808116
Last Calibrated	6/28/2022

Calibration Details

Calibration Point 1

pH of Buffer	7.00 pH
pH mV	5.6 mV
Temperature	23.89 °C

Pre Measurement

pH	6.92 pH
pH mV	5.8 mV

Post Measurement

pH	7.00 pH
pH mV	5.6 mV

Slope and Offset 1

Slope	-58.94 mV/pH
Offset	5.6 mV

ORP

ORP Solution	Quick-Cal
Offset	-12.9 mV
Temperature	24.33 °C
Pre Measurement	221.2 mV
Post Measurement	224.5 mV

[redacted]

Serial Number	915782
Last Calibrated	6/28/2022

Calibration Details

Slope	1.006902
Offset	0.00 mg/L

Calibration point 100%

Concentration	8.19 mg/L
Pre Measurement	99.70 %Sat
Post Measurement	100.00 %Sat
Temperature	23.64 °C
Barometric Pressure	986.65 mbar

[redacted]

Serial Number	594439
Last Calibrated	6/28/2022

Calibration Details

TDS Conversion Factor (ppm)	0.65
Cell Constant	0.977
Reference Temperature	25.00 °C

Pre Measurement

Actual Conductivity	7,871.5 µS/cm
Specific Conductivity	8,041.6 µS/cm

Post Measurement

Actual Conductivity	7,830.7 µS/cm
Specific Conductivity	8,000.0 µS/cm

[redacted]

Serial Number	518813
Last Calibrated	Factory Defaults

APPENDIX C

2022 FWGWMP Investigation-Derived Waste

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C.1 Characterization and Disposal Plan, Dated September 7, 2022

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September 7, 2022

Ms. Katie Tait, OHARNG
Camp James A. Garfield - Environmental Office
1438 State Route 534 SW
Newton Falls, OH 44444

Subject: **Spring 2022 Facility-wide Groundwater Monitoring Program (FWGWMP) Sampling - Investigation-Derived Waste (IDW) Characterization and Disposal Plan**
References: **1) Contract No. W912QR-21-D-0016, Delivery Order No. W912QR22F0186, Groundwater Investigation and Reporting Services, RVAAP Restoration Program**

Dear Ms. Tait:

Facility-wide Groundwater Monitoring Program (FWGWMP) investigative activities in accordance with the *Facility-wide Groundwater Monitoring Addendum for* 2022 were performed from June 14, 2022 to June 28, 2022. These activities resulted in the generation of one liquid IDW stream consisting of purge water and equipment decontamination fluids (liquinox wash water, 10% nitric acid, isopropanol, and deionized water). This IDW stream is summarized in Table 1 and consists of three (3) 55-gallon drums containing approximately 140 gallons of groundwater well purge water and equipment decontamination fluids.

Leidos composited and sampled the Spring 2022 FWGWMP waste stream per requirements outlined in Section 8.0 of the *Facility-Wide Sampling and Analysis Plan* (USACE 2011) (herein referred to as the Facility-wide SAP). This report provides a summary of IDW generated, the origin of the IDW, the proposed classification, and recommendations for disposal of the IDW. The analytical results are presented in Attachment 1, and the laboratory data package associated with this sample is presented in Attachment 2. In addition, the container logs are presented in Attachment 3.

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-220601-WW was collected to characterize the liquid drums containing groundwater well purge water and equipment decontamination fluids.

Upon receipt from the laboratory, the analytical results were reviewed to determine if the waste was potentially hazardous. This review consisted of a comparison of the analytical results against the TCLP criteria presented in Table 8-1: Maximum Concentration of Contaminants for the Toxicity Characteristic (40 CFR 261.24) and Table 8-2: Maximum Concentration of Hazardous Waste Characterization Analytes (40 CFR 261.21-23) presented in the Facility-wide SAP (USACE 2011), as well as other applicable Resource

Conservation Recovery Act (RCRA) Hazardous Waste regulations 40 CFR 261 – 265. Attachment A, Table A.1 presents the analytical laboratory data for the liquid IDW sample. The results are summarized below:

1) All analytical results were below the Maximum Concentration for Toxicity Characteristic per 40 *CFR* 261.24;
2) 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 nonhazardous, non-contaminated.

Recommended Disposal Pathways for IDW

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 the liquid IDW be removed offsite and disposed of at a permitted water treatment or waste facility unless ARNG/OHARNG has additional information that would result in the IDW meeting the definition of a listed hazardous waste as defined in 40 CFR Part 261 Subpart D. Table 1 presents the disposal pathway recommended as a result of IDW characterization data.

Table 1. Summary of Investigation-Derived Wastes and Disposal Recommendation

Container Number	Container Type and Size	Contents	Generation Date	Disposal Recommendation
Leidos-FWGW-067-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 47 gal	06/14/2022-06/17/2022	Permitted Treatment or Waste Facility
Leidos-FWGW-068-L	55 Gallon, Steel, Closed Top Drum	Purge Water, Equipment Decon Fluids – 49 gal	06/17/2022-06/22/22	Permitted Treatment or Waste Facility
Leidos-FWGW-069-L	55 Gallon, Steel, Open Top Drum	Purge Water, Equipment Decon Fluids – 44 gal	06/23/2022-06/28/2022	Permitted Treatment or Waste Facility

Since the former RVAAP, under RCRA, is the generator of this material, Leidos requests concurrence or direction on the waste classification. Following your concurrence, we will proceed with generating a waste manifest and coordinating waste disposal under previous Clean Harbors Profile No. CH2218993.

If you have any questions, or require additional information, please do not hesitate to contact me at (330) 405-5802.

Leidos

Danielle Anderson
Field Manager

cc: Kevin Sedlak, ARNG, Camp James A. Garfield
Jay Trumble, USACE Louisville
Jed Thomas, Leidos
Ryan Laurich, Leidos

ATTACHMENT 1

Laboratory Analytical Results
Sample FWGIDW-220601-WW

Table A.1. Liquid IDW Sample Results (FWGIDW-220601-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	<0.022 UF2F
Barium	7440-39-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	100	0.028 J
Cadmium	7440-43-9	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.00065 UF2F
Chromium	7440-47-3	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.0033 U
Lead	7439-92-1	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.014 UF2F
Mercury	7439-97-6	mg/L	Mercury (CVAA)	TCLP	40 CFR 261.24	0.2	<0.00006 U
Selenium	7782-49-2	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	1	<0.032 UF2F
Silver	7440-22-4	mg/L	Metals (ICP)	TCLP	40 CFR 261.24	5	<0.0098 UF
2,4-D	94-75-7	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	10	<0.0016 U
Silvex (2,4,5-TP)	93-72-1	mg/L	Herbicides (GC)	TCLP	40 CFR 261.24	1	<0.00097 U
Chlordane (technical)	57-74-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.03	<0.0014 U
Endrin	72-20-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.02	<0.000079 U
Heptachlor	76-44-8	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.000077 U
Heptachlor epoxide	1024-57-3	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.008	<0.000075 U
Methoxychlor	72-43-5	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	10	0.0017
Toxaphene	8001-35-2	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.5	<0.0037 U
gamma-BHC (Lindane)	58-89-9	mg/L	Organochlorine Pesticides (GC)	TCLP	40 CFR 261.24	0.4	<0.000069 U
1,4-Dichlorobenzene	106-46-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	7.5	<0.0064 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	<0.0028 U
2,4-Dinitrotoluene	121-14-2	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.0083 U
2-Methylphenol (o-cresol)	95-48-7	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.0049 U
3 & 4 Methylphenol (m,p-cresol)	15831-10-4	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.0013 U
Hexachlorobenzene	118-74-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.13	<0.0033 U
Hexachlorobutadiene	87-68-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.017 U
Hexachloroethane	67-72-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	3	<0.0049 U
Nitrobenzene	98-95-3	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	2	<0.0041 U
Pentachlorophenol	87-86-5	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.1 U
Pyridine	110-86-1	mg/L	Semivolatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	5	<0.0085 U
1,1-Dichloroethene	75-35-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.7	<0.0023 U
1,2-Dichloroethane	107-06-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.0013 U
2-Butanone (MEK)	78-93-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	200	<0.02 U
Benzene	71-43-2	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.0016 U
Carbon tetrachloride	56-23-5	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.0019 U
Chlorobenzene	108-90-7	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	100	<0.0017 U
Chloroform	67-66-3	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	6	<0.0016 U
Tetrachloroethene	127-18-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.7	<0.002 U
Trichloroethene	79-01-6	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.5	<0.0016 U
Vinyl chloride	75-01-4	mg/L	Volatile Organic Compounds (GC/MS)	TCLP	40 CFR 261.24	0.2	<0.001 U

Analyte	CAS Number	Units	Specific Method	Basis	Regulatory Level Citation	Regulatory Level	Sample Result
PCB-1016	12674-11-2	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00012 U
PCB-1221	11104-28-2	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.0002 U
PCB-1232	11141-16-5	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00016 U
PCB-1242	53469-21-9	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.0004 U
PCB-1248	12672-29-6	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.000086 U
PCB-1254	11097-69-1	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00011 U
PCB-1260	11096-82-5	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	<0.00015 U
PCB-1262	37324-23-5	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	ND
PCB-1268	11100-14-4	mg/L	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	Total	40 CFR 761.60	50	ND
Flashpoint	N/A	Deg C	Ignitability, Pensky-Martens Closed-Cup Method	Total	40 CFR 261.21	>60˚C (140˚F)	>160
Cyanide, Total	57-12-5	mg/L	Cyanide, Total	Total	40 CFR 261.23	See Note 1	<0.005 U
Sulfide, Total	18496-25-8	mg/L	Sulfide, Acid Soluble and Insoluble (Titrimetric)	Total	40 CFR 261.23	See Note 1	<1.6 U
pH adj. to 25 deg C	N/A	SU	pH	Total	40 CFR 261.22	2 ≤ pH ≤ 12.5	7.2
Nitrate as N	14797-55-8	mg/L	Anions, Ion Chromatography	Total	NA	---	NS
Nitrite as N	14797-65-0	mg/L	Anions, Ion Chromatography	Total	NA	---	NS
Temperature	N/A	Deg C	Temperature	Total	NA	---	18.8

All analyses were from sample collected on 6/28/22 under sample ID FWGIDW-220601-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 2

Laboratory Analytical Report
Job Number: 280-163873-1: Containing Sample FWGIDW-220601-WW

ANALYTICAL REPORT

Job Number: 280-163873-1

Job Description: Leidos RFP# 001088 - Ravenna AAP-66

For:
Leidos, Inc.
Picatinny Arsenal
356 Ninth Avenue
Suite 106
Dover, NJ 07801

Attention: Rita Schmon-Stasik

Approved for release.
Janice R Winn-Shilling
Senior Project Manager
7/21/2022 4:35 PM

Janice R Winn-Shilling, Senior Project Manager
4955 Yarrow Street, Arvada, CO, 80002
Janice.Winn-Shilling@ET.eurofinsUS.com
07/21/2022

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 Eurofins 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 Denver
4955 Yarrow Street, Arvada, CO 80002
Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com

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Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.

GC Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.

Metals

Qualifier	Qualifier Description
^1-	Initial Calibration Verification (ICV) is outside acceptance limits, low biased.
^3+	Reporting Limit Check Standard is outside acceptance limits, high biased
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

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)
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)

Glossary (Continued)

Abbreviation	These commonly used abbreviations may or may not be present in this report.
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

CASE NARRATIVE

Client: Leidos, Inc.

Project: Leidos RFP# 001088 - Ravenna AAP-66

Report Number: 280-163873-1

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 6/29/2022 9:40 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 4.1º C.

TCLP VOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for TCLP volatile organic compounds (GC-MS) in accordance with 1311. The samples were leached on 07/05/2022 and analyzed on 07/06/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for TCLP semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were leached on 06/30/2022, prepared on 07/06/2022 and analyzed on 07/08/2022.

The surrogate recovery for the blank associated with preparation batch 280-579680 and 280-580055 and analytical batch 280-580310 was outside the upper control limits.

The laboratory control sample and/or the laboratory control sample duplicate (LCS/LCSD) for preparation batch 280-579680 and 280-580055 and analytical batch 280-580310 recovered outside control limits for the following analyte(s): 2,4-Dinitrotoluene. 2,4-Dinitrotoluene has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed.

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-220601-WW (280-163873-1) was analyzed for TCLP Organochlorine Pesticides (GC) in accordance with SW 846 1311/8081B. The samples were leached on 06/30/2022, prepared on 07/07/2022 and analyzed on 07/19/2022.

The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 280-579680 and 280-580199 and analytical batch 280-581292 recovered outside control limits for the following analytes: Toxaphene. The associated sample is outside 2x hold time; therefore, no re-extraction was performed.

The following samples in preparation batch 280-579939 and analytical batch 280-580519 required a sulfuric acid clean-up, via EPA Method 3665A, to reduce matrix interferences: FWGIDW-220601-WW (280-163873-1), (LCS 280-579939/4-A), (LCSD 280-579939/5-A) and (MB 280-579939/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

POLYCHLORINATED BIPHENYLS (PCBS)
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for polychlorinated biphenyls (PCBs) in accordance with SW-846 8082A. The samples were prepared on 07/05/2022 and analyzed on 07/12/2022.

The following sample FWGIDW-220601-WW (280-163873-1) is orange in color and contains sediment preparation batch 280-579939.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

HERBICIDES BY LC/MS
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for herbicides by LC/MS in accordance with SW846 8321A. The samples were leached on 06/30/2022 and analyzed on 07/01/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP METALS
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for TCLP metals in accordance with EPA SW846 Methods 1311/6010C. The samples were leached on 06/30/2022, prepared on 07/13/2022 and analyzed on 07/14/2022 and 07/15/2022.

An alternative second source ICV was used to verify calibration for Barium. Based on analysis of multiple certified barium standards on different instruments, it is suspected that barium is not stable at the concentration level of the standard ICV. FWGIDW-220601-WW (280-163873-1), (ICV 280-581069/7), (ICV 280-581069/8), (LB3 280-579680/1-E), (LCS 280-579680/2-F), (280-163873-B-1-H MS), (280-163873-B-1-I MSD), (280-163873-B-1-G PDS) and (280-163873-B-1-G SD ^5)

Barium failed the recovery criteria low for the MS of sample FWGIDW-220601-WWMS (280-163873-1) in batch 280-581069. Several analytes failed the recovery criteria low for the MSD of sample FWGIDW-220601-WWMSD (280-163873-1) in batch 280-581069.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TCLP MERCURY
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for TCLP mercury in accordance with SW-846 1311/7470. The samples were leached on 06/30/2022, and prepared and analyzed on 07/01/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

IGNITABILITY
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for ignitability in accordance with EPA SW-846 Method 1010. The samples were analyzed on 07/07/2022.

The following samples are not associated with a duplicate as none of the samples in the batch had a detectable flashpoint.
FWGIDW-220601-WW (280-163873-1)

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 280-580263 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.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CYANIDE, TOTAL AND/OR AMENABLE
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for Cyanide, Total and/or Amenable in accordance with 9012B. The samples were analyzed on 07/11/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SULFIDE
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 06/30/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CORROSIVITY (PH)
Sample FWGIDW-220601-WW (280-163873-1) was analyzed for Corrosivity (pH) in accordance with EPA SW-846 9040C. The samples were analyzed on 07/05/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Leidos, Inc.
Job ID: 280-163873-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Client Sample ID: FWGIDW-220601-WW
Lab Sample ID: 280-163873-1

Analyte	Result	Qualifier	RL		MDL	Unit	Dil Fac	D	Method	Prep Type
Methoxychlor	0.0017		0.0010		0.00013	mg/L	1		8081B	TCLP
Barium	0.028	J ^1-	1.0		0.0041	mg/L	1		6010C	TCLP
Flashpoint	>160	*+	1.00		1.00	Degrees F	1		1010A	Total/NA
pH adj. to 25 deg C	7.2	HF	0.1		0.1	SU	1		9040C	Total/NA
Temperature	18.8	HF	1.0		1.0	Degrees C	1		9040C	Total/NA

This Detection Summary does not include radiochemical test results.

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0023	mg/L		07/06/22 11:22	1
1,2-Dichloroethane	ND		0.010	0.0013	mg/L		07/06/22 11:22	1
2-Butanone (MEK)	ND		0.10	0.020	mg/L		07/06/22 11:22	1
Benzene	ND		0.010	0.0016	mg/L		07/06/22 11:22	1
Carbon tetrachloride	ND		0.010	0.0019	mg/L		07/06/22 11:22	1
Chlorobenzene	ND		0.010	0.0017	mg/L		07/06/22 11:22	1
Chloroform	ND		0.010	0.0016	mg/L		07/06/22 11:22	1
Tetrachloroethene	ND		0.010	0.0020	mg/L		07/06/22 11:22	1
Trichloroethene	ND		0.010	0.0016	mg/L		07/06/22 11:22	1
Vinyl chloride	ND		0.010	0.0010	mg/L		07/06/22 11:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*64 - 129*		*07/06/22 11:22*	*1*
4-Bromofluorobenzene (Surr)	*96*		*78 - 121*		*07/06/22 11:22*	*1*
Dibromofluoromethane (Surr)	*102*		*79 - 119*		*07/06/22 11:22*	*1*
Toluene-d8 (Surr)	*99*		*78 - 120*		*07/06/22 11:22*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - TCLP

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.020	0.0064	mg/L		07/08/22 17:46	1
2,4,5-Trichlorophenol	ND		0.050	0.010	mg/L		07/08/22 17:46	1
2,4,6-Trichlorophenol	ND		0.050	0.0028	mg/L		07/08/22 17:46	1
2,4-Dinitrotoluene	ND	*-	0.050	0.0083	mg/L		07/08/22 17:46	1
2-Methylphenol	ND		0.050	0.0049	mg/L		07/08/22 17:46	1
3 & 4 Methylphenol	ND		0.050	0.0013	mg/L		07/08/22 17:46	1
Hexachlorobenzene	ND		0.050	0.0033	mg/L		07/08/22 17:46	1
Hexachlorobutadiene	ND		0.050	0.017	mg/L		07/08/22 17:46	1
Hexachloroethane	ND		0.050	0.0049	mg/L		07/08/22 17:46	1
Nitrobenzene	ND		0.050	0.0041	mg/L		07/08/22 17:46	1
Pentachlorophenol	ND		0.25	0.10	mg/L		07/08/22 17:46	1
Pyridine	ND		0.10	0.0085	mg/L		07/08/22 17:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*75*		*51 - 120*	*07/06/22 11:32*	*07/08/22 17:46*	*1*
2-Fluorobiphenyl	*76*		*49 - 120*	*07/06/22 11:32*	*07/08/22 17:46*	*1*
2-Fluorophenol (Surr)	*70*		*50 - 120*	*07/06/22 11:32*	*07/08/22 17:46*	*1*
Nitrobenzene-d5 (Surr)	*74*		*51 - 120*	*07/06/22 11:32*	*07/08/22 17:46*	*1*
Phenol-d5 (Surr)	*65*		*47 - 120*	*07/06/22 11:32*	*07/08/22 17:46*	*1*
Terphenyl-d14 (Surr)	*89*		*56 - 120*	*07/06/22 11:32*	*07/08/22 17:46*	*1*

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Endrin	ND		0.00050	0.000079	mg/L		07/19/22 21:03	1

Method: 8081B - Organochlorine Pesticides (GC) - TCLP (Continued)

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Heptachlor	ND		0.00050	0.000077	mg/L		07/19/22 21:03	1
Heptachlor epoxide	ND		0.00050	0.000075	mg/L		07/19/22 21:03	1
gamma-BHC (Lindane)	ND		0.00050	0.000069	mg/L		07/19/22 21:03	1
Methoxychlor	**0.0017**		0.0010	0.00013	mg/L		07/19/22 21:03	1
Toxaphene	ND	*-	0.020	0.0037	mg/L		07/19/22 21:03	1
Chlordane (technical)	ND		0.0050	0.0014	mg/L		07/19/22 21:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*75*		*28 - 115*	*07/07/22 13:16*	*07/19/22 21:03*	*1*
DCB Decachlorobiphenyl	*74*		*34 - 122*	*07/07/22 13:16*	*07/19/22 21:03*	*1*

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
PCB-1016	ND		0.94	0.12	ug/L		07/12/22 05:33	1
PCB-1221	ND		0.94	0.20	ug/L		07/12/22 05:33	1
PCB-1232	ND		0.94	0.16	ug/L		07/12/22 05:33	1
PCB-1242	ND		0.94	0.40	ug/L		07/12/22 05:33	1
PCB-1248	ND		0.94	0.086	ug/L		07/12/22 05:33	1
PCB-1254	ND		0.94	0.11	ug/L		07/12/22 05:33	1
PCB-1260	ND		0.94	0.15	ug/L		07/12/22 05:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*80*		*25 - 120*	*07/05/22 12:01*	*07/12/22 05:33*	*1*
DCB Decachlorobiphenyl	*97*		*30 - 136*	*07/05/22 12:01*	*07/12/22 05:33*	*1*

Method: 8321A Herb - Herbicides (LC/MS) - TCLP

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
2,4-D	ND		5.0	1.6	ug/L		07/01/22 19:54	1
Silvex (2,4,5-TP)	ND		5.0	0.97	ug/L		07/01/22 19:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*96*		*25 - 125*		*07/01/22 19:54*	*1*

Method: 6010C - Metals (ICP) - TCLP

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Arsenic	ND	F2 F1	0.50	0.022	mg/L		07/14/22 21:41	1
Barium	**0.028**	**J ^1-**	1.0	0.0041	mg/L		07/15/22 14:12	1
Cadmium	ND	F2 F1	0.10	0.00065	mg/L		07/14/22 21:41	1
Chromium	ND		0.50	0.0033	mg/L		07/15/22 14:12	1
Lead	ND	F2 F1	0.50	0.014	mg/L		07/14/22 21:41	1

Method: 6010C - Metals (ICP) - TCLP (Continued)

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Selenium	ND	F2 F1	0.10	0.032	mg/L		07/14/22 21:41	1
Silver	ND	F1	0.50	0.0098	mg/L		07/14/22 21:41	1

Method: 7470A - Mercury (CVAA) - TCLP

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Mercury	ND		0.0020	0.000060	mg/L		07/01/22 22:33	1

General Chemistry

Client Sample ID: FWGIDW-220601-WW **Lab Sample ID: 280-163873-1**
Date Collected: 06/28/22 14:40 **Matrix: Water**
Date Received: 06/29/22 09:40

Analyte	Result	Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Flashpoint	**>160**	***+**	1.00	1.00	Degrees F		07/07/22 16:02	1
Cyanide, Total	ND		0.010	0.0050	mg/L		07/11/22 12:52	1
Sulfide	ND		4.0	1.6	mg/L		06/30/22 15:45	1
pH adj. to 25 deg C	**7.2**	**HF**	0.1	0.1	SU		07/05/22 11:39	1
Temperature	**18.8**	**HF**	1.0	1.0	Degrees C		07/05/22 11:39	1

Default Detection Limits

Client: Leidos, Inc.
Job ID: 280-163873-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method: 8260B - Volatile Organic Compounds (GC/MS) - TCLP

Leach: 1311

Analyte	RL	MDL	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	RL	MDL	Units
1,4-Dichlorobenzene	0.020	0.0064	mg/L
2,4,5-Trichlorophenol	0.050	0.010	mg/L
2,4,6-Trichlorophenol	0.050	0.0028	mg/L
2,4-Dinitrotoluene	0.050	0.0083	mg/L
2-Methylphenol	0.050	0.0049	mg/L
3 & 4 Methylphenol	0.050	0.0013	mg/L
Hexachlorobenzene	0.050	0.0033	mg/L
Hexachlorobutadiene	0.050	0.017	mg/L
Hexachloroethane	0.050	0.0049	mg/L
Nitrobenzene	0.050	0.0041	mg/L
Pentachlorophenol	0.25	0.10	mg/L
Pyridine	0.10	0.0085	mg/L

Method: 8081B - Organochlorine Pesticides (GC) - TCLP

Prep: 3510C
Leach: 1311

Analyte	RL	MDL	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	RL	MDL	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

Default Detection Limits

Client: Leidos, Inc.
Job ID: 280-163873-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method: 8321A Herb - Herbicides (LC/MS) - TCLP

Leach: 1311

Analyte	RL	MDL	Units
2,4-D	5.0	1.6	ug/L
Silvex (2,4,5-TP)	5.0	0.97	ug/L

Method: 6010C - Metals (ICP) - TCLP

Prep: 3010A
Leach: 1311

Analyte	RL	MDL	Units
Arsenic	0.50	0.022	mg/L
Barium	1.0	0.0041	mg/L
Cadmium	0.10	0.00065	mg/L
Chromium	0.50	0.0033	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	RL	MDL	Units
Mercury	0.0020	0.000060	mg/L

General Chemistry

Analyte	RL	MDL	Units
Flashpoint	1.00	1.00	Degrees F
Cyanide, Total	0.010	0.0050	mg/L
pH adj. to 25 deg C	0.1	0.1	SU
Temperature	1.0	1.0	Degrees C

General Chemistry

Prep: 9030B

Analyte	RL	MDL	Units
Sulfide	4.0	1.6	mg/L

Surrogate Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-163873-1

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)
280-163873-1	FWGIDW-220601-WW	103	96	102	99
LB3 280-579966/1-A	Method Blank	102	98	102	98
LCS 280-579966/2-A	Lab Control Sample	100	100	100	99
LCSD 280-579966/3-A	Lab Control Sample Dup	100	99	102	98

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)
280-163873-1	FWGIDW-220601-WW	75	76	70	74	65	89
LB3 280-579680/1-C	Method Blank	38 S1-	44 S1-	40 S1-	46 S1-	37 S1-	51 S1-
LCS 280-579680/2-C	Lab Control Sample	70	77	70	78	64	90
LCSD 280-579680/3-B	Lab Control Sample Dup	75	78	69	76	64	98

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)
280-163873-1	FWGIDW-220601-WW	75	74
LB3 280-579680/1-D	Method Blank	72	72
LCS 280-579680/2-D	Lab Control Sample	75	75
LCS 280-579680/2-E	Lab Control Sample	74	76
LCSD 280-579680/3-C	Lab Control Sample Dup	71	73
LCSD 280-579680/3-D	Lab Control Sample Dup	73	74

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCBP = DCB Decachlorobiphenyl

Surrogate Summary

Client: Leidos, Inc. Job ID: 280-163873-1

Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		TCX1	DCBP1
Lab Sample ID	Client Sample ID	(25-120)	(30-136)
280-163873-1	FWGIDW-220601-WW	80	97
LCS 280-579939/4-A	Lab Control Sample	69	116
LCSD 280-579939/5-A	Lab Control Sample Dup	68	113
MB 280-579939/1-A	Method Blank	77	108

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCBP = DCB Decachlorobiphenyl

Method: 8321A Herb - Herbicides (LC/MS)

Matrix: Water **Prep Type: TCLP**

		Percent Surrogate Recovery (Acceptance Limits)
		DCPAA
Lab Sample ID	Client Sample ID	(25-125)
280-163873-1	FWGIDW-220601-WW	96
280-163873-1 MS	FWGIDW-220601-WW	97
280-163873-1 MSD	FWGIDW-220601-WW	104
LB3 280-579680/1-A	Method Blank	114
LCS 280-579680/2-A	Lab Control Sample	102

Surrogate Legend

DCPAA = 2,4-Dichlorophenylacetic acid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 280-579966/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580066

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
1,1-Dichloroethene	ND		0.010	0.0023	mg/L		07/06/22 11:00	1
1,2-Dichloroethane	ND		0.010	0.0013	mg/L		07/06/22 11:00	1
2-Butanone (MEK)	ND		0.10	0.020	mg/L		07/06/22 11:00	1
Benzene	ND		0.010	0.0016	mg/L		07/06/22 11:00	1
Carbon tetrachloride	ND		0.010	0.0019	mg/L		07/06/22 11:00	1
Chlorobenzene	ND		0.010	0.0017	mg/L		07/06/22 11:00	1
Chloroform	ND		0.010	0.0016	mg/L		07/06/22 11:00	1
Tetrachloroethene	ND		0.010	0.0020	mg/L		07/06/22 11:00	1
Trichloroethene	ND		0.010	0.0016	mg/L		07/06/22 11:00	1
Vinyl chloride	ND		0.010	0.0010	mg/L		07/06/22 11:00	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*64 - 129*		*07/06/22 11:00*	*1*
4-Bromofluorobenzene (Surr)	*98*		*78 - 121*		*07/06/22 11:00*	*1*
Dibromofluoromethane (Surr)	*102*		*79 - 119*		*07/06/22 11:00*	*1*
Toluene-d8 (Surr)	*98*		*78 - 120*		*07/06/22 11:00*	*1*

Lab Sample ID: LCS 280-579966/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580066

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethene	0.250	0.234		mg/L		93	71 - 136
1,2-Dichloroethane	0.250	0.243		mg/L		97	70 - 135
2-Butanone (MEK)	1.00	0.993		mg/L		99	44 - 150
Benzene	0.250	0.235		mg/L		94	74 - 135
Carbon tetrachloride	0.250	0.253		mg/L		101	67 - 135
Chlorobenzene	0.250	0.226		mg/L		90	76 - 135
Chloroform	0.250	0.236		mg/L		95	76 - 120
Tetrachloroethene	0.250	0.231		mg/L		92	70 - 135
Trichloroethene	0.250	0.221		mg/L		88	73 - 135
Vinyl chloride	0.250	0.271		mg/L		108	40 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*64 - 129*
4-Bromofluorobenzene (Surr)	*100*		*78 - 121*
Dibromofluoromethane (Surr)	*100*		*79 - 119*
Toluene-d8 (Surr)	*99*		*78 - 120*

Lab Sample ID: LCSD 280-579966/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580066

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1-Dichloroethene	0.250	0.263		mg/L		105	71 - 136	12	20
1,2-Dichloroethane	0.250	0.269		mg/L		108	70 - 135	10	20
2-Butanone (MEK)	1.00	1.10		mg/L		110	44 - 150	10	32
Benzene	0.250	0.258		mg/L		103	74 - 135	9	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 280-579966/3-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580066

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	7	21
Chlorobenzene	0.250	0.248		mg/L		99	76 - 135	10	20
Chloroform	0.250	0.258		mg/L		103	76 - 120	9	20
Tetrachloroethene	0.250	0.263		mg/L		105	70 - 135	13	20
Trichloroethene	0.250	0.248		mg/L		99	73 - 135	12	20
Vinyl chloride	0.250	0.273		mg/L		109	40 - 144	1	24

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*64 - 129*
4-Bromofluorobenzene (Surr)	*99*		*78 - 121*
Dibromofluoromethane (Surr)	*102*		*79 - 119*
Toluene-d8 (Surr)	*98*		*78 - 120*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: LB3 280-579680/1-C **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580310 **Prep Batch: 580055**

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
1,4-Dichlorobenzene	ND		0.020	0.0064	mg/L		07/08/22 15:42	1
2,4,5-Trichlorophenol	ND		0.050	0.010	mg/L		07/08/22 15:42	1
2,4,6-Trichlorophenol	ND		0.050	0.0028	mg/L		07/08/22 15:42	1
2,4-Dinitrotoluene	ND		0.050	0.0083	mg/L		07/08/22 15:42	1
2-Methylphenol	ND		0.050	0.0049	mg/L		07/08/22 15:42	1
3 & 4 Methylphenol	ND		0.050	0.0013	mg/L		07/08/22 15:42	1
Hexachlorobenzene	ND		0.050	0.0033	mg/L		07/08/22 15:42	1
Hexachlorobutadiene	ND		0.050	0.017	mg/L		07/08/22 15:42	1
Hexachloroethane	ND		0.050	0.0049	mg/L		07/08/22 15:42	1
Nitrobenzene	ND		0.050	0.0041	mg/L		07/08/22 15:42	1
Pentachlorophenol	ND		0.25	0.10	mg/L		07/08/22 15:42	1
Pyridine	ND		0.10	0.0085	mg/L		07/08/22 15:42	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*38*	*S1-*	*51 - 120*	*07/06/22 11:32*	*07/08/22 15:42*	*1*
2-Fluorobiphenyl	*44*	*S1-*	*49 - 120*	*07/06/22 11:32*	*07/08/22 15:42*	*1*
2-Fluorophenol (Surr)	*40*	*S1-*	*50 - 120*	*07/06/22 11:32*	*07/08/22 15:42*	*1*
Nitrobenzene-d5 (Surr)	*46*	*S1-*	*51 - 120*	*07/06/22 11:32*	*07/08/22 15:42*	*1*
Phenol-d5 (Surr)	*37*	*S1-*	*47 - 120*	*07/06/22 11:32*	*07/08/22 15:42*	*1*
Terphenyl-d14 (Surr)	*51*	*S1-*	*56 - 120*	*07/06/22 11:32*	*07/08/22 15:42*	*1*

Lab Sample ID: LCS 280-579680/2-C **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580310 **Prep Batch: 580055**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dichlorobenzene	0.250	0.171		mg/L		68	29 - 112
2,4,5-Trichlorophenol	0.250	0.189		mg/L		76	53 - 123

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 280-579680/2-C **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580310 **Prep Batch: 580055**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4,6-Trichlorophenol	0.250	0.178		mg/L		71	50 - 125
2,4-Dinitrotoluene	0.100	0.0397	J *-	mg/L		40	57 - 128
2-Methylphenol	0.250	0.191		mg/L		77	30 - 117
3 & 4 Methylphenol	0.500	0.386		mg/L		77	29 - 110
Hexachlorobenzene	0.100	0.0824		mg/L		82	53 - 125
Hexachlorobutadiene	0.250	0.182		mg/L		73	22 - 124
Hexachloroethane	0.250	0.171		mg/L		68	21 - 115
Nitrobenzene	0.250	0.201		mg/L		81	45 - 121
Pentachlorophenol	0.500	0.260		mg/L		52	35 - 138
Pyridine	0.250	0.176		mg/L		71	10 - 121

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*70*		*51 - 120*
2-Fluorobiphenyl	*77*		*49 - 120*
2-Fluorophenol (Surr)	*70*		*50 - 120*
Nitrobenzene-d5 (Surr)	*78*		*51 - 120*
Phenol-d5 (Surr)	*64*		*47 - 120*
Terphenyl-d14 (Surr)	*90*		*56 - 120*

Lab Sample ID: LCSD 280-579680/3-B **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580310 **Prep Batch: 580055**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dichlorobenzene	0.250	0.180		mg/L		72	29 - 112	5	30
2,4,5-Trichlorophenol	0.250	0.212		mg/L		85	53 - 123	12	30
2,4,6-Trichlorophenol	0.250	0.195		mg/L		78	50 - 125	9	30
2,4-Dinitrotoluene	0.100	0.0461	J *-	mg/L		46	57 - 128	15	30
2-Methylphenol	0.250	0.210		mg/L		84	30 - 117	9	30
3 & 4 Methylphenol	0.500	0.415		mg/L		83	29 - 110	7	30
Hexachlorobenzene	0.100	0.0954		mg/L		95	53 - 125	15	30
Hexachlorobutadiene	0.250	0.190		mg/L		76	22 - 124	4	47
Hexachloroethane	0.250	0.171		mg/L		68	21 - 115	0	30
Nitrobenzene	0.250	0.213		mg/L		85	45 - 121	6	30
Pentachlorophenol	0.500	0.335		mg/L		67	35 - 138	25	30
Pyridine	0.250	0.158		mg/L		63	10 - 121	11	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*75*		*51 - 120*
2-Fluorobiphenyl	*78*		*49 - 120*
2-Fluorophenol (Surr)	*69*		*50 - 120*
Nitrobenzene-d5 (Surr)	*76*		*51 - 120*
Phenol-d5 (Surr)	*64*		*47 - 120*
Terphenyl-d14 (Surr)	*98*		*56 - 120*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: LB3 280-579680/1-D **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581292 **Prep Batch: 580199**

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Endrin	ND		0.00050	0.000079	mg/L		07/19/22 19:37	1
Heptachlor	ND		0.00050	0.000077	mg/L		07/19/22 19:37	1
Heptachlor epoxide	ND		0.00050	0.000075	mg/L		07/19/22 19:37	1
gamma-BHC (Lindane)	ND		0.00050	0.000069	mg/L		07/19/22 19:37	1
Methoxychlor	ND		0.0010	0.00013	mg/L		07/19/22 19:37	1
Toxaphene	ND		0.020	0.0037	mg/L		07/19/22 19:37	1
Chlordane (technical)	ND		0.0050	0.0014	mg/L		07/19/22 19:37	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*72*		*28 - 115*	*07/07/22 13:16*	*07/19/22 19:37*	*1*
DCB Decachlorobiphenyl	*72*		*34 - 122*	*07/07/22 13:16*	*07/19/22 19:37*	*1*

Lab Sample ID: LCS 280-579680/2-D **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581292 **Prep Batch: 580199**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Endrin	0.00500	0.00435		mg/L		87	66 - 143
Heptachlor	0.00500	0.00427		mg/L		85	59 - 143
Heptachlor epoxide	0.00500	0.00400		mg/L		80	37 - 142
gamma-BHC (Lindane)	0.00500	0.00410		mg/L		82	68 - 142
Methoxychlor	0.00500	0.00575		mg/L		115	30 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*75*		*28 - 115*
DCB Decachlorobiphenyl	*75*		*34 - 122*

Lab Sample ID: LCS 280-579680/2-E **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581292 **Prep Batch: 580199**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Toxaphene	0.200	0.0669	*-	mg/L		33	63 - 142

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*74*		*28 - 115*
DCB Decachlorobiphenyl	*76*		*34 - 122*

Lab Sample ID: LCSD 280-579680/3-C **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581292 **Prep Batch: 580199**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Endrin	0.00500	0.00459		mg/L		92	66 - 143	5	30
Heptachlor	0.00500	0.00460		mg/L		92	59 - 143	7	30
Heptachlor epoxide	0.00500	0.00416		mg/L		83	37 - 142	4	30
gamma-BHC (Lindane)	0.00500	0.00430		mg/L		86	68 - 142	5	30
Methoxychlor	0.00500	0.00752		mg/L		150	30 - 150	27	30

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	71		28 - 115
DCB Decachlorobiphenyl	73		34 - 122

Lab Sample ID: LCSD 280-579680/3-D **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581292 **Prep Batch: 580199**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Toxaphene			0.200	0.0724	*-	mg/L		36	63 - 142	8	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Tetrachloro-m-xylene	73		28 - 115
DCB Decachlorobiphenyl	74		34 - 122

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 280-579939/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580519 **Prep Batch: 579939**

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
PCB-1016	ND		1.0		0.12	ug/L		07/12/22 04:18	1
PCB-1221	ND		1.0		0.21	ug/L		07/12/22 04:18	1
PCB-1232	ND		1.0		0.17	ug/L		07/12/22 04:18	1
PCB-1242	ND		1.0		0.42	ug/L		07/12/22 04:18	1
PCB-1248	ND		1.0		0.092	ug/L		07/12/22 04:18	1
PCB-1254	ND		1.0		0.11	ug/L		07/12/22 04:18	1
PCB-1260	ND		1.0		0.16	ug/L		07/12/22 04:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	77		25 - 120	07/05/22 12:01	07/12/22 04:18	1
DCB Decachlorobiphenyl	108		30 - 136	07/05/22 12:01	07/12/22 04:18	1

Lab Sample ID: LCS 280-579939/4-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580519 **Prep Batch: 579939**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
PCB-1016			2.00	1.83		ug/L		91	46 - 129		
PCB-1260			2.00	2.15		ug/L		107	45 - 134		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tetrachloro-m-xylene	69		25 - 120
DCB Decachlorobiphenyl	116		30 - 136

Lab Sample ID: LCSD 280-579939/5-A **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580519 **Prep Batch: 579939**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-1016			2.00	1.94		ug/L		97	46 - 129	6	30

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography (Continued)

Lab Sample ID: LCSD 280-579939/5-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 580519 — **Prep Batch: 579939**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-1260			2.00	2.20		ug/L		110	45 - 134	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*68*		*25 - 120*
DCB Decachlorobiphenyl	*113*		*30 - 136*

Method: 8321A Herb - Herbicides (LC/MS)

Lab Sample ID: LB3 280-579680/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 579795

Analyte	LB3 Result	LB3 Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
2,4-D	ND		5.0		1.6	ug/L		07/01/22 19:42	1
Silvex (2,4,5-TP)	ND		5.0		0.97	ug/L		07/01/22 19:42	1

Surrogate	*LB3 %Recovery*	*LB3 Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*114*		*25 - 125*		*07/01/22 19:42*	*1*

Lab Sample ID: LCS 280-579680/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 579795

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
2,4-D			20.0	19.8		ug/L		99	70 - 130		
Silvex (2,4,5-TP)			20.0	18.8		ug/L		94	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*102*		*25 - 125*

Lab Sample ID: 280-163873-1 MS — **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 579795

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
2,4-D	ND		20.0	23.5		ug/L		117	70 - 130		
Silvex (2,4,5-TP)	ND		20.0	20.9		ug/L		105	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*97*		*25 - 125*

Lab Sample ID: 280-163873-1 MSD — **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water — **Prep Type: TCLP**
Analysis Batch: 579795

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4-D	ND		20.0	24.0		ug/L		120	70 - 130	2	20
Silvex (2,4,5-TP)	ND		20.0	23.4		ug/L		117	70 - 130	11	20

Method: 8321A Herb - Herbicides (LC/MS) (Continued)

Surrogate	MSD %Recovery	MSD Qualifier	Limits
2,4-Dichlorophenylacetic acid	104		25 - 125

Method: 6010C - Metals (ICP)

Lab Sample ID: LB3 280-579680/1-E **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580930 **Prep Batch: 580678**

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Arsenic	ND		0.50	0.022	mg/L		07/14/22 21:33	1
Cadmium	ND		0.10	0.00065	mg/L		07/14/22 21:33	1
Lead	ND		0.50	0.014	mg/L		07/14/22 21:33	1
Selenium	ND		0.10	0.032	mg/L		07/14/22 21:33	1
Silver	ND		0.50	0.0098	mg/L		07/14/22 21:33	1

Lab Sample ID: LB3 280-579680/1-E **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581069 **Prep Batch: 580678**

Analyte	LB3 Result	LB3 Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Barium	ND	^1-	1.0	0.0041	mg/L		07/15/22 14:03	1
Chromium	ND		0.50	0.0033	mg/L		07/15/22 14:03	1

Lab Sample ID: LCS 280-579680/2-F **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580930 **Prep Batch: 580678**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	4.00	3.54		mg/L		89	87 - 113
Cadmium	2.00	1.75		mg/L		88	88 - 113
Lead	6.00	5.41		mg/L		90	86 - 113
Selenium	2.00	1.74		mg/L		87	83 - 114
Silver	1.05	0.894		mg/L		85	84 - 115

Lab Sample ID: LCS 280-579680/2-F **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581069 **Prep Batch: 580678**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	11.0	12.2	^1-	mg/L		111	88 - 113
Chromium	6.00	6.57		mg/L		110	90 - 113

Lab Sample ID: 280-163873-1 MS **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580930 **Prep Batch: 580678**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	ND	F2 F1	4.00	3.78		mg/L		95	87 - 113
Cadmium	ND	F2 F1	2.00	1.85		mg/L		93	88 - 113
Lead	ND	F2 F1	6.00	5.70		mg/L		95	86 - 113
Selenium	ND	F2 F1	2.00	1.84		mg/L		92	83 - 114
Silver	ND	F1	1.05	0.940		mg/L		90	84 - 115

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 280-163873-1 MS **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581069 **Prep Batch: 580678**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Barium	0.028	J ^1-	11.0	12.2	^1-	mg/L		110	88 - 113		
Chromium	ND		6.00	6.64		mg/L		111	90 - 113		

Lab Sample ID: 280-163873-1 MSD **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 580930 **Prep Batch: 580678**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	ND	F2 F1	4.00	3.00	F1 F2	mg/L		75	87 - 113	23	20
Cadmium	ND	F2 F1	2.00	1.46	F1 F2	mg/L		73	88 - 113	24	20
Lead	ND	F2 F1	6.00	4.52	F1 F2	mg/L		75	86 - 113	23	20
Selenium	ND	F2 F1	2.00	1.46	F1 F2	mg/L		73	83 - 114	23	20
Silver	ND	F1	1.05	0.769	F1	mg/L		73	84 - 115	20	20

Lab Sample ID: 280-163873-1 MSD **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 581069 **Prep Batch: 580678**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Barium	0.028	J ^1-	11.0	12.5	^1-	mg/L		113	88 - 113	2	20
Chromium	ND		6.00	6.78		mg/L		113	90 - 113	2	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: LB3 280-579680/1-B **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 579942 **Prep Batch: 579786**

Analyte	LB3 Result	LB3 Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Mercury	ND		0.0020		0.000060	mg/L		07/01/22 22:28	1

Lab Sample ID: LCS 280-579680/2-B **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 579942 **Prep Batch: 579786**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00500	0.00480		mg/L		96	90 - 116		

Lab Sample ID: 280-163873-1 MS **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 579942 **Prep Batch: 579786**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	ND		0.00500	0.00486		mg/L		97	90 - 116		

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 280-163873-1 MSD **Client Sample ID: FWGIDW-220601-WW**
Matrix: Water **Prep Type: TCLP**
Analysis Batch: 579942 **Prep Batch: 579786**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	ND		0.00500	0.00486		mg/L		97	90 - 116	0	10

Method: 1010A - Ignitability, Pensky-Martens Closed-Cup Method

Lab Sample ID: MB 280-580263/2 **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580263

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Flashpoint	>160.0		1.00		1.00	Degrees F		07/07/22 16:02	1

Lab Sample ID: MB 280-580263/6 **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580263

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Flashpoint	>160.0		1.00		1.00	Degrees F		07/07/22 16:02	1

Lab Sample ID: LCS 280-580263/1 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580263

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Flashpoint			90.0	93.00		Degrees F		103	95 - 105		

Lab Sample ID: LCSD 280-580263/5 **Client Sample ID: Lab Control Sample Dup**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580263

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Flashpoint			90.0	95.00	*+	Degrees F		106	95 - 105	2	10

Method: 9012B - Cyanide, Total and/or Amenable

Lab Sample ID: MB 280-580498/20 **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580498

Analyte	MB Result	MB Qualifier	RL		MDL	Unit	D	Analyzed	Dil Fac
Cyanide, Total	ND		0.010		0.0050	mg/L		07/11/22 12:23	1

Lab Sample ID: HLCS 280-580498/17 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580498

Analyte			Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total			0.350	0.369		mg/L		105	90 - 110		

Method: 9012B - Cyanide, Total and/or Amenable (Continued)

Lab Sample ID: LCS 280-580498/19 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580498

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.100	0.0973		mg/L		97	83 - 116

Lab Sample ID: LLCS 280-580498/18 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580498

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.100	0.106		mg/L		106	44 - 167

Method: 9034 - Sulfide, Acid Soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 280-579634/2-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 579651 **Prep Batch: 579634**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Analyzed	Dil Fac
Sulfide	ND		4.0	1.6	mg/L		06/30/22 15:45	1

Lab Sample ID: LCS 280-579634/1-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 579651 **Prep Batch: 579634**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	18.6	14.4		mg/L		78	44 - 110

Method: 9040C - pH

Lab Sample ID: LCS 280-580032/4 **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 580032

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	99 - 101

QC Association Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-163873-1

GC/MS VOA

Leach Batch: 579966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	1311	
LB3 280-579966/1-A	Method Blank	TCLP	Water	1311	
LCS 280-579966/2-A	Lab Control Sample	TCLP	Water	1311	
LCSD 280-579966/3-A	Lab Control Sample Dup	TCLP	Water	1311	

Analysis Batch: 580066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	8260B	579966
LB3 280-579966/1-A	Method Blank	TCLP	Water	8260B	579966
LCS 280-579966/2-A	Lab Control Sample	TCLP	Water	8260B	579966
LCSD 280-579966/3-A	Lab Control Sample Dup	TCLP	Water	8260B	579966

GC/MS Semi VOA

Leach Batch: 579680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	1311	
LB3 280-579680/1-C	Method Blank	TCLP	Water	1311	
LCS 280-579680/2-C	Lab Control Sample	TCLP	Water	1311	
LCSD 280-579680/3-B	Lab Control Sample Dup	TCLP	Water	1311	

Prep Batch: 580055

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	3510C	579680
LB3 280-579680/1-C	Method Blank	TCLP	Water	3510C	579680
LCS 280-579680/2-C	Lab Control Sample	TCLP	Water	3510C	579680
LCSD 280-579680/3-B	Lab Control Sample Dup	TCLP	Water	3510C	579680

Analysis Batch: 580310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	8270D	580055
LB3 280-579680/1-C	Method Blank	TCLP	Water	8270D	580055
LCS 280-579680/2-C	Lab Control Sample	TCLP	Water	8270D	580055
LCSD 280-579680/3-B	Lab Control Sample Dup	TCLP	Water	8270D	580055

GC Semi VOA

Leach Batch: 579680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	1311	
LB3 280-579680/1-D	Method Blank	TCLP	Water	1311	
LCS 280-579680/2-D	Lab Control Sample	TCLP	Water	1311	
LCS 280-579680/2-E	Lab Control Sample	TCLP	Water	1311	
LCSD 280-579680/3-C	Lab Control Sample Dup	TCLP	Water	1311	
LCSD 280-579680/3-D	Lab Control Sample Dup	TCLP	Water	1311	

Prep Batch: 579939

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	Total/NA	Water	3510C	
MB 280-579939/1-A	Method Blank	Total/NA	Water	3510C	
LCS 280-579939/4-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 280-579939/5-A	Lab Control Sample Dup	Total/NA	Water	3510C	

QC Association Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-163873-1

GC Semi VOA

Prep Batch: 580199

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	3510C	579680
LB3 280-579680/1-D	Method Blank	TCLP	Water	3510C	579680
LCS 280-579680/2-D	Lab Control Sample	TCLP	Water	3510C	579680
LCS 280-579680/2-E	Lab Control Sample	TCLP	Water	3510C	579680
LCSD 280-579680/3-C	Lab Control Sample Dup	TCLP	Water	3510C	579680
LCSD 280-579680/3-D	Lab Control Sample Dup	TCLP	Water	3510C	579680

Analysis Batch: 580519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	Total/NA	Water	8082A	579939
MB 280-579939/1-A	Method Blank	Total/NA	Water	8082A	579939
LCS 280-579939/4-A	Lab Control Sample	Total/NA	Water	8082A	579939
LCSD 280-579939/5-A	Lab Control Sample Dup	Total/NA	Water	8082A	579939

Analysis Batch: 581292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	8081B	580199
LB3 280-579680/1-D	Method Blank	TCLP	Water	8081B	580199
LCS 280-579680/2-D	Lab Control Sample	TCLP	Water	8081B	580199
LCS 280-579680/2-E	Lab Control Sample	TCLP	Water	8081B	580199
LCSD 280-579680/3-C	Lab Control Sample Dup	TCLP	Water	8081B	580199
LCSD 280-579680/3-D	Lab Control Sample Dup	TCLP	Water	8081B	580199

LCMS

Leach Batch: 579680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	1311	
LB3 280-579680/1-A	Method Blank	TCLP	Water	1311	
LCS 280-579680/2-A	Lab Control Sample	TCLP	Water	1311	
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	1311	
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	1311	

Analysis Batch: 579795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	8321A Herb	579680
LB3 280-579680/1-A	Method Blank	TCLP	Water	8321A Herb	579680
LCS 280-579680/2-A	Lab Control Sample	TCLP	Water	8321A Herb	579680
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	8321A Herb	579680
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	8321A Herb	579680

Metals

Leach Batch: 579680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	1311	
LB3 280-579680/1-B	Method Blank	TCLP	Water	1311	
LB3 280-579680/1-E	Method Blank	TCLP	Water	1311	
LCS 280-579680/2-B	Lab Control Sample	TCLP	Water	1311	
LCS 280-579680/2-F	Lab Control Sample	TCLP	Water	1311	
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	1311	
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	1311	

QC Association Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-163873-1

Metals

Prep Batch: 579786

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	7470A	579680
LB3 280-579680/1-B	Method Blank	TCLP	Water	7470A	579680
LCS 280-579680/2-B	Lab Control Sample	TCLP	Water	7470A	579680
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	7470A	579680
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	7470A	579680

Analysis Batch: 579942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	7470A	579786
LB3 280-579680/1-B	Method Blank	TCLP	Water	7470A	579786
LCS 280-579680/2-B	Lab Control Sample	TCLP	Water	7470A	579786
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	7470A	579786
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	7470A	579786

Prep Batch: 580678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	3010A	579680
LB3 280-579680/1-E	Method Blank	TCLP	Water	3010A	579680
LCS 280-579680/2-F	Lab Control Sample	TCLP	Water	3010A	579680
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	3010A	579680
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	3010A	579680

Analysis Batch: 580930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	6010C	580678
LB3 280-579680/1-E	Method Blank	TCLP	Water	6010C	580678
LCS 280-579680/2-F	Lab Control Sample	TCLP	Water	6010C	580678
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	6010C	580678
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	6010C	580678

Analysis Batch: 581069

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	TCLP	Water	6010C	580678
LB3 280-579680/1-E	Method Blank	TCLP	Water	6010C	580678
LCS 280-579680/2-F	Lab Control Sample	TCLP	Water	6010C	580678
280-163873-1 MS	FWGIDW-220601-WW	TCLP	Water	6010C	580678
280-163873-1 MSD	FWGIDW-220601-WW	TCLP	Water	6010C	580678

General Chemistry

Prep Batch: 579634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	Total/NA	Water	9030B	
MB 280-579634/2-A	Method Blank	Total/NA	Water	9030B	
LCS 280-579634/1-A	Lab Control Sample	Total/NA	Water	9030B	

Analysis Batch: 579651

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	Total/NA	Water	9034	579634
MB 280-579634/2-A	Method Blank	Total/NA	Water	9034	579634
LCS 280-579634/1-A	Lab Control Sample	Total/NA	Water	9034	579634

QC Association Summary

Client: Leidos, Inc.
Job ID: 280-163873-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

General Chemistry

Analysis Batch: 580032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	Total/NA	Water	9040C	
LCS 280-580032/4	Lab Control Sample	Total/NA	Water	9040C	

Analysis Batch: 580263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	Total/NA	Water	1010A	
MB 280-580263/2	Method Blank	Total/NA	Water	1010A	
MB 280-580263/6	Method Blank	Total/NA	Water	1010A	
LCS 280-580263/1	Lab Control Sample	Total/NA	Water	1010A	
LCSD 280-580263/5	Lab Control Sample Dup	Total/NA	Water	1010A	

Analysis Batch: 580498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-163873-1	FWGIDW-220601-WW	Total/NA	Water	9012B	
MB 280-580498/20	Method Blank	Total/NA	Water	9012B	
HLCS 280-580498/17	Lab Control Sample	Total/NA	Water	9012B	
LCS 280-580498/19	Lab Control Sample	Total/NA	Water	9012B	
LLCS 280-580498/18	Lab Control Sample	Total/NA	Water	9012B	

Lab Chronicle

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-163873-1

Client Sample ID: FWGIDW-220601-WW

Date Collected: 06/28/22 14:40
Date Received: 06/29/22 09:40

Lab Sample ID: 280-163873-1

Matrix: Water

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	579966	07/05/22 12:48	DFB1	TAL DEN
TCLP	Analysis	8260B		1	0.5 mL	5 mL	580066	07/06/22 11:22	CKL	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	579680	06/30/22 14:10	DFB1	TAL DEN
TCLP	Prep	3510C			200 mL	1 mL	580055	07/06/22 11:32	KAS	TAL DEN
TCLP	Analysis	8270D		1			580310	07/08/22 17:46	SP	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	579680	06/30/22 14:10	DFB1	TAL DEN
TCLP	Prep	3510C			100 mL	10 mL	580199	07/07/22 13:16	KJZ	TAL DEN
TCLP	Analysis	8081B		1			581292	07/19/22 21:03	AJE	TAL DEN
Total/NA	Prep	3510C			1060.1 mL	10 mL	579939	07/05/22 12:01	KJZ	TAL DEN
Total/NA	Analysis	8082A		1			580519	07/12/22 05:33	MKW	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	579680	06/30/22 14:10	DFB1	TAL DEN
TCLP	Analysis	8321A Herb		1	0.5 mL	1 mL	579795	07/01/22 19:54	JZ	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	579680	06/30/22 14:10	DFB1	TAL DEN
TCLP	Prep	3010A			10 mL	50 mL	580678	07/13/22 16:14	KMS	TAL DEN
TCLP	Analysis	6010C		1			580930	07/14/22 21:41	MAB	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	579680	06/30/22 14:10	DFB1	TAL DEN
TCLP	Prep	3010A			10 mL	50 mL	580678	07/13/22 16:14	KMS	TAL DEN
TCLP	Analysis	6010C		1			581069	07/15/22 14:12	MAB	TAL DEN
TCLP	Leach	1311			1.0 g	1.0 mL	579680	06/30/22 14:10	DFB1	TAL DEN
TCLP	Prep	7470A			30 mL	50 mL	579786	07/01/22 16:48	CEH	TAL DEN
TCLP	Analysis	7470A		1			579942	07/01/22 22:33	CEH	TAL DEN
Total/NA	Analysis	1010A		1			580263	07/07/22 16:02	MEC	TAL DEN
Total/NA	Analysis	9012B		1	10 mL	10 mL	580498	07/11/22 12:52	MMP	TAL DEN
Total/NA	Prep	9030B			50 mL	50 mL	579634	06/30/22 13:59	ZPM	TAL DEN
Total/NA	Analysis	9034		1			579651	06/30/22 15:45	ZPM	TAL DEN
Total/NA	Analysis	9040C		1			580032	07/05/22 11:39	KEG	TAL DEN

Laboratory References:

TAL DEN = Eurofins Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Leidos, Inc. Job ID: 280-163873-1
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Laboratory: Eurofins 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	10-31-23

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
9012B		Water	Cyanide, Total
9040C		Water	Temperature

Method Summary

Client: Leidos, Inc.
Project/Site: Leidos RFP# 001088 - Ravenna AAP-66

Job ID: 280-163873-1

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
8321A Herb	Herbicides (LC/MS)	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	SW846	TAL DEN
9034	Sulfide, Acid Soluble and Insoluble (Titrimetric)	SW846	TAL DEN
9040C	pH	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
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	TAL DEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = Eurofins 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: 280-163873-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-163873-1	FWGIDW-220601-WW	Water	06/28/22 14:40	06/29/22 09:40

Eurofins Denver
4955 Yarrow Street
Arvada, CO 80002
Phone: 303-736-0100 Fax: 303-431-7171

Chain of Custody Record

eurofins | Environment Testing America

(8 of 8)

Client Information	Sampler: Chris McFarland	Lab PM: Rydberg, Donna R	Carrier Tracking No(s): 817253056709	COC No: RVAAP-241-TA 280-120647-33875.1
Client Contact: Bette Premo	Phone:	E-Mail: Donna.Rydberg@et.eurofinsus.com	State of Origin: OHIO	Page: Page 1 of 1
Company: White Water Associates	PWSID:			Job #:
Address: 429 River Lane PO BOX 27	Due Date Requested:			
City: Amasa	TAT Requested (days): STANDARD TAT			
State, Zip: MI, 49903	Compliance Project: Δ Yes X No			
Phone: 973-439-2919(Tel)	PO #: P010216426			
Email: bette.premo@white-water-associates.com	WO #:			
Project Name: Leidos RFP# 001088 - Ravenna AAP-66	Project #: 28018729			
Site: RVAAP FWGW Sampling Event 2021	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	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)	8260B_DOD5 - TCLP Volatile Organic Compounds	8270D_DOD5 - (MOD) 8270D Routine Analyte List	9012B_DOD5 - Cyanide, Total	9034 - Local Method	9040C, 9056A_48H_DOD5	1010A - Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N	B	CB	N	N		
FWGIDW-220601-NW	6/28/22	1440	C	Water	N	N	X	X	X	X	X	X	9	LEIDOS FWGW-067 to 69-L

AS 6/28/22

280-163873 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by: RSmf	Date/Time: 6/28/22 1530	Company: LEIDOS	Received by: Jeff Camp	Date/Time: 6/29/22 0940	Company: ETA-Den
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 1836524, 1836525		Cooler Temperature(s) °C and Other Remarks: 4.0 IR#12 CF (0.1)		

Ver: 06/08/2021

ATTACHMENT 3

Container Logs

CONTAINER LOG

Container No. (1) **LEIDOS-FWGW-067-L** **Page 1 of 1**

Drum Staging Area: Building 1036

Date (2)	Material Name (3)	Quantity Added (4)	Cumulative Quantity (5)	Person Adding Material (6)	Label	Notes
06/14/2022	FWGW Purge Water	5 gallons	5 gallons	Field Sampling Team	Pending analysis	N/A
06/15/2022	FWGW Purge Water	16 gallons	21 gallons	Field Sampling Team	Pending analysis	N/A
06/16/2022	FWGW Purge Water	17 gallons	38 gallons	Field Sampling Team	Pending analysis	N/A
06/17/2022	FWGW Purge Water	9 gallons	47 gallons	Field Sampling Team	Pending analysis	N/A

(When 55 gals total reached, must move from SAA within 3 calendar days.)

Date Container Transferred to Generator Accumulation Area _____

Materials shipped offsite date: _____

(1) Container ID Number (e.g., FC-FMS#1-2)
(2) Date when waste was added to container
(3) Name of waste added (e.g., Diesel Fuel)
(4) For items such as filters, note the number of items. For liquids, note the number of gallons.
(5) The total quantity of items of numbers of gallon currently in the container
(6) The name of the person adding the waste

CONTAINER LOG

Container No. (1) **LEIDOS-FWGW-068-L** **Page 1 of 1**

Drum Staging Area: Building 1036

Date (2)	Material Name (3)	Quantity Added (4)	Cumulative Quantity (5)	Person Adding Material (6)	Label	Notes
06/17/2022	FWGW Purge Water	9 gallons	9 gallons	Field Sampling Team	Pending analysis	N/A
06/21/2022	FWGW Purge Water	12 gallons	21 gallons	Field Sampling Team	Pending analysis	N/A
06/22/2022	FWGW Purge Water	28 gallons	49 gallons	Field Sampling Team	Pending analysis	N/A

(When 55 gals total reached, must move from SAA within 3 calendar days.)

Date Container Transferred to Generator Accumulation Area _____

Materials shipped offsite date: _____

(1) Container ID Number (e.g., FC-FMS#1-2)
(2) Date when waste was added to container
(3) Name of waste added (e.g., Diesel Fuel)
(4) For items such as filters, note the number of items. For liquids, note the number of gallons.
(5) The total quantity of items of numbers of gallon currently in the container
(6) The name of the person adding the waste

CONTAINER LOG

Container No. (1) **LEIDOS-FWGW-069-L** **Page 1 of 1**

Drum Staging Area: Building 1036

Date (2)	Material Name (3)	Quantity Added (4)	Cumulative Quantity (5)	Person Adding Material (6)	Label	Notes
06/21/2022	FWGW Purge Water	9.5 gallons	9.5 gallons	Field Sampling Team	Pending analysis	N/A
06/24/2022	FWGW Purge Water	23.5 gallons	33 gallons	Field Sampling Team	Pending analysis	N/A
06/27/2022	FWGW Purge Water	2 gallons	35 gallons	Field Sampling Team	Pending analysis	N/A
06/28/2022	FWGW Purge Water	9 gallons	44 gallons	Field Sampling Team	Pending analysis	N/A

(When 55 gals total reached, must move from SAA within 3 calendar days.)

Date Container Transferred to Generator Accumulation Area _____

Materials shipped offsite date: _____

(1) Container ID Number (e.g., FC-FMS#1-2)
(2) Date when waste was added to container
(3) Name of waste added (e.g., Diesel Fuel)
(4) For items such as filters, note the number of items. For liquids, note the number of gallons.
(5) The total quantity of items of numbers of gallon currently in the container
(6) The name of the person adding the waste

C.2 Waste Manifest

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Site Address: 8451 State Route 5
Ravenna,OH 44266

SC PPW 11/1/2022

WORK ORDER NO. DE-2201868702

DOCUMENT NO. 1627501

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 5930

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY			SHIPPER ATTN:Katie Tait		
Spring Grove Resource Recovery Inc.			Former Ravenna Army Ammunition Plant		
FACILITY EPA ID # 0HD000816629			SHIPPER EPA ID # 0H5210020736		
ADDRESS 4879 Spring Grove Avenue			ADDRESS 1438 State Route 534 SW		
CITY Cincinnati	STATE OH	ZIP 45232	CITY Newton Falls	STATE OH	ZIP 44444

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
6X55	DM		ANON DOT REGULATED MATERIAL, LIQUID IDW	2800	P
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: Former Ravenna Army Ammunition Plant
ACH2503039

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Kathryn S. Tait	Kathryn S Tait	12/15/2022
TRANSPORTER 1	Alex Vasu	VAU	12/15/22
TRANSPORTER 2			
RECEIVED BY			

Generator acknowledges that no material change has occurred either in the characteristics or in the process generating the material.

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APPENDIX D

Laboratory Analytical Results and Screening

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D.1 Spring 2022 Analytical Results

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Appendix D.1 Spring 2022 Analytical Results

		Station	DETmw-003	DETmw-003	DETmw-004	FBQmw-173	FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010
		Sample Id	DET-003-220602-GW	DET-003-220601-GW	DET-004-220601-GW	FBQmw-173-220602-GW	FBQmw-173-220601-GW	FBQmw-174-220601-GW	FBQmw-175-220602-GW	FBQmw-175-220601-GW	FWGmw-004-220602-GW	FWGmw-004-220601-GW	FWGmw-007-220601-GW	FWGmw-010-220601-GW
		Date	06/23/22	06/23/22	06/23/22	06/28/22	06/28/22	06/28/22	06/28/22	06/28/22	06/22/22	06/22/22	06/28/22	06/14/22
		Sample Type	FD	GR	GR	FD	GR	GR	FD	GR	FD	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Homewood	Homewood	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Analyte	**CAS Number**	**Units**												
Metals														
Aluminum	7429-90-5	mg/L	<0.07 U	<0.07 U	<0.07 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	mg/L	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	mg/L	0.0092	0.0095	<0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	mg/L	0.045	0.045	0.057	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	mg/L	<0.00009 U	<0.00011 U	<0.0003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	mg/L	<0.00075 U	<0.00075 U	<0.00075 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	mg/L	92	93 J	130	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	mg/L	0.00053 J	<0.0018 U	<0.0018 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	mg/L	<0.00029 U	<0.00029 U	<0.00035 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	mg/L	<0.0018 U	<0.0018 U	<0.0018 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	mg/L	1.9	1.9	<0.059 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	mg/L	<0.0007 U	<0.0007 U	<0.0007 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	mg/L	35	35 J	26	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	mg/L	0.23	0.23	0.042	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	mg/L	<0.00008 U	<0.00008 U	<0.00008 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	mg/L	<0.001 U	<0.001 U	0.00041 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	mg/L	2 J	2 J	1.1 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	mg/L	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	mg/L	<0.0001 U	<0.0001 U	<0.0001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	mg/L	13	13	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	mg/L	<0.0002 U	<0.0002 U	<0.0002 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	mg/L	<0.003 U	<0.003 U	<0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	mg/L	<0.008 U	<0.008 U	0.012 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	14797-55-8	mg/L	NA	NA	NA	<0.11 U	<0.15 U	0.94	NA	NA	NA	NA	NA	NA
Nitrite	14797-65-0	mg/L	NA	NA	NA	<0.1 U	<0.1 U	0.07 J	NA	NA	NA	NA	NA	NA
Sulfate	14808-79-8	mg/L	NA	NA	NA	36	35	55	NA	NA	NA	NA	NA	NA
Sulfide	18496-25-8	mg/L	NA	NA	NA	<2 U	<2 U	<2 U	NA	NA	NA	NA	NA	NA
Miscellaneous														
Alkalinity	N33	mg/L	NA	NA	NA	22	23	10	NA	NA	NA	NA	NA	NA
Ammonia	7664-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	mg/L	<0.009 U	<0.009 U	<0.009 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	mg/L	NA	NA	NA	NA	0.86 J	1.7	NA	NA	NA	NA	NA	NA
Explosives/Propellants														
1,3,5-Trinitrobenzene	99-35-4	ug/L	NA	<0.22 U	<0.22 U	NA	<0.21 U	<0.21 U	<0.22 U	<0.23 U	<0.23 U	<0.23 U	<0.22 U	<0.21 U
1,3-Dinitrobenzene	99-65-0	ug/L	NA	<0.11 U	<0.11 U	NA	<0.11 U	<0.11 U	<0.11 U	<0.12 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
2,4,6-Trinitrotoluene	118-96-7	ug/L	NA	<0.11 U	<0.11 U	NA	<0.11 U	5.6	<0.11 U	<0.12 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
2,4-Diamino-6-nitrotoluene	6629-29-4	ug/L	NA	NA	NA	NA	<0.96 U	<0.97 U	<0.98 U	<1.1 U	NA	NA	NA	<0.96 U
2,4-Dinitrotoluene	121-14-2	ug/L	NA	<0.087 U	<0.087 U	NA	<0.085 U	0.37	<0.087 U	<0.094 U	<0.091 U	<0.091 U	<0.088 U	<0.086 U
2,6-Diamino-4-nitrotoluene	59229-75-3	ug/L	NA	NA	NA	NA	<0.96 U	<0.97 U	<0.98 U	<1.1 U	NA	NA	NA	<0.96 U
2,6-Dinitrotoluene	606-20-2	ug/L	NA	<0.087 U	<0.087 U	NA	<0.085 U	<0.086 U	<0.087 U	<0.094 U	<0.091 U	<0.091 U	<0.088 U	<0.086 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	ug/L	NA	<0.11 U	<0.11 U	NA	<0.11 U	8.7	<0.11 U	<0.12 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
2-Nitrotoluene	88-72-2	ug/L	NA	<0.22 U	<0.22 U	NA	<0.21 U	<0.21 U	<0.22 U	<0.23 U	<0.23 U	<0.23 U	<0.22 U	<0.21 U
3,5-Dinitroaniline	618-87-1	ug/L	NA	NA	NA	NA	<0.32 U	0.86	<0.33 U	<0.35 U	NA	NA	NA	<0.32 U
3-Nitrotoluene	99-08-1	ug/L	NA	<0.43 U	<0.44 U	NA	<0.43 U	<0.43 U	<0.44 U	<0.47 UJ	<0.46 U	<0.45 U	<0.44 U	<0.43 UJ

Appendix D.1 Spring 2022 Analytical Results

		Station	DETmw-003	DETmw-003	DETmw-004	FBQmw-173	FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010
		Sample Id	DET-003-220602-GW	DET-003-220601-GW	DET-004-220601-GW	FBQmw-173-220602-GW	FBQmw-173-220601-GW	FBQmw-174-220601-GW	FBQmw-175-220602-GW	FBQmw-175-220601-GW	FWGmw-004-220602-GW	FWGmw-004-220601-GW	FWGmw-007-220601-GW	FWGmw-010-220601-GW
		Date	06/23/22	06/23/22	06/23/22	06/28/22	06/28/22	06/28/22	06/28/22	06/28/22	06/22/22	06/22/22	06/28/22	06/14/22
		Sample Type	FD	GR	GR	FD	GR	GR	FD	GR	FD	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Homewood	Homewood	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
4-Amino-2,6-Dinitrotoluene	19406-51-0	ug/L	NA	<0.13 U	<0.13 U	NA	<0.13 U	17	<0.13 U	<0.14 U	<0.14 U	<0.14 U	<0.13 U	<0.13 U
4-Nitrotoluene	99-99-0	ug/L	NA	<0.43 U	<0.44 U	NA	<0.43 U	<0.43 U	<0.44 U	<0.47 U	<0.46 U	<0.45 U	<0.44 U	<0.43 U
DNX	80251-29-2	ug/L	NA	NA	NA	NA	<0.27 U	<0.27 U	<0.27 U	<0.29 U	NA	NA	NA	<0.27 U
HMX	2691-41-0	ug/L	NA	<0.22 U	1.7	NA	<0.21 U	<0.21 U	<0.22 U	<0.23 U	<0.23 U	<0.23 U	<0.22 U	<0.21 U
MNX	5755-27-1	ug/L	NA	NA	NA	NA	<0.31 U	<0.31 U	<0.32 U	<0.34 U	NA	NA	NA	<0.31 U
Nitrobenzene	98-95-3	ug/L	NA	<0.22 U	<0.22 U	NA	<0.21 U	<0.21 U	<0.22 U	<0.23 U	<0.23 U	<0.23 U	<0.22 U	<0.21 U
Nitroglycerin	55-63-0	ug/L	NA	<2.2 U	<2.2 U	NA	<2.1 U	<2.1 U	<2.2 U	<2.3 U	<2.3 U	<2.3 U	<2.2 U	<2.1 U
PETN	78-11-5	ug/L	NA	<1.1 U	<1.1 U	NA	<1.1 U	<1.1 U	<1.1 U	<1.2 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U
RDX	121-82-4	ug/L	NA	<0.22 U	0.59	NA	<0.21 U	<0.21 U	<0.22 U	<0.23 U	<0.23 U	<0.23 U	<0.22 U	<0.21 U
TNX	13980-04-6	ug/L	NA	NA	NA	NA	<0.27 U	<0.27 U	<0.27 U	<0.29 U	NA	NA	NA	<0.27 U
Tetryl	479-45-8	ug/L	NA	<0.11 U	<0.11 U	NA	<0.11 U	<0.11 U	<0.11 U	<0.12 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
SVOCs														
1-Methylnaphthalene	90-12-0	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	ug/L	<31 UJ	<31 UJ	<29 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	ug/L	<31 U	<31 U	<29 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	ug/L	<9.1 UJ	<9 UJ	<8.5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	ug/L	<3.3 U	<3.3 U	<3.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	ug/L	<3.3 U	<3.3 U	<3.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	ug/L	<1 U	<1 U	<0.96 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	ug/L	<3.3 U	<3.3 U	<3.1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	DETmw-003	DETmw-003	DETmw-004	FBQmw-173	FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010
		Sample Id	DET-003-220602-GW	DET-003-220601-GW	DET-004-220601-GW	FBQmw-173-220602-GW	FBQmw-173-220601-GW	FBQmw-174-220601-GW	FBQmw-175-220602-GW	FBQmw-175-220601-GW	FWGmw-004-220602-GW	FWGmw-004-220601-GW	FWGmw-007-220601-GW	FWGmw-010-220601-GW
		Date	06/23/22	06/23/22	06/23/22	06/28/22	06/28/22	06/28/22	06/28/22	06/28/22	06/22/22	06/22/22	06/28/22	06/14/22
		Sample Type	FD	GR	GR	FD	GR	GR	FD	GR	FD	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Homewood	Homewood	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Naphthalene	91-20-3	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	ug/L	<41 UJ	<41 UJ	<39 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	ug/L	<8.2 UJ	<8.2 UJ	<7.7 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	ug/L	<0.087 UJ	<0.087 UJ	<0.074 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	ug/L	<8.2 U	<8.2 U	<7.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs														
PCB-1016	12674-11-2	ug/L	<0.43 U	<0.43 U	<0.39 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	ug/L	<0.27 U	<0.27 U	<0.24 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	ug/L	<0.65 U	<0.65 U	<0.58 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	ug/L	<0.97 U	<0.97 U	<0.87 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	ug/L	<0.32 U	<0.32 U	<0.29 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	ug/L	<0.27 U	<0.27 U	<0.24 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	ug/L	<0.43 U	<0.43 U	<0.39 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides														
4,4'-DDD	72-54-8	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	ug/L	<0.054 UJ	<0.054 UJ	<0.048 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	ug/L	<0.022 UJ	<0.022 UJ	<0.019 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	ug/L	<0.022 U	<0.022 UJ	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	ug/L	<0.022 UJ	<0.022 UJ	<0.019 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	ug/L	<0.022 UJ	<0.022 UJ	<0.019 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	ug/L	<0.054 UJ	<0.054 U	<0.048 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	ug/L	<0.87 U	<0.86 U	<0.77 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	ug/L	<0.022 U	<0.022 U	<0.019 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs														
1,1,1-Trichloroethane	71-55-6	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	DETmw-003	DETmw-003	DETmw-004	FBQmw-173	FBQmw-173	FBQmw-174	FBQmw-175	FBQmw-175	FWGmw-004	FWGmw-004	FWGmw-007	FWGmw-010
		Sample Id	DET-003-220602-GW	DET-003-220601-GW	DET-004-220601-GW	FBQmw-173-220602-GW	FBQmw-173-220601-GW	FBQmw-174-220601-GW	FBQmw-175-220602-GW	FBQmw-175-220601-GW	FWGmw-004-220602-GW	FWGmw-004-220601-GW	FWGmw-007-220601-GW	FWGmw-010-220601-GW
		Date	06/23/22	06/23/22	06/23/22	06/28/22	06/28/22	06/28/22	06/28/22	06/28/22	06/22/22	06/22/22	06/28/22	06/14/22
		Sample Type	FD	GR	GR	FD	GR	GR	FD	GR	FD	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Homewood	Homewood	Homewood	Homewood	Homewood	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
1,2-Dichloropropane	78-87-5	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	ug/L	<4 UJ	<4 UJ	<4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	ug/L	<4 UJ	<4 UJ	<4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	ug/L	<3.2 UJ	<3.2 UJ	<3.2 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	ug/L	<6.4 UJ	<6.4 UJ	<6.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	ug/L	<0.2 UJ	<0.2 UJ	<0.2 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	ug/L	<0.9 UJ	<0.9 UJ	<0.9 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	ug/L	<1.6 UJ	<1.6 UJ	<1.6 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	ug/L	<2 UJ	<2 UJ	<2 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	ug/L	<0.2 UJ	<0.2 UJ	<0.2 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	ug/L	<0.8 UJ	<0.8 UJ	<0.8 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	ug/L	<0.4 UJ	<0.4 UJ	<0.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185
		Sample Id	FWGmw-011-220601-GW	FWGmw-012-220601-GW	FWGmw-015-220601-GW	FWGmw-016-220601-GW	FWGmw-018-220601-GW	FWGmw-020-220601-GW	FWGmw-021-220601-GW	FWGmw-023-220601-GW	FWGmw-024-220601-GW	LL10mw-003-220601-GW	LL12mw-185-220602-GW	LL12mw-185-220601-GW
		Date	06/17/22	06/17/22	06/16/22	06/16/22	06/16/22	06/16/22	06/16/22	06/28/22	06/16/22	06/28/22	06/27/22	06/27/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated
Analyte	**CAS Number**	**Units**												
Metals														
Aluminum	7429-90-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	14797-55-8	mg/L	NA	NA	NA	NA	<0.2 U	0.11 J	NA	NA	NA	NA	74	71
Nitrite	14797-65-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	14808-79-8	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	18496-25-8	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous														
Alkalinity	N33	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ammonia	7664-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.039 J	<0.05 U
Cyanide	57-12-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Explosives/Propellants														
1,3,5-Trinitrobenzene	99-35-4	ug/L	<0.22 U	<0.22 U	<0.23 U	<0.22 U	NA	NA	<0.22 U	<0.21 U	<0.22 U	NA	NA	NA
1,3-Dinitrobenzene	99-65-0	ug/L	<0.11 U	<0.11 U	<0.11 U	<0.11 U	NA	NA	<0.11 U	<0.11 U	<0.11 U	NA	NA	NA
2,4,6-Trinitrotoluene	118-96-7	ug/L	<0.11 U	<0.11 U	<0.11 U	<0.11 U	NA	NA	<0.11 U	<0.11 U	<0.11 U	NA	NA	NA
2,4-Diamino-6-nitrotoluene	6629-29-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	ug/L	<0.087 U	<0.087 U	<0.091 U	<0.088 U	NA	NA	<0.089 U	<0.085 U	<0.09 U	NA	NA	NA
2,6-Diamino-4-nitrotoluene	59229-75-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	ug/L	<0.087 U	<0.087 U	<0.091 U	<0.088 U	NA	NA	<0.089 U	<0.085 U	<0.09 U	NA	NA	NA
2-Amino-4,6-Dinitrotoluene	35572-78-2	ug/L	<0.11 U	<0.11 U	<0.11 U	<0.11 U	NA	NA	<0.11 U	<0.11 U	<0.11 U	NA	NA	NA
2-Nitrotoluene	88-72-2	ug/L	<0.22 U	<0.22 U	<0.23 U	<0.22 U	NA	NA	0.31 J	<0.21 U	<0.22 U	NA	NA	NA
3,5-Dinitroaniline	618-87-1	ug/L	NA	NA	<0.34 U	<0.33 U	NA	NA	<0.33 U	NA	<0.34 U	NA	NA	NA
3-Nitrotoluene	99-08-1	ug/L	<0.43 U	<0.44 U	<0.45 UJ	<0.44 UJ	NA	NA	<0.45 UJ	<0.42 U	<0.45 UJ	NA	NA	NA

		Station	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185
		Sample Id	FWGmw-011-220601-GW	FWGmw-012-220601-GW	FWGmw-015-220601-GW	FWGmw-016-220601-GW	FWGmw-018-220601-GW	FWGmw-020-220601-GW	FWGmw-021-220601-GW	FWGmw-023-220601-GW	FWGmw-024-220601-GW	LL10mw-003-220601-GW	LL12mw-185-220602-GW	LL12mw-185-220601-GW
		Date	06/17/22	06/17/22	06/16/22	06/16/22	06/16/22	06/16/22	06/16/22	06/28/22	06/16/22	06/28/22	06/27/22	06/27/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated
4-Amino-2,6-Dinitrotoluene	19406-51-0	ug/L	<0.13 U	<0.13 U	<0.14 U	<0.13 U	NA	NA	<0.13 U	<0.13 U	<0.13 U	NA	NA	NA
4-Nitrotoluene	99-99-0	ug/L	<0.43 U	<0.44 U	<0.45 U	<0.44 U	NA	NA	<0.45 U	<0.42 U	<0.45 U	NA	NA	NA
DNX	80251-29-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HMX	2691-41-0	ug/L	<0.22 U	<0.22 U	<0.23 U	<0.22 U	NA	NA	<0.22 U	<0.21 U	<0.22 U	NA	NA	NA
MNX	5755-27-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	ug/L	<0.22 U	<0.22 U	<0.23 U	<0.22 U	NA	NA	<0.22 U	<0.21 U	<0.22 U	NA	NA	NA
Nitroglycerin	55-63-0	ug/L	<2.2 U	<2.2 U	<2.3 U	<2.2 U	NA	NA	<2.2 U	<2.1 U	<2.2 U	NA	NA	NA
PETN	78-11-5	ug/L	<1.1 U	<1.1 U	<1.1 U	<1.1 U	NA	NA	<1.1 U	<1.1 U	<1.1 U	NA	NA	NA
RDX	121-82-4	ug/L	<0.22 U	<0.22 U	<0.23 U	<0.22 U	NA	NA	<0.22 U	<0.21 U	<0.22 U	NA	NA	NA
TNX	13980-04-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetryl	479-45-8	ug/L	<0.11 U	<0.11 U	<0.11 U	<0.11 U	NA	NA	<0.11 U	<0.11 U	<0.11 U	NA	NA	NA
SVOCs														
1-Methylnaphthalene	90-12-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185
		Sample Id	FWGmw-011-220601-GW	FWGmw-012-220601-GW	FWGmw-015-220601-GW	FWGmw-016-220601-GW	FWGmw-018-220601-GW	FWGmw-020-220601-GW	FWGmw-021-220601-GW	FWGmw-023-220601-GW	FWGmw-024-220601-GW	LL10mw-003-220601-GW	LL12mw-185-220602-GW	LL12mw-185-220601-GW
		Date	06/17/22	06/17/22	06/16/22	06/16/22	06/16/22	06/16/22	06/16/22	06/28/22	06/16/22	06/28/22	06/27/22	06/27/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated
Naphthalene	91-20-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs														
PCB-1016	12674-11-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides														
4,4'-DDD	72-54-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs														
1,1,1-Trichloroethane	71-55-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	FWGmw-011	FWGmw-012	FWGmw-015	FWGmw-016	FWGmw-018	FWGmw-020	FWGmw-021	FWGmw-023	FWGmw-024	LL10mw-003	LL12mw-185	LL12mw-185
		Sample Id	FWGmw-011-220601-GW	FWGmw-012-220601-GW	FWGmw-015-220601-GW	FWGmw-016-220601-GW	FWGmw-018-220601-GW	FWGmw-020-220601-GW	FWGmw-021-220601-GW	FWGmw-023-220601-GW	FWGmw-024-220601-GW	LL10mw-003-220601-GW	LL12mw-185-220602-GW	LL12mw-185-220601-GW
		Date	06/17/22	06/17/22	06/16/22	06/16/22	06/16/22	06/16/22	06/16/22	06/28/22	06/16/22	06/28/22	06/27/22	06/27/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Upper Sharon	Unconsolidated	Upper Sharon	Basal Sharon Congl	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Homewood	Unconsolidated	Unconsolidated
1,2-Dichloropropane	78-87-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	4 J	NA	NA
Chlorobenzene	108-90-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246	LL1mw-063	LL1mw-064	LL1mw-080	LL1mw-081	LL1mw-082	LL1mw-083	LL1mw-084	LL1mw-084
		Sample Id	LL12mw-187-220601-GW	LL12mw-244-220601-GW	LL12mw-245-220601-GW	LL12mw-246-220601-GW	LL1mw-063-220601-GW	LL1mw-064-220601-GW	LL1mw-080-220601-GW	LL1mw-081-220601-GW	LL1mw-082-220601-GW	LL1mw-083-220601-GW	LL1mw-084-220602-GW	LL1mw-084-220601-GW
		Date	06/28/22	06/27/22	06/27/22	06/27/22	06/17/22	06/15/22	06/23/22	06/23/22	06/24/22	06/17/22	06/17/22	06/17/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Analyte	**CAS Number**	**Units**												
Metals														
Aluminum	7429-90-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	14797-55-8	mg/L	<0.2 U	<0.2 U	<0.2 U	<0.2 U	NA	NA	0.098 J	NA	NA	0.25 J	0.59	0.61
Nitrite	14797-65-0	mg/L	NA	NA	NA	NA	NA	NA	<0.1 U	NA	NA	<0.1 U	<0.1 U	<0.1 U
Sulfate	14808-79-8	mg/L	NA	NA	NA	NA	NA	NA	35	NA	NA	120	110	110
Sulfide	18496-25-8	mg/L	NA	NA	NA	NA	NA	NA	<2 U	NA	NA	<2 U	<2 U	<2 U
Miscellaneous														
Alkalinity	N33	mg/L	NA	NA	NA	NA	NA	NA	100	NA	NA	<6.4 U	63	69
Ammonia	7664-41-7	mg/L	660	0.26	0.049 J	0.15	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	mg/L	NA	NA	NA	NA	NA	NA	1.2	NA	NA	1.2	NA	1.8
Explosives/Propellants														
1,3,5-Trinitrobenzene	99-35-4	ug/L	NA	NA	NA	NA	<0.21 U	<0.22 U	<0.23 U	<0.21 U	<0.22 U	4.2	<0.22 U	<0.22 U
1,3-Dinitrobenzene	99-65-0	ug/L	NA	NA	NA	NA	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
2,4,6-Trinitrotoluene	118-96-7	ug/L	NA	NA	NA	NA	<0.11 U	<0.11 U	0.16	<0.11 U	0.21	1.9	2.9	2.7
2,4-Diamino-6-nitrotoluene	6629-29-4	ug/L	NA	NA	NA	NA	<0.96 U	<0.98 U	<1 U	<0.96 U	<1 U	<0.98 U	<0.97 U	<0.97 U
2,4-Dinitrotoluene	121-14-2	ug/L	NA	NA	NA	NA	<0.086 U	<0.087 U	<0.09 U	<0.086 U	<0.089 U	2.5	<0.086 U	<0.086 U
2,6-Diamino-4-nitrotoluene	59229-75-3	ug/L	NA	NA	NA	NA	<0.96 U	<0.98 U	<1 U	<0.96 U	<1 U	<0.98 U	<0.97 U	<0.97 U
2,6-Dinitrotoluene	606-20-2	ug/L	NA	NA	NA	NA	<0.086 U	<0.087 U	<0.09 U	<0.086 U	<0.089 U	1	<0.086 U	<0.086 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	ug/L	NA	NA	NA	NA	<0.11 U	<0.11 U	1.8 J	<0.11 U	0.69	8.5	7.8	7.7
2-Nitrotoluene	88-72-2	ug/L	NA	NA	NA	NA	<0.21 U	<0.22 U	<0.23 U	<0.21 U	<0.22 U	<0.22 U	<0.22 U	<0.22 U
3,5-Dinitroaniline	618-87-1	ug/L	NA	NA	NA	NA	<0.32 U	<0.33 U	0.74	<0.32 U	0.43 J	<0.33 U	1.6 J	1.6 J
3-Nitrotoluene	99-08-1	ug/L	NA	NA	NA	NA	<0.43 U	<0.43 UJ	<0.45 U	<0.43 U	<0.45 U	<0.44 U	<0.43 U	<0.43 U

Appendix D.1 Spring 2022 Analytical Results

		Station	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246	LL1mw-063	LL1mw-064	LL1mw-080	LL1mw-081	LL1mw-082	LL1mw-083	LL1mw-084	LL1mw-084
		Sample Id	LL12mw-187-220601-GW	LL12mw-244-220601-GW	LL12mw-245-220601-GW	LL12mw-246-220601-GW	LL1mw-063-220601-GW	LL1mw-064-220601-GW	LL1mw-080-220601-GW	LL1mw-081-220601-GW	LL1mw-082-220601-GW	LL1mw-083-220601-GW	LL1mw-084-220602-GW	LL1mw-084-220601-GW
		Date	06/28/22	06/27/22	06/27/22	06/27/22	06/17/22	06/15/22	06/23/22	06/23/22	06/24/22	06/17/22	06/17/22	06/17/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
4-Amino-2,6-Dinitrotoluene	19406-51-0	ug/L	NA	NA	NA	NA	<0.13 U	<0.13 U	4.9	<0.13 U	1.1	16	24	23
4-Nitrotoluene	99-99-0	ug/L	NA	NA	NA	NA	<0.43 U	<0.43 U	<0.45 U	<0.43 U	<0.45 U	<0.44 U	<0.43 U	<0.43 U
DNX	80251-29-2	ug/L	NA	NA	NA	NA	<0.27 U	<0.27 U	<0.28 U	<0.27 U	<0.28 U	<0.27 U	<0.27 U	<0.27 U
HMX	2691-41-0	ug/L	NA	NA	NA	NA	2.4	<0.22 U	4.4	<0.21 U	<0.22 U	<0.22 U	<0.22 U	<0.22 U
MNX	5755-27-1	ug/L	NA	NA	NA	NA	<0.31 U	<0.32 U	0.65	<0.31 U	<0.32 U	<0.32 U	<0.31 U	<0.31 U
Nitrobenzene	98-95-3	ug/L	NA	NA	NA	NA	<0.21 U	<0.22 U	<0.23 U	<0.21 U	<0.22 U	<0.22 U	<0.22 U	<0.22 U
Nitroglycerin	55-63-0	ug/L	NA	NA	NA	NA	<2.1 U	<2.2 U	<2.3 U	<2.1 U	<2.2 U	<2.2 U	<2.2 U	<2.2 U
PETN	78-11-5	ug/L	NA	NA	NA	NA	<1.1 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U
RDX	121-82-4	ug/L	NA	NA	NA	NA	<0.21 U	<0.22 U	26	1 J	<0.22 U	<0.22 U	<0.22 U	<0.22 U
TNX	13980-04-6	ug/L	NA	NA	NA	NA	<0.27 U	<0.27 U	<0.28 U	<0.27 U	<0.28 U	<0.27 U	<0.27 U	<0.27 U
Tetryl	479-45-8	ug/L	NA	NA	NA	NA	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
SVOCs														
1-Methylnaphthalene	90-12-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246	LL1mw-063	LL1mw-064	LL1mw-080	LL1mw-081	LL1mw-082	LL1mw-083	LL1mw-084	LL1mw-084
		Sample Id	LL12mw-187-220601-GW	LL12mw-244-220601-GW	LL12mw-245-220601-GW	LL12mw-246-220601-GW	LL1mw-063-220601-GW	LL1mw-064-220601-GW	LL1mw-080-220601-GW	LL1mw-081-220601-GW	LL1mw-082-220601-GW	LL1mw-083-220601-GW	LL1mw-084-220602-GW	LL1mw-084-220601-GW
		Date	06/28/22	06/27/22	06/27/22	06/27/22	06/17/22	06/15/22	06/23/22	06/23/22	06/24/22	06/17/22	06/17/22	06/17/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
Naphthalene	91-20-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs														
PCB-1016	12674-11-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides														
4,4'-DDD	72-54-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs														
1,1,1-Trichloroethane	71-55-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	LL12mw-187	LL12mw-244	LL12mw-245	LL12mw-246	LL1mw-063	LL1mw-064	LL1mw-080	LL1mw-081	LL1mw-082	LL1mw-083	LL1mw-084	LL1mw-084
		Sample Id	LL12mw-187-220601-GW	LL12mw-244-220601-GW	LL12mw-245-220601-GW	LL12mw-246-220601-GW	LL1mw-063-220601-GW	LL1mw-064-220601-GW	LL1mw-080-220601-GW	LL1mw-081-220601-GW	LL1mw-082-220601-GW	LL1mw-083-220601-GW	LL1mw-084-220602-GW	LL1mw-084-220601-GW
		Date	06/28/22	06/27/22	06/27/22	06/27/22	06/17/22	06/15/22	06/23/22	06/23/22	06/24/22	06/17/22	06/17/22	06/17/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon
1,2-Dichloropropane	78-87-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	LL1mw-086	LL1mw-087	LL1mw-087	LL1mw-089	LL1mw-089	LL2mw-059	LL3mw-237	LL3mw-238	LL3mw-239	LL3mw-241	LL3mw-245	SCFmw-004	SCFmw-004
		Sample Id	LL1mw-086-220601-GW	LL1mw-087-220602-GW	LL1mw-087-220601-GW	LL1mw-089-220602-GW	LL1mw-089-220601-GW	LL2mw-059-220601-GW	LL3mw-237-220601-GW	LL3mw-238-220601-GW	LL3mw-239-220601-GW	LL3mw-241-220601-GW	LL3mw-245-220601-GW	SCFmw-004-220602-GW	SCFmw-004-220601-GW
		Date	06/24/22	06/16/22	06/16/22	06/14/22	06/14/22	06/23/22	06/24/22	06/24/22	06/24/22	06/24/22	06/27/22	06/16/22	06/16/22
		Sample Type	GR	FD	GR	FD	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
Analyte	**CAS Number**	**Units**													
Metals															
Aluminum	7429-90-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	14797-55-8	mg/L	NA	NA	NA	NA	NA	0.81	NA	0.51	0.65	NA	NA	NA	NA
Nitrite	14797-65-0	mg/L	NA	NA	NA	NA	NA	<0.1 U	NA	<0.1 U	<0.1 U	NA	NA	NA	NA
Sulfate	14808-79-8	mg/L	NA	NA	NA	NA	NA	320	NA	60	39	NA	NA	NA	NA
Sulfide	18496-25-8	mg/L	NA	NA	NA	NA	NA	<2 U	NA	<2 U	<2 U	NA	NA	NA	NA
Miscellaneous															
Alkalinity	N33	mg/L	NA	NA	NA	NA	NA	160	NA	160	59	NA	NA	NA	NA
Ammonia	7664-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	mg/L	NA	NA	NA	NA	NA	2.9	NA	2.9	1	NA	NA	NA	NA
Explosives/Propellants															
1,3,5-Trinitrobenzene	99-35-4	ug/L	2.2	<0.22 U	<0.22 U	<0.22 U	<0.22 U	0.71	14	<0.21 U	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.22 U
1,3-Dinitrobenzene	99-65-0	ug/L	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.1 U	<0.11 U	<0.11 U	<0.1 U	<0.11 U	<0.1 U	<0.11 U	<0.11 U
2,4,6-Trinitrotoluene	118-96-7	ug/L	1.3	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.1 U	42 J	<0.11 U	<0.1 U	<0.11 U	<0.1 U	<0.11 U	<0.11 U
2,4-Diamino-6-nitrotoluene	6629-29-4	ug/L	<0.97 U	<0.98 U	<0.99 U	<0.98 U	<0.98 U	<0.94 U	<1 U	<0.96 U	<0.94 U	<0.95 U	<0.94 U	NA	NA
2,4-Dinitrotoluene	121-14-2	ug/L	<0.086 U	<0.087 U	<0.088 U	<0.087 U	<0.087 U	0.15	<0.091 U	<0.086 U	<0.083 U	<0.084 U	<0.084 U	<0.087 U	<0.087 U
2,6-Diamino-4-nitrotoluene	59229-75-3	ug/L	<0.97 U	<0.98 U	<0.99 U	<0.98 U	<0.98 U	<0.94 U	<1 U	<0.96 U	<0.94 U	<0.95 U	<0.94 U	NA	NA
2,6-Dinitrotoluene	606-20-2	ug/L	<0.086 U	<0.087 U	<0.088 U	<0.087 U	<0.087 U	<0.084 U	<0.091 U	<0.086 U	<0.083 U	<0.084 U	<0.084 U	<0.087 U	<0.087 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	ug/L	2.2	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.1 U	6.9	<0.11 U	<0.1 U	<0.11 U	<0.1 U	<0.11 U	<0.11 U
2-Nitrotoluene	88-72-2	ug/L	<0.22 U	<0.22 U	<0.22 U	<0.22 U	<0.22 U	<0.21 U	<0.23 U	<0.21 U	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.22 U
3,5-Dinitroaniline	618-87-1	ug/L	0.72	<0.33 U	<0.33 U	<0.33 U	<0.33 U	0.87	1.5	<0.32 U	<0.31 U	<0.32 U	<0.31 U	<0.33 U	<0.33 U
3-Nitrotoluene	99-08-1	ug/L	<0.43 U	<0.43 UJ	<0.44 UJ	<0.44 UJ	<0.44 UJ	<0.42 U	<0.46 U	<0.43 U	<0.42 U	<0.42 U	<0.42 U	<0.44 UJ	<0.44 UJ

Appendix D.1 Spring 2022 Analytical Results

		Station	LL1mw-086	LL1mw-087	LL1mw-087	LL1mw-089	LL1mw-089	LL2mw-059	LL3mw-237	LL3mw-238	LL3mw-239	LL3mw-241	LL3mw-245	SCFmw-004	SCFmw-004
		Sample Id	LL1mw-086-220601-GW	LL1mw-087-220602-GW	LL1mw-087-220601-GW	LL1mw-089-220602-GW	LL1mw-089-220601-GW	LL2mw-059-220601-GW	LL3mw-237-220601-GW	LL3mw-238-220601-GW	LL3mw-239-220601-GW	LL3mw-241-220601-GW	LL3mw-245-220601-GW	SCFmw-004-220602-GW	SCFmw-004-220601-GW
		Date	06/24/22	06/16/22	06/16/22	06/14/22	06/14/22	06/23/22	06/24/22	06/24/22	06/24/22	06/24/22	06/27/22	06/16/22	06/16/22
		Sample Type	GR	FD	GR	FD	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
4-Amino-2,6-Dinitrotoluene	19406-51-0	ug/L	2.4	<0.13 U	<0.13 U	<0.13 U	<0.13 U	0.21	27 J	<0.13 U	<0.13 U	<0.13 U	<0.13 U	<0.13 U	<0.13 U
4-Nitrotoluene	99-99-0	ug/L	<0.43 U	<0.43 U	<0.44 U	<0.44 U	<0.44 U	<0.42 U	<0.46 U	<0.43 U	<0.42 U	<0.42 U	<0.42 U	<0.44 U	<0.44 U
DNX	80251-29-2	ug/L	<0.27 U	<0.27 U	<0.28 U	<0.27 U	<0.27 U	<0.26 U	<0.29 U	<0.27 U	<0.26 U	<0.26 U	<0.26 U	NA	NA
HMX	2691-41-0	ug/L	<0.22 U	<0.22 U	<0.22 U	<0.22 U	<0.22 U	<0.21 U	3.1	<0.21 U	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.22 U
MNX	5755-27-1	ug/L	<0.31 U	<0.31 U	<0.32 U	<0.32 U	<0.32 U	<0.3 U	<3.3 UJ	<0.31 U	<0.3 U	<0.31 U	<0.3 U	NA	NA
Nitrobenzene	98-95-3	ug/L	<0.22 U	<0.22 U	<0.22 U	<0.22 U	<0.22 U	<0.21 U	<0.23 U	<0.21 U	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.22 U
Nitroglycerin	55-63-0	ug/L	<2.2 U	<2.2 U	<2.2 U	<2.2 U	<2.2 U	<2.1 U	<2.3 U	<2.1 U	<2.1 U	<2.1 U	<2.1 U	<2.2 U	<2.2 U
PETN	78-11-5	ug/L	<1.1 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U	<1 U	<1.1 U	<1.1 U	<1 U	<1.1 U	<1 U	<1.1 U	<1.1 U
RDX	121-82-4	ug/L	1.1	<0.22 U	<0.22 U	<0.22 U	<0.22 U	<0.21 U	6.7 J	<0.21 U	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.22 U
TNX	13980-04-6	ug/L	<0.27 U	<0.27 U	<0.28 U	<0.27 U	<0.27 U	<0.26 U	<2.9 UJ	<0.27 U	<0.26 U	<0.26 U	<0.26 U	NA	NA
Tetryl	479-45-8	ug/L	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.1 U	<0.11 U	<0.11 U	<0.1 U	<0.11 U	<0.1 U	<0.11 U	<0.11 U
SVOCs															
1-Methylnaphthalene	90-12-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	LL1mw-086	LL1mw-087	LL1mw-087	LL1mw-089	LL1mw-089	LL2mw-059	LL3mw-237	LL3mw-238	LL3mw-239	LL3mw-241	LL3mw-245	SCFmw-004	SCFmw-004
		Sample Id	LL1mw-086-220601-GW	LL1mw-087-220602-GW	LL1mw-087-220601-GW	LL1mw-089-220602-GW	LL1mw-089-220601-GW	LL2mw-059-220601-GW	LL3mw-237-220601-GW	LL3mw-238-220601-GW	LL3mw-239-220601-GW	LL3mw-241-220601-GW	LL3mw-245-220601-GW	SCFmw-004-220602-GW	SCFmw-004-220601-GW
		Date	06/24/22	06/16/22	06/16/22	06/14/22	06/14/22	06/23/22	06/24/22	06/24/22	06/24/22	06/24/22	06/27/22	06/16/22	06/16/22
		Sample Type	GR	FD	GR	FD	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
Naphthalene	91-20-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs															
PCB-1016	12674-11-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides															
4,4'-DDD	72-54-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs															
1,1,1-Trichloroethane	71-55-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	LL1mw-086	LL1mw-087	LL1mw-087	LL1mw-089	LL1mw-089	LL2mw-059	LL3mw-237	LL3mw-238	LL3mw-239	LL3mw-241	LL3mw-245	SCFmw-004	SCFmw-004
		Sample Id	LL1mw-086-220601-GW	LL1mw-087-220602-GW	LL1mw-087-220601-GW	LL1mw-089-220602-GW	LL1mw-089-220601-GW	LL2mw-059-220601-GW	LL3mw-237-220601-GW	LL3mw-238-220601-GW	LL3mw-239-220601-GW	LL3mw-241-220601-GW	LL3mw-245-220601-GW	SCFmw-004-220602-GW	SCFmw-004-220601-GW
		Date	06/24/22	06/16/22	06/16/22	06/14/22	06/14/22	06/23/22	06/24/22	06/24/22	06/24/22	06/24/22	06/27/22	06/16/22	06/16/22
		Sample Type	GR	FD	GR	FD	GR	GR	GR	GR	GR	GR	GR	FD	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Upper Sharon	Basal Sharon Congl	Basal Sharon Congl
1,2-Dichloropropane	78-87-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	WBGmw-006	WBGmw-009	WBGmw-014	WBGmw-016	WBGmw-017	WBGmw-018	WBGmw-020	WBGmw-021
		Sample Id	WBGmw-006-220601-GW	WBGmw-009-220601-GW	WBGmw-014-220601-GW	WBGmw-016-220601-GW	WBGmw-017-220601-GW	WBGmw-018-220601-GW	WBGmw-020-220601-GW	WBGmw-021-220601-GW
		Date	06/21/22	06/21/22	06/22/22	06/22/22	06/22/22	06/22/22	06/21/22	06/21/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon
Analyte	**CAS Number**	**Units**								
Metals										
Aluminum	7429-90-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	14797-55-8	mg/L	<0.2 U	<0.2 U	NA	NA	NA	0.23 J	NA	NA
Nitrite	14797-65-0	mg/L	<0.1 U	<0.1 U	NA	NA	NA	<0.1 U	NA	NA
Sulfate	14808-79-8	mg/L	28	16	NA	NA	NA	9.9	NA	NA
Sulfide	18496-25-8	mg/L	<2 U	<2 U	NA	NA	NA	<2 U	NA	NA
Miscellaneous										
Alkalinity	N33	mg/L	270	110	NA	NA	NA	46	NA	NA
Ammonia	7664-41-7	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	mg/L	NA	NA	NA	NA	NA	NA	NA	NA
Total Organic Carbon	N997	mg/L	1.4	1.2	NA	NA	NA	1.8	NA	NA
Explosives/Propellants										
1,3,5-Trinitrobenzene	99-35-4	ug/L	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.21 U	<0.21 U	<0.22 U	<0.21 U
1,3-Dinitrobenzene	99-65-0	ug/L	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
2,4,6-Trinitrotoluene	118-96-7	ug/L	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
2,4-Diamino-6-nitrotoluene	6629-29-4	ug/L	<0.96 U	<0.93 U	<0.94 U	<0.97 U	<0.95 U	<0.95 U	<0.97 U	<0.97 U
2,4-Dinitrotoluene	121-14-2	ug/L	<0.085 U	<0.083 U	<0.084 U	<0.086 U	<0.085 U	<0.085 U	<0.086 U	<0.086 U
2,6-Diamino-4-nitrotoluene	59229-75-3	ug/L	<0.96 U	<0.93 U	<0.94 U	<0.97 U	<0.95 U	<0.95 U	<0.97 U	<0.97 U
2,6-Dinitrotoluene	606-20-2	ug/L	<0.085 U	<0.083 U	<0.084 U	<0.086 U	<0.085 U	<0.085 U	<0.086 U	<0.086 U
2-Amino-4,6-Dinitrotoluene	35572-78-2	ug/L	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
2-Nitrotoluene	88-72-2	ug/L	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.21 U	<0.21 U	<0.22 U	<0.21 U
3,5-Dinitroaniline	618-87-1	ug/L	<0.32 U	<0.31 U	<0.31 U	<0.32 U	<0.32 U	<0.32 U	<0.32 U	<0.32 U
3-Nitrotoluene	99-08-1	ug/L	<0.43 U	<0.41 U	<0.42 U	<0.43 U	<0.42 U	<0.42 U	<0.43 U	<0.43 U

Appendix D.1 Spring 2022 Analytical Results

		Station	WBGmw-006	WBGmw-009	WBGmw-014	WBGmw-016	WBGmw-017	WBGmw-018	WBGmw-020	WBGmw-021
		Sample Id	WBGmw-006-220601-GW	WBGmw-009-220601-GW	WBGmw-014-220601-GW	WBGmw-016-220601-GW	WBGmw-017-220601-GW	WBGmw-018-220601-GW	WBGmw-020-220601-GW	WBGmw-021-220601-GW
		Date	06/21/22	06/21/22	06/22/22	06/22/22	06/22/22	06/22/22	06/21/22	06/21/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon
4-Amino-2,6-Dinitrotoluene	19406-51-0	ug/L	<0.13 U	<0.12 U	<0.13 U	<0.13 U	<0.13 U	<0.13 U	<0.13 U	<0.13 U
4-Nitrotoluene	99-99-0	ug/L	<0.43 U	<0.41 U	<0.42 U	<0.43 U	<0.42 U	<0.42 U	<0.43 U	<0.43 U
DNX	80251-29-2	ug/L	<0.27 U	<0.26 U	<0.26 U	<0.27 U	<0.26 U	<0.26 U	<0.27 U	<0.27 U
HMX	2691-41-0	ug/L	3.1	0.75	<0.21 U	<0.22 U	<0.21 U	<0.21 U	<0.22 U	<0.21 U
MNX	5755-27-1	ug/L	0.3 J	<0.3 U	<0.3 U	<0.31 U	<0.31 U	<0.31 U	<0.31 U	<0.31 U
Nitrobenzene	98-95-3	ug/L	<0.21 U	<0.21 U	<0.21 U	<0.22 U	<0.21 U	<0.21 U	<0.22 U	<0.21 U
Nitroglycerin	55-63-0	ug/L	<2.1 U	<2.1 U	<2.1 U	<2.2 U	<2.1 U	<2.1 U	<2.2 U	<2.1 U
PETN	78-11-5	ug/L	<1.1 U	<1 U	<1 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U	<1.1 U
RDX	121-82-4	ug/L	6.9	1.3 J	<0.21 U	<0.22 U	<0.21 U	0.2 J	<0.22 U	<0.21 U
TNX	13980-04-6	ug/L	<0.27 U	<0.26 U	<0.26 U	<0.27 U	<0.26 U	<0.26 U	<0.27 U	<0.27 U
Tetryl	479-45-8	ug/L	<0.11 U	<0.1 U	<0.1 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U	<0.11 U
SVOCs										
1-Methylnaphthalene	90-12-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Methyl-4,6-dinitrophenol	534-52-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	56-55-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(ghi)perylene	191-24-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	117-81-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	117-84-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	53-70-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA

		Station	WBGmw-006	WBGmw-009	WBGmw-014	WBGmw-016	WBGmw-017	WBGmw-018	WBGmw-020	WBGmw-021
		Sample Id	WBGmw-006-220601-GW	WBGmw-009-220601-GW	WBGmw-014-220601-GW	WBGmw-016-220601-GW	WBGmw-017-220601-GW	WBGmw-018-220601-GW	WBGmw-020-220601-GW	WBGmw-021-220601-GW
		Date	06/21/22	06/21/22	06/22/22	06/22/22	06/22/22	06/22/22	06/21/22	06/21/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon
Naphthalene	91-20-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Total Cresols	1319-77-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
PCBs										
PCB-1016	12674-11-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1221	11104-28-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1232	11141-16-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1242	53469-21-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1248	12672-29-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1254	11097-69-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
PCB-1260	11096-82-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides										
4,4'-DDD	72-54-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Lindane	58-89-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane	5103-71-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	319-85-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	319-86-8	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	5103-74-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
VOCs										
1,1,1-Trichloroethane	71-55-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	75-35-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	106-93-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	107-06-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA

Appendix D.1 Spring 2022 Analytical Results

		Station	WBGmw-006	WBGmw-009	WBGmw-014	WBGmw-016	WBGmw-017	WBGmw-018	WBGmw-020	WBGmw-021
		Sample Id	WBGmw-006-220601-GW	WBGmw-009-220601-GW	WBGmw-014-220601-GW	WBGmw-016-220601-GW	WBGmw-017-220601-GW	WBGmw-018-220601-GW	WBGmw-020-220601-GW	WBGmw-021-220601-GW
		Date	06/21/22	06/21/22	06/22/22	06/22/22	06/22/22	06/22/22	06/21/22	06/21/22
		Sample Type	GR	GR	GR	GR	GR	GR	GR	GR
		Aquifer	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Upper Sharon	Upper Sharon
1,2-Dichloropropane	78-87-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	78-93-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	591-78-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Bromobenzene	108-86-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Bromochloromethane	74-97-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	75-27-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Bromoform	75-25-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Bromomethane	74-83-9	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	75-15-0	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Carbon tetrachloride	56-23-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	75-00-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	67-66-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Chloromethane	74-87-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	124-48-1	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100-41-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	75-09-2	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	75-01-4	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	1330-20-7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	ug/L	NA	NA	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				Selected Screening Criteria		Background Concentration			
Analysis Type	Chemical	Units	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	mg/L	14797-55-8	52.283	1.666	10	3.2	10	MCL	--	--	--	--
Anions	Nitrite	mg/L	14797-65-0			1	0.2	1	MCL	--	--	--	--
Anions	Sulfate	mg/L	14808-79-8							--	--	--	--
Anions	Sulfide	mg/L	18496-25-8							--	--	--	--
Explosives/Propellants	1,3,5-Trinitrobenzene	ug/L	99-35-4				59	59	RSL	--	--	--	--
Explosives/Propellants	1,3-Dinitrobenzene	ug/L	99-65-0	3.28	0.104		0.2	0.2	RSL	--	--	--	--
Explosives/Propellants	2,4,6-Trinitrotoluene	ug/L	118-96-7	16.4	0.521		0.98	0.98	RSL	--	--	--	--
Explosives/Propellants	2,4-Diamino-6-nitrotoluene	ug/L	6629-29-4							--	--	--	--
Explosives/Propellants	2,4-Dinitrotoluene	ug/L	121-14-2	1.29	0.12		0.24	0.24	RSL	--	--	--	--
Explosives/Propellants	2,6-Diamino-4-nitrotoluene	ug/L	59229-75-3							--	--	--	--
Explosives/Propellants	2,6-Dinitrotoluene	ug/L	606-20-2	1.31	0.122		0.049	0.122	RA	--	--	--	--
Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	ug/L	35572-78-2	6.55	0.209		3.9	3.9	RSL	--	--	--	--
Explosives/Propellants	2-Nitrotoluene	ug/L	88-72-2	3.99	0.37		0.31	0.37	RA	--	--	--	--
Explosives/Propellants	3,5-Dinitroaniline	ug/L	618-87-1							--	--	--	--
Explosives/Propellants	3-Nitrotoluene	ug/L	99-08-1				0.17	0.17	RSL	--	--	--	--
Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	ug/L	19406-51-0	6.55	0.209		3.9	3.9	RSL	--	--	--	--
Explosives/Propellants	4-Nitrotoluene	ug/L	99-99-0	54	5.01		4.3	5.01	RA	--	--	--	--
Explosives/Propellants	DNX	ug/L	80251-29-2							--	--	--	--
Explosives/Propellants	HMX	ug/L	2691-41-0				100	100	RSL	--	--	--	--
Explosives/Propellants	MNX	ug/L	5755-27-1							--	--	--	--
Explosives/Propellants	Nitrobenzene	ug/L	98-95-3	16.4	0.521		0.14	0.521	RC	--	--	--	--
Explosives/Propellants	Nitroglycerin	ug/L	55-63-0	54	5.01		0.2	5.01	RA	--	--	--	--
Explosives/Propellants	PETN	ug/L	78-11-5				3.9	3.9	RSL	--	--	--	--
Explosives/Propellants	RDX	ug/L	121-82-4	8.34	0.774		0.97	0.97	RSL	--	--	--	--
Explosives/Propellants	TNX	ug/L	13980-04-6							--	--	--	--
Explosives/Propellants	Tetryl	ug/L	479-45-8				3.9	3.9	RSL	--	--	--	--
Metals, Total	Aluminum	mg/L	7429-90-5	31.981	1.028	--	2	2	RSL	0.386	0.43	0.038	0.049
Metals, Total	Antimony	mg/L	7440-36-0	0.0117	0.000389	0.006	0.00078	0.006	MCL	0	0	0	0.0006
Metals, Total	Arsenic	mg/L	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	mg/L	7440-39-3	6.332	0.204	2	0.38	2	MCL	0.034	0.177	0.035	0.145
Metals, Total	Beryllium	mg/L	7440-41-7	--	--	0.004	0.0025	0.004	MCL	0	0	0	0.00023
Metals, Total	Cadmium	mg/L	7440-43-9	0.0132	0.000456	0.005	0.00092	0.005	MCL	0	0	0	0
Metals, Total	Calcium	mg/L	7440-70-2	--	--	--	--	--	--	107	143	118	93
Metals, Total	Chromium	mg/L	7440-47-3	33.087	1.214	0.1	2.2	0.1	MCL	0.002	0.007	0	0.00074
Metals, Total	Cobalt	mg/L	7440-48-4	0.654	0.0208	--	0.0006	0.0208	RC	0.00083	0.003	0.001	0.005
Metals, Total	Copper	mg/L	7440-50-8	--	--	1.3	0.08	1.3	MCL	0.005	0.002	0.001	0.00069
Metals, Total	Iron	mg/L	7439-89-6	9.671	0.31	--	1.4	1.91	BKG	1.91	22.3	2.08	2.56
Metals, Total	Lead	mg/L	7439-92-1	--	--	0.015	0.015	0.015	MCL	0.00099	0.00032	0.002	0.00022
Metals, Total	Magnesium	mg/L	7439-95-4	--	--	--	--	--	--	55.3	37.5	38.9	30
Metals, Total	Manganese	mg/L	7439-96-5	1.421	0.0463	--	0.043	0.075	BKG	0.075	0.56	0.198	1.03
Metals, Total	Mercury	mg/L	7439-97-6	--	--	0.002	0.000063	0.002	MCL	0	0	0	0
Metals, Total	Nickel	mg/L	7440-02-0	0.654	0.0208	--	0.039	0.039	RSL	0.002	0.005	0.002	0.014
Metals, Total	Potassium	mg/L	7440-09-7	--	--	--	--	--	--	4.84	2.01	3.38	2.9
Metals, Total	Selenium	mg/L	7782-49-2	--	--	0.05	0.01	0.05	MCL	0.00099	0	0.001	0
Metals, Total	Silver	mg/L	7440-22-4	--	--	--	0.0094	0.0094	RSL	0	0	0	0
Metals, Total	Sodium	mg/L	7440-23-5	--	--	--	--	--	--	18.2	21	129	15.3
Metals, Total	Thallium	mg/L	7440-28-0	0.00261	0.000083	0.002	0.00002	0.002	MCL	0	0	0	0.000097
Metals, Total	Vanadium	mg/L	7440-62-2	0.185	0.00638	--	0.0086	0.0086	RSL	0.0005	0.0007	0.00085	0

Appendix D.2 Chemical-Specific Screening Criteria

				Screening Criteria				Selected Screening Criteria		Background Concentration			
Analysis Type	Chemical	Units	CAS No	NGT CUG	Resident CUG	MCL	Tapwater RSL	GW Screening Level	GW Screening Level Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
Metals, Total	Zinc	mg/L	7440-66-6	9.756	0.312	--	0.6	0.6	RSL	0.005	0.011	0.009	0.003
Miscellaneous	Alkalinity	mg/L	N33					N/A			--	--	--
Miscellaneous	Ammonia	mg/L	7664-41-7					N/A			--	--	--
Miscellaneous	Cyanide	mg/L	57-12-5			0.2	0.00015	N/A	0.2	MCL	--	--	--
Miscellaneous	Total Organic Carbon	mg/L	N997					N/A			--	--	--
PCBs	PCB-1016	ug/L	12674-11-2				0.14	N/A	0.14	RSL	--	--	--
PCBs	PCB-1221	ug/L	11104-28-2				0.0047	N/A	0.0047	RSL	--	--	--
PCBs	PCB-1232	ug/L	11141-16-5				0.0047	N/A	0.0047	RSL	--	--	--
PCBs	PCB-1242	ug/L	53469-21-9	2.29	0.213		0.0078	N/A	0.213	RA	--	--	--
PCBs	PCB-1248	ug/L	12672-29-6				0.0078	N/A	0.0078	RSL	--	--	--
PCBs	PCB-1254	ug/L	11097-69-1	0.655	0.021		0.0078	N/A	0.021	RC	--	--	--
PCBs	PCB-1260	ug/L	11096-82-5	2.29	0.213		0.0078	N/A	0.213	RA	--	--	--
Pesticides	4,4'-DDD	ug/L	72-54-8	0.639	0.059		0.0063	N/A	0.059	RA	--	--	--
Pesticides	4,4'-DDE	ug/L	72-55-9	0.503	0.047		0.046	N/A	0.047	RA	--	--	--
Pesticides	4,4'-DDT	ug/L	50-29-3	0.294	0.027		0.23	N/A	0.23	RSL	--	--	--
Pesticides	Aldrin	ug/L	309-00-2	0.051	0.005		0.00092	N/A	0.005	RA	--	--	--
Pesticides	Dieldrin	ug/L	60-57-1	0.038	0.004		0.0018	N/A	0.004	RA	--	--	--
Pesticides	Endosulfan I	ug/L	959-98-8				10	N/A	10	RSL	--	--	--
Pesticides	Endosulfan II	ug/L	33213-65-9				10	N/A	10	RSL	--	--	--
Pesticides	Endosulfan sulfate	ug/L	1031-07-8				10	N/A	10	RSL	--	--	--
Pesticides	Endrin	ug/L	72-20-8			2	0.23	N/A	2	MCL	--	--	--
Pesticides	Endrin aldehyde	ug/L	7421-93-4				0.23	N/A	0.23	RSL	--	--	--
Pesticides	Endrin ketone	ug/L	53494-70-5				0.23	N/A	0.23	RSL	--	--	--
Pesticides	Heptachlor	ug/L	76-44-8	0.153	0.014	0.4	0.0014	N/A	0.4	MCL	--	--	--
Pesticides	Heptachlor epoxide	ug/L	1024-57-3	0.101	0.009	0.2	0.0014	N/A	0.2	MCL	--	--	--
Pesticides	Lindane	ug/L	58-89-9	0.55	0.051	0.2	0.042	N/A	0.2	MCL	--	--	--
Pesticides	Methoxychlor	ug/L	72-43-5			40	3.7	N/A	40	MCL	--	--	--
Pesticides	Toxaphene	ug/L	8001-35-2	0.518	0.048	3	0.071	N/A	3	MCL	--	--	--
Pesticides	alpha-BHC	ug/L	319-84-6	0.146	0.014		0.0072	N/A	0.014	RA	--	--	--
Pesticides	alpha-Chlordane	ug/L	5103-71-9				0.02	N/A	0.02	RSL	--	--	--
Pesticides	beta-BHC	ug/L	319-85-7	0.51	0.047		0.025	N/A	0.047	RA	--	--	--
Pesticides	delta-BHC	ug/L	319-86-8					N/A			--	--	--
Pesticides	gamma-Chlordane	ug/L	5103-74-2				0.02	N/A	0.02	RSL	--	--	--
SVOCs	1-Methylnaphthalene	ug/L	90-12-0				1.1	N/A	1.1	RSL	--	--	--
SVOCs	2,4,5-Trichlorophenol	ug/L	95-95-4				120	N/A	120	RSL	--	--	--
SVOCs	2,4,6-Trichlorophenol	ug/L	88-06-2				1.2	N/A	1.2	RSL	--	--	--
SVOCs	2,4-Dichlorophenol	ug/L	120-83-2				4.6	N/A	4.6	RSL	--	--	--
SVOCs	2,4-Dimethylphenol	ug/L	105-67-9				36	N/A	36	RSL	--	--	--
SVOCs	2,4-Dinitrophenol	ug/L	51-28-5				3.9	N/A	3.9	RSL	--	--	--
SVOCs	2,4-Dinitrotoluene	ug/L	121-14-2	1.29	0.12		0.24	N/A	0.24	RSL	--	--	--
SVOCs	2,6-Dinitrotoluene	ug/L	606-20-2	1.31	0.122		0.049	N/A	0.122	RA	--	--	--
SVOCs	2-Chlorophenol	ug/L	95-57-8				9.1	N/A	9.1	RSL	--	--	--
SVOCs	2-Methyl-4,6-dinitrophenol	ug/L	534-52-1				0.15	N/A	0.15	RSL	--	--	--
SVOCs	2-Methylnaphthalene	ug/L	91-57-6				3.6	N/A	3.6	RSL	--	--	--
SVOCs	2-Methylphenol	ug/L	95-48-7				93	N/A	93	RSL	--	--	--
SVOCs	2-Nitrophenol	ug/L	88-75-5					N/A			--	--	--
SVOCs	4-Chloro-3-methylphenol	ug/L	59-50-7				140	N/A	140	RSL	--	--	--
SVOCs	4-Nitrophenol	ug/L	100-02-7					N/A			--	--	--

Appendix D.2 Chemical-Specific Screening Criteria

				Screening Criteria				Selected Screening Criteria		Background Concentration			
Analysis Type	Chemical	Units	CAS No	NGT CUG	Resident CUG	MCL	Tapwater RSL	GW Screening Level	GW Screening Level Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
SVOCs	Acenaphthene	ug/L	83-32-9				53	N/A	53	RSL	--	--	--
SVOCs	Acenaphthylene	ug/L	208-96-8				12	N/A	12	RSL	--	--	--
SVOCs	Anthracene	ug/L	120-12-7				180	N/A	180	RSL	--	--	--
SVOCs	Benz(a)anthracene	ug/L	56-55-3	0.042	0.004		0.03	N/A	0.03	RSL	--	--	--
SVOCs	Benzo(a)pyrene	ug/L	50-32-8	0.002	0.00023	0.2	0.025	N/A	0.2	MCL	--	--	--
SVOCs	Benzo(b)fluoranthene	ug/L	205-99-2	0.024	0.002		0.25	N/A	0.25	RSL	--	--	--
SVOCs	Benzo(ghi)perylene	ug/L	191-24-2				12	N/A	12	RSL	--	--	--
SVOCs	Benzo(k)fluoranthene	ug/L	207-08-9				2.5	N/A	2.5	RSL	--	--	--
SVOCs	Bis(2-ethylhexyl)phthalate	ug/L	117-81-7	9.7	0.9	6	5.6	N/A	6	MCL	--	--	--
SVOCs	Butyl benzyl phthalate	ug/L	85-68-7				16	N/A	16	RSL	--	--	--
SVOCs	Chrysene	ug/L	218-01-9				25	N/A	25	RSL	--	--	--
SVOCs	Di-n-butyl phthalate	ug/L	84-74-2				90	N/A	90	RSL	--	--	--
SVOCs	Di-n-octylphthalate	ug/L	117-84-0				20	N/A	20	RSL	--	--	--
SVOCs	Dibenz(a,h)anthracene	ug/L	53-70-3	0.002	0.00015		0.025	N/A	0.025	RSL	--	--	--
SVOCs	Diethyl phthalate	ug/L	84-66-2				1500	N/A	1500	RSL	--	--	--
SVOCs	Dimethyl phthalate	ug/L	131-11-3					N/A			--	--	--
SVOCs	Fluoranthene	ug/L	206-44-0				80	N/A	80	RSL	--	--	--
SVOCs	Fluorene	ug/L	86-73-7				29	N/A	29	RSL	--	--	--
SVOCs	Indeno(1,2,3-cd)pyrene	ug/L	193-39-5	0.024	0.002		0.25	N/A	0.25	RSL	--	--	--
SVOCs	Naphthalene	ug/L	91-20-3				0.17	N/A	0.17	RSL	--	--	--
SVOCs	Nitrobenzene	ug/L	98-95-3	16.4	0.521		0.14	N/A	0.521	RC	--	--	--
SVOCs	Pentachlorophenol	ug/L	87-86-5	0.797	0.074	1	0.041	N/A	1	MCL	--	--	--
SVOCs	Phenanthrene	ug/L	85-01-8				12	N/A	12	RSL	--	--	--
SVOCs	Phenol	ug/L	108-95-2				580	N/A	580	RSL	--	--	--
SVOCs	Pyrene	ug/L	129-00-0				12	N/A	12	RSL	--	--	--
SVOCs	Total Cresols	ug/L	1319-77-3				150	N/A	150	RSL	--	--	--
VOCs	1,1,1-Trichloroethane	ug/L	71-55-6			200	800	N/A	200	MCL	--	--	--
VOCs	1,1,2,2-Tetrachloroethane	ug/L	79-34-5	0.744	0.069		0.076	N/A	0.076	RSL	--	--	--
VOCs	1,1,2-Trichloroethane	ug/L	79-00-5			5	0.041	N/A	5	MCL	--	--	--
VOCs	1,1-Dichloroethane	ug/L	75-34-3				2.8	N/A	2.8	RSL	--	--	--
VOCs	1,1-Dichloroethene	ug/L	75-35-4			7	28	N/A	7	MCL	--	--	--
VOCs	1,2-Dibromoethane	ug/L	106-93-4			0.05	0.0075	N/A	0.05	MCL	--	--	--
VOCs	1,2-Dichloroethane	ug/L	107-06-2	1.67	0.155	5	0.17	N/A	5	MCL	--	--	--
VOCs	1,2-Dichloropropane	ug/L	78-87-5			5	0.82	N/A	5	MCL	--	--	--
VOCs	2-Butanone	ug/L	78-93-3				560	N/A	560	RSL	--	--	--
VOCs	2-Hexanone	ug/L	591-78-6				3.8	N/A	3.8	RSL	--	--	--
VOCs	4-Methyl-2-pentanone	ug/L	108-10-1				630	N/A	630	RSL	--	--	--
VOCs	Acetone	ug/L	67-64-1				1400	N/A	1400	RSL	--	--	--
VOCs	Benzene	ug/L	71-43-2	4.64	0.431	5	0.46	N/A	5	MCL	--	--	--
VOCs	Bromobenzene	ug/L	108-86-1				6.2	N/A	6.2	RSL	--	--	--
VOCs	Bromochloromethane	ug/L	74-97-5				8.3	N/A	8.3	RSL	--	--	--
VOCs	Bromodichloromethane	ug/L	75-27-4				0.13	N/A	0.13	RSL	--	--	--
VOCs	Bromoform	ug/L	75-25-2				3.3	N/A	3.3	RSL	--	--	--
VOCs	Bromomethane	ug/L	74-83-9				0.75	N/A	0.75	RSL	--	--	--
VOCs	Carbon disulfide	ug/L	75-15-0				81	N/A	81	RSL	--	--	--
VOCs	Carbon tetrachloride	ug/L	56-23-5	2.2	0.204	5	0.46	N/A	5	MCL	--	--	--
VOCs	Chlorobenzene	ug/L	108-90-7			100	7.8	N/A	100	MCL	--	--	--
VOCs	Chloroethane	ug/L	75-00-3				2100	N/A	2100	RSL	--	--	--

Appendix D.2 Chemical-Specific Screening Criteria

Analysis Type	Chemical	Units	CAS No	Screening Criteria				Selected Screening Criteria		Background Concentration			
				NGT CUG	Resident CUG	MCL	Tapwater RSL	GW Screening Level	GW Screening Level Source	Unconsolidated	Homewood	Upper Sharon	Basal Sharon Conglomerate
VOCs	Chloroform	ug/L	67-66-3	2.23	0.207	80	0.22	N/A	80	MCL	--	--	--
VOCs	Chloromethane	ug/L	74-87-3				19	N/A	19	RSL	--	--	--
VOCs	Dibromochloromethane	ug/L	124-48-1				0.87	N/A	0.87	RSL	--	--	--
VOCs	Ethylbenzene	ug/L	100-41-4			700	1.5	N/A	700	MCL	--	--	--
VOCs	Methylene chloride	ug/L	75-09-2	57.5	5.34	5	11	N/A	5	MCL	--	--	--
VOCs	Styrene	ug/L	100-42-5			100	120	N/A	100	MCL	--	--	--
VOCs	Tetrachloroethene	ug/L	127-18-4	1.05	0.098	5	4.1	N/A	5	MCL	--	--	--
VOCs	Toluene	ug/L	108-88-3			1000	110	N/A	1000	MCL	--	--	--
VOCs	Trichloroethene	ug/L	79-01-6	0.336	0.031	5	0.28	N/A	5	MCL	--	--	--
VOCs	Vinyl chloride	ug/L	75-01-4			2	0.019	N/A	2	MCL	--	--	--
VOCs	Xylenes, total	ug/L	1330-20-7			10000	19	N/A	10000	MCL	--	--	--
VOCs	cis-1,3-Dichloropropene	ug/L	10061-01-5				0.47	N/A	0.47	RSL	--	--	--
VOCs	trans-1,3-Dichloropropene	ug/L	10061-02-6				0.47	N/A	0.47	RSL	--	--	--

D.3 Spring 2022 Detected Concentrations

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Appendix D.3 Spring 2022 Detected Concentrations

Zone	Well	Date Collected	Sample ID	Sample Type	Analysis Type	Chemical	Result[1]	Units	Validation Qualifier	GW Screening Criteria	GW Screening Criteria Source	Background Criteria	Result exceeds screening and background criteria (Y/N)?
Homewood	FBQmw-173	6/28/2022	FBQmw-173-220601-GW	Grab	Anions	Sulfate	35	mg/L					None
Homewood	FBQmw-173	6/28/2022	FBQmw-173-220602-GW	Field Duplicate	Anions	Sulfate	36	mg/L					None
Homewood	FBQmw-173	6/28/2022	FBQmw-173-220602-GW	Field Duplicate	Miscellaneous	Alkalinity	22	mg/L					None
Homewood	FBQmw-173	6/28/2022	FBQmw-173-220601-GW	Grab	Miscellaneous	Alkalinity	23	mg/L					None
Homewood	FBQmw-173	6/28/2022	FBQmw-173-220601-GW	Grab	Miscellaneous	Total Organic Carbon	0.86	mg/L	J				None
Homewood	FBQmw-174	6/28/2022	FBQmw-174-220601-GW	Grab	Anions	Nitrate	0.94	mg/L		10	MCL		N
Homewood	FBQmw-174	6/28/2022	FBQmw-174-220601-GW	Grab	Anions	Nitrite	0.07	mg/L	J	1	MCL		N
Homewood	FBQmw-174	6/28/2022	FBQmw-174-220601-GW	Grab	Anions	Sulfate	55	mg/L					None
Homewood	**FBQmw-174**	**6/28/2022**	**FBQmw-174-220601-GW**	**Grab**	**Explosives/Propellants**	**2,4,6-Trinitrotoluene**	**5.6**	**ug/L**		**0.98**	**RSL**		**Y**
Homewood	**FBQmw-174**	**6/28/2022**	**FBQmw-174-220601-GW**	**Grab**	**Explosives/Propellants**	**2,4-Dinitrotoluene**	**0.37**	**ug/L**		**0.24**	**RSL**		**Y**
Homewood	**FBQmw-174**	**6/28/2022**	**FBQmw-174-220601-GW**	**Grab**	**Explosives/Propellants**	**2-Amino-4,6-Dinitrotoluene**	**8.7**	**ug/L**		**3.9**	**RSL**		**Y**
Homewood	FBQmw-174	6/28/2022	FBQmw-174-220601-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.86	ug/L					None
Homewood	**FBQmw-174**	**6/28/2022**	**FBQmw-174-220601-GW**	**Grab**	**Explosives/Propellants**	**4-Amino-2,6-Dinitrotoluene**	**17**	**ug/L**		**3.9**	**RSL**		**Y**
Homewood	FBQmw-174	6/28/2022	FBQmw-174-220601-GW	Grab	Miscellaneous	Alkalinity	10	mg/L					None
Homewood	FBQmw-174	6/28/2022	FBQmw-174-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1.7	mg/L					None
Homewood	LL10mw-003	6/28/2022	LL10mw-003-220601-GW	Grab	VOCs	Carbon tetrachloride	4	ug/L	J	5	MCL		N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Arsenic	0.0092	mg/L		0.01	MCL	0.003	N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220601-GW	Grab	Metals, Total	Arsenic	0.0095	mg/L		0.01	MCL	0.003	N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220601-GW	Grab	Metals, Total	Barium	0.045	mg/L		2	MCL	0.034	N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Barium	0.045	mg/L		2	MCL	0.034	N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220601-GW	Grab	Metals, Total	Calcium	93	mg/L	J			107	None
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Calcium	92	mg/L				107	None
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Chromium	0.00053	mg/L	J	0.1	MCL	0.002	N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Iron	1.9	mg/L		1.91	BKG	1.91	N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220601-GW	Grab	Metals, Total	Iron	1.9	mg/L		1.91	BKG	1.91	N
Unconsolidated	DETmw-003	6/23/2022	DET-003-220601-GW	Grab	Metals, Total	Magnesium	35	mg/L	J			55.3	None
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Magnesium	35	mg/L				55.3	None
Unconsolidated	**DETmw-003**	**6/23/2022**	**DET-003-220602-GW**	**Field Duplicate**	**Metals, Total**	**Manganese**	**0.23**	**mg/L**		**0.075**	**BKG**	**0.075**	**Y**
Unconsolidated	**DETmw-003**	**6/23/2022**	**DET-003-220601-GW**	**Grab**	**Metals, Total**	**Manganese**	**0.23**	**mg/L**		**0.075**	**BKG**	**0.075**	**Y**
Unconsolidated	DETmw-003	6/23/2022	DET-003-220601-GW	Grab	Metals, Total	Potassium	2	mg/L	J			4.84	None
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Potassium	2	mg/L	J			4.84	None
Unconsolidated	DETmw-003	6/23/2022	DET-003-220601-GW	Grab	Metals, Total	Sodium	13	mg/L				18.2	None
Unconsolidated	DETmw-003	6/23/2022	DET-003-220602-GW	Field Duplicate	Metals, Total	Sodium	13	mg/L				18.2	None
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Explosives/Propellants	HMX	1.7	ug/L		100	RSL		N
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Explosives/Propellants	RDX	0.59	ug/L		0.97	RSL		N
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Barium	0.057	mg/L		2	MCL	0.034	N
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Calcium	130	mg/L				107	None
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Magnesium	26	mg/L				55.3	None
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Manganese	0.042	mg/L		0.075	BKG	0.075	N
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Nickel	0.00041	mg/L	J	0.039	RSL	0.002	N
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Potassium	1.1	mg/L	J			4.84	None
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Sodium	1.9	mg/L				18.2	None
Unconsolidated	DETmw-004	6/23/2022	DET-004-220601-GW	Grab	Metals, Total	Zinc	0.012	mg/L	J	0.6	RSL	0.005	N
Unconsolidated	WBGmw-006	6/21/2022	WBGmw-006-220601-GW	Grab	Anions	Sulfate	28	mg/L					None
Unconsolidated	WBGmw-006	6/21/2022	WBGmw-006-220601-GW	Grab	Explosives/Propellants	HMX	3.1	ug/L		100	RSL		N
Unconsolidated	WBGmw-006	6/21/2022	WBGmw-006-220601-GW	Grab	Explosives/Propellants	MNX	0.3	ug/L	J				None
Unconsolidated	WBGmw-006	6/21/2022	WBGmw-006-220601-GW	Grab	Explosives/Propellants	RDX	**6.9**	ug/L		0.97	RSL		Y
Unconsolidated	WBGmw-006	6/21/2022	WBGmw-006-220601-GW	Grab	Miscellaneous	Alkalinity	270	mg/L					None

Appendix D.3 Spring 2022 Detected Concentrations

Zone	Well	Date Collected	Sample ID	Sample Type	Analysis Type	Chemical	Result[1]	Units	Validation Qualifier	GW Screening Criteria	GW Screening Criteria Source	Background Criteria	Result exceeds screening and background criteria (Y/N)?
Unconsolidated	WBGmw-006	6/21/2022	WBGmw-006-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1.4	mg/L					None
Unconsolidated	WBGmw-009	6/21/2022	WBGmw-009-220601-GW	Grab	Anions	Sulfate	16	mg/L					None
Unconsolidated	WBGmw-009	6/21/2022	WBGmw-009-220601-GW	Grab	Explosives/Propellants	HMX	0.75	ug/L		100	RSL		N
Unconsolidated	**WBGmw-009**	**6/21/2022**	**WBGmw-009-220601-GW**	**Grab**	**Explosives/Propellants**	**RDX**	**1.3**	**ug/L**	**J**	**0.97**	**RSL**		**Y**
Unconsolidated	WBGmw-009	6/21/2022	WBGmw-009-220601-GW	Grab	Miscellaneous	Alkalinity	110	mg/L					None
Unconsolidated	WBGmw-009	6/21/2022	WBGmw-009-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1.2	mg/L					None
Unconsolidated	WBGmw-018	6/22/2022	WBGmw-018-220601-GW	Grab	Anions	Nitrate	0.23	mg/L	J	10	MCL		N
Unconsolidated	WBGmw-018	6/22/2022	WBGmw-018-220601-GW	Grab	Anions	Sulfate	9.9	mg/L					None
Unconsolidated	WBGmw-018	6/22/2022	WBGmw-018-220601-GW	Grab	Explosives/Propellants	RDX	0.2	ug/L	J	0.97	RSL		N
Unconsolidated	WBGmw-018	6/22/2022	WBGmw-018-220601-GW	Grab	Miscellaneous	Alkalinity	46	mg/L					None
Unconsolidated	WBGmw-018	6/22/2022	WBGmw-018-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1.8	mg/L					None
Unconsolidated	LL1mw-063	6/17/2022	LL1mw-063-220601-GW	Grab	Explosives/Propellants	HMX	2.4	ug/L		100	RSL		N
Unconsolidated	LL1mw-086	6/24/2022	LL1mw-086-220601-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	2.2	ug/L		59	RSL		N
Unconsolidated	**LL1mw-086**	**6/24/2022**	**LL1mw-086-220601-GW**	**Grab**	**Explosives/Propellants**	**2,4,6-Trinitrotoluene**	**1.3**	**ug/L**		**0.98**	**RSL**		**Y**
Unconsolidated	LL1mw-086	6/24/2022	LL1mw-086-220601-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	2.2	ug/L		3.9	RSL		N
Unconsolidated	LL1mw-086	6/24/2022	LL1mw-086-220601-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.72	ug/L					None
Unconsolidated	LL1mw-086	6/24/2022	LL1mw-086-220601-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	2.4	ug/L		3.9	RSL		N
Unconsolidated	**LL1mw-086**	**6/24/2022**	**LL1mw-086-220601-GW**	**Grab**	**Explosives/Propellants**	**RDX**	**1.1**	**ug/L**		**0.97**	**RSL**		**Y**
Unconsolidated	**LL12mw-185**	**6/27/2022**	**LL12mw-185-220601-GW**	**Grab**	**Anions**	**Nitrate**	**71**	**mg/L**		**10**	**MCL**		**Y**
Unconsolidated	**LL12mw-185**	**6/27/2022**	**LL12mw-185-220602-GW**	**Field Duplicate**	**Anions**	**Nitrate**	**74**	**mg/L**		**10**	**MCL**		**Y**
Unconsolidated	LL12mw-185	6/27/2022	LL12mw-185-220602-GW	Field Duplicate	Miscellaneous	Ammonia	0.039	mg/L	J				None
Unconsolidated	LL12mw-187	6/28/2022	LL12mw-187-220601-GW	Grab	Miscellaneous	Ammonia	660	mg/L					None
Unconsolidated	LL12mw-244	6/27/2022	LL12mw-244-220601-GW	Grab	Miscellaneous	Ammonia	0.26	mg/L					None
Unconsolidated	LL12mw-245	6/27/2022	LL12mw-245-220601-GW	Grab	Miscellaneous	Ammonia	0.049	mg/L	J				None
Unconsolidated	LL12mw-246	6/27/2022	LL12mw-246-220601-GW	Grab	Miscellaneous	Ammonia	0.15	mg/L					None
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Anions	Nitrate	0.098	mg/L	J	10	MCL		N
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Anions	Sulfate	35	mg/L					None
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.16	ug/L		0.98	RSL		N
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	1.8	ug/L	J	3.9	RSL		N
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.74	ug/L					None
Upper Sharon	**LL1mw-080**	**6/23/2022**	**LL1mw-080-220601-GW**	**Grab**	**Explosives/Propellants**	**4-Amino-2,6-Dinitrotoluene**	**4.9**	**ug/L**		**3.9**	**RSL**		**Y**
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Explosives/Propellants	HMX	4.4	ug/L		100	RSL		N
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Explosives/Propellants	MNX	0.65	ug/L					None
Upper Sharon	**LL1mw-080**	**6/23/2022**	**LL1mw-080-220601-GW**	**Grab**	**Explosives/Propellants**	**RDX**	**26**	**ug/L**		**0.97**	**RSL**		**Y**
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Miscellaneous	Alkalinity	100	mg/L					None
Upper Sharon	LL1mw-080	6/23/2022	LL1mw-080-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1.2	mg/L					None
Upper Sharon	**LL1mw-081**	**6/23/2022**	**LL1mw-081-220601-GW**	**Grab**	**Explosives/Propellants**	**RDX**	**1**	**ug/L**	**J**	**0.97**	**RSL**		**Y**
Upper Sharon	LL1mw-082	6/24/2022	LL1mw-082-220601-GW	Grab	Explosives/Propellants	2,4,6-Trinitrotoluene	0.21	ug/L		0.98	RSL		N
Upper Sharon	LL1mw-082	6/24/2022	LL1mw-082-220601-GW	Grab	Explosives/Propellants	2-Amino-4,6-Dinitrotoluene	0.69	ug/L		3.9	RSL		N
Upper Sharon	LL1mw-082	6/24/2022	LL1mw-082-220601-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.43	ug/L	J				None
Upper Sharon	LL1mw-082	6/24/2022	LL1mw-082-220601-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	1.1	ug/L		3.9	RSL		N
Upper Sharon	LL1mw-083	6/17/2022	LL1mw-083-220601-GW	Grab	Anions	Nitrate	0.25	mg/L	J	10	MCL		N
Upper Sharon	LL1mw-083	6/17/2022	LL1mw-083-220601-GW	Grab	Anions	Sulfate	120	mg/L					None
Upper Sharon	LL1mw-083	6/17/2022	LL1mw-083-220601-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	4.2	ug/L		59	RSL		N
Upper Sharon	**LL1mw-083**	**6/17/2022**	**LL1mw-083-220601-GW**	**Grab**	**Explosives/Propellants**	**2,4,6-Trinitrotoluene**	**1.9**	**ug/L**		**0.98**	**RSL**		**Y**
Upper Sharon	**LL1mw-083**	**6/17/2022**	**LL1mw-083-220601-GW**	**Grab**	**Explosives/Propellants**	**2,4-Dinitrotoluene**	**2.5**	**ug/L**		**0.24**	**RSL**		**Y**
Upper Sharon	**LL1mw-083**	**6/17/2022**	**LL1mw-083-220601-GW**	**Grab**	**Explosives/Propellants**	**2,6-Dinitrotoluene**	**1**	**ug/L**		**0.122**	**RA**		**Y**
Upper Sharon	**LL1mw-083**	**6/17/2022**	**LL1mw-083-220601-GW**	**Grab**	**Explosives/Propellants**	**2-Amino-4,6-Dinitrotoluene**	**8.5**	**ug/L**		**3.9**	**RSL**		**Y**

Appendix D.3 Spring 2022 Detected Concentrations

Zone	Well	Date Collected	Sample ID	Sample Type	Analysis Type	Chemical	Result[1]	Units	Validation Qualifier	GW Screening Criteria	GW Screening Criteria Source	Background Criteria	Result exceeds screening and background criteria (Y/N)?
Upper Sharon	**LL1mw-083**	**6/17/2022**	**LL1mw-083-220601-GW**	**Grab**	**Explosives/Propellants**	**4-Amino-2,6-Dinitrotoluene**	**16**	**ug/L**		**3.9**	**RSL**		**Y**
Upper Sharon	LL1mw-083	6/17/2022	LL1mw-083-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1.2	mg/L					None
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220602-GW	Field Duplicate	Anions	Nitrate	0.59	mg/L		10	MCL		N
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220601-GW	Grab	Anions	Nitrate	0.61	mg/L		10	MCL		N
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220602-GW	Field Duplicate	Anions	Sulfate	110	mg/L					None
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220601-GW	Grab	Anions	Sulfate	110	mg/L					None
Upper Sharon	**LL1mw-084**	**6/17/2022**	**LL1mw-084-220601-GW**	**Grab**	**Explosives/Propellants**	**2,4,6-Trinitrotoluene**	**2.7**	**ug/L**		**0.98**	**RSL**		**Y**
Upper Sharon	**LL1mw-084**	**6/17/2022**	**LL1mw-084-220602-GW**	**Field Duplicate**	**Explosives/Propellants**	**2,4,6-Trinitrotoluene**	**2.9**	**ug/L**		**0.98**	**RSL**		**Y**
Upper Sharon	**LL1mw-084**	**6/17/2022**	**LL1mw-084-220601-GW**	**Grab**	**Explosives/Propellants**	**2-Amino-4,6-Dinitrotoluene**	**7.7**	**ug/L**		**3.9**	**RSL**		**Y**
Upper Sharon	**LL1mw-084**	**6/17/2022**	**LL1mw-084-220602-GW**	**Field Duplicate**	**Explosives/Propellants**	**2-Amino-4,6-Dinitrotoluene**	**7.8**	**ug/L**		**3.9**	**RSL**		**Y**
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220602-GW	Field Duplicate	Explosives/Propellants	3,5-Dinitroaniline	1.6	ug/L	J				None
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220601-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	1.6	ug/L	J				None
Upper Sharon	**LL1mw-084**	**6/17/2022**	**LL1mw-084-220601-GW**	**Grab**	**Explosives/Propellants**	**4-Amino-2,6-Dinitrotoluene**	**23**	**ug/L**		**3.9**	**RSL**		**Y**
Upper Sharon	**LL1mw-084**	**6/17/2022**	**LL1mw-084-220602-GW**	**Field Duplicate**	**Explosives/Propellants**	**4-Amino-2,6-Dinitrotoluene**	**24**	**ug/L**		**3.9**	**RSL**		**Y**
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220602-GW	Field Duplicate	Miscellaneous	Alkalinity	63	mg/L					None
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220601-GW	Grab	Miscellaneous	Alkalinity	69	mg/L					None
Upper Sharon	LL1mw-084	6/17/2022	LL1mw-084-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1.8	mg/L					None
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Anions	Nitrate	0.81	mg/L		10	MCL		N
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Anions	Sulfate	320	mg/L					None
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	0.71	ug/L		59	RSL		N
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Explosives/Propellants	2,4-Dinitrotoluene	0.15	ug/L		0.24	RSL		N
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	0.87	ug/L					None
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Explosives/Propellants	4-Amino-2,6-Dinitrotoluene	0.21	ug/L		3.9	RSL		N
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Miscellaneous	Alkalinity	160	mg/L					None
Upper Sharon	LL2mw-059	6/23/2022	LL2mw-059-220601-GW	Grab	Miscellaneous	Total Organic Carbon	2.9	mg/L					None
Upper Sharon	LL3mw-237	6/24/2022	LL3mw-237-220601-GW	Grab	Explosives/Propellants	1,3,5-Trinitrobenzene	14	ug/L		59	RSL		N
Upper Sharon	**LL3mw-237**	**6/24/2022**	**LL3mw-237-220601-GW**	**Grab**	**Explosives/Propellants**	**2,4,6-Trinitrotoluene**	**42**	**ug/L**	**J**	**0.98**	**RSL**		**Y**
Upper Sharon	**LL3mw-237**	**6/24/2022**	**LL3mw-237-220601-GW**	**Grab**	**Explosives/Propellants**	**2-Amino-4,6-Dinitrotoluene**	**6.9**	**ug/L**		**3.9**	**RSL**		**Y**
Upper Sharon	LL3mw-237	6/24/2022	LL3mw-237-220601-GW	Grab	Explosives/Propellants	3,5-Dinitroaniline	1.5	ug/L					None
Upper Sharon	**LL3mw-237**	**6/24/2022**	**LL3mw-237-220601-GW**	**Grab**	**Explosives/Propellants**	**4-Amino-2,6-Dinitrotoluene**	**27**	**ug/L**	**J**	**3.9**	**RSL**		**Y**
Upper Sharon	LL3mw-237	6/24/2022	LL3mw-237-220601-GW	Grab	Explosives/Propellants	HMX	3.1	ug/L		100	RSL		N
Upper Sharon	**LL3mw-237**	**6/24/2022**	**LL3mw-237-220601-GW**	**Grab**	**Explosives/Propellants**	**RDX**	**6.7**	**ug/L**	**J**	**0.97**	**RSL**		**Y**
Upper Sharon	LL3mw-238	6/24/2022	LL3mw-238-220601-GW	Grab	Anions	Nitrate	0.51	mg/L		10	MCL		N
Upper Sharon	LL3mw-238	6/24/2022	LL3mw-238-220601-GW	Grab	Anions	Sulfate	60	mg/L					None
Upper Sharon	LL3mw-238	6/24/2022	LL3mw-238-220601-GW	Grab	Miscellaneous	Alkalinity	160	mg/L					None
Upper Sharon	LL3mw-238	6/24/2022	LL3mw-238-220601-GW	Grab	Miscellaneous	Total Organic Carbon	2.9	mg/L					None
Upper Sharon	LL3mw-239	6/24/2022	LL3mw-239-220601-GW	Grab	Anions	Nitrate	0.65	mg/L		10	MCL		N
Upper Sharon	LL3mw-239	6/24/2022	LL3mw-239-220601-GW	Grab	Anions	Sulfate	39	mg/L					None
Upper Sharon	LL3mw-239	6/24/2022	LL3mw-239-220601-GW	Grab	Miscellaneous	Alkalinity	59	mg/L					None
Upper Sharon	LL3mw-239	6/24/2022	LL3mw-239-220601-GW	Grab	Miscellaneous	Total Organic Carbon	1	mg/L					None
Upper Sharon	FWGmw-020	6/16/2022	FWGmw-020-220601-GW	Grab	Anions	Nitrate	0.11	mg/L	J	10	MCL		N
Upper Sharon	FWGmw-021	6/16/2022	FWGmw-021-220601-GW	Grab	Explosives/Propellants	2-Nitrotoluene	0.31	ug/L	J	0.37	RA		N

[1] = Bold highlight indicates detected concentration exceeds screening and background criteria.

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APPENDIX E

Laboratory Data Packages

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E.1 SPRING 2022 LABORATORY DATA PACKAGES

(Data Packages are provided on CD)

Analytical Report Job Number: 280-163487-1
Analytical Report Job Number: 280-163528-1
Analytical Report Job Number: 280-163557-1
Analytical Report Job Number: 280-163594-1
Analytical Report Job Number: 280-163664-1
Analytical Report Job Number: 280-163706-1
Analytical Report Job Number: 280-163753-1
Analytical Report Job Number: 280-163797-1
Analytical Report Job Number: 280-163830-1
Analytical Report Job Number: 280-163867-1

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APPENDIX F

Spring 2022 FWGWMP Data Quality Report

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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
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
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 2022 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 2022* (Leidos 2022; herein referred to as the 2022 Addendum). Implementation of the 2022 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 2022 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 2022 Addendum (Leidos 2022). 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 used 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.

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. The Field Manager completed a separate Daily Tailgate Safety Briefing log daily.

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 Eurofins Environment Testing America of Denver, Colorado (Eurofins Denver), performed all analyses. Eurofins 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 5.3 (DoD 2019) 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 field change requests (FCRs) were necessary during the Spring 2022 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 used 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:

- 2022 Addendum (Leidos 2022);
- RIWP, including Appendix A.2 QAPP (TEC-Weston 2016);
- DoD QSM, Version 5.3 (DoD 2019) 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 (EE 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 48 environmental groundwater samples were collected along with 9 field duplicates, with approximately 1,409 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 2022 sampling event.

Table F-1 summarizes the number of environmental and QC samples collected during the Spring 2022 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, chromatographic interference, noncompliant MS recoveries, blank contamination, surrogate recoveries, and outlier LCS recoveries, as well as professional judgment.

During the Spring 2022 sampling event, nine field duplicates were collected and analyzed with primary samples. Two trip blanks were collected and analyzed for VOCs and all analytes were non-detect. Non-dedicated stainless steel QED bladder pumps were used to collect groundwater from 11 wells (WBGmw-006, WBGmw-009, WBGmw-014, WBGmw-016, WBGmw-017, WBGmw-018, WBGmw-020, WBGmw-021, LL1mw-082, LL3mw-245, LL12mw-246) and two rinsate blanks were collected; all analytes were non-detect. The project goal for blanks is to achieve concentrations less than the reporting levels and trip and rinsate blanks 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. Results for four samples were 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 all results were conservatively qualified as estimated (J, UJ) based on sample condition and professional judgment. Initial calibrations and continuing calibration criteria were achieved. 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 were free from contamination. All LCS and MS/MSD recoveries were within criteria. No samples required dilutions. No data were rejected for any reason. Although some data points 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 with the exception of two compounds that resulted in six data points being qualified as non-detect at an estimated concentration (UJ). 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 with the exception of two compounds that results in six data points being qualified as non-detect at an estimated concentration (UJ). No semivolatile organic compound (SVOC) samples required dilutions. Although some data points 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.4.3 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 recoveries for all PAHs had an average recovery of 40 percent and all PAH data points were qualified as estimated (J, UJ); however, all MS/MSD recoveries and relative percent difference (RPD) values met criteria. No polycyclic aromatic hydrocarbon (PAH) samples required dilutions. Although some data points 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.4.4 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 with the exception of three compounds that exceeded criteria; six data points in the associated samples were qualified as non-detect at an estimated concentration. Pesticide method blanks were free of contamination. LCS recoveries or MS/MSD recoveries values exceeded criteria for three compounds resulting in nine data points qualified as non-detect at an estimated concentration; spiked duplicate RPD values met criteria. No pesticide samples required dilutions. Column comparisons were not required as all compounds were non-detect. Although some data points 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.4.5 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 biphenyls (PCBs). 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 2022). The list of 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). Analytical holding times were met for all samples. Surrogate recovery for one sample was outside control limits and resulted in four 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 seven results in seven samples, which caused these data points to be qualified as estimated (J). LCS recoveries for 1 compound exceeded criteria, resulting in 12 results being qualified as non-detect at an estimated concentration (UJ). One compound in two samples analyzed as an MS/MSD exceeded recovery criteria, resulting in two data points qualified as estimated (UJ). One sample for explosives required a dilution for two compounds and two non-detect compounds were reported from this analysis at an elevated limit of detection (LOD) due to chromatographic interferences in the undiluted analysis. Although some data points 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 1 result being qualified as non-detect (U) at a reported sample concentration that was less than 10 times the blank result. Initial and continuing calibration criteria met criteria. Calibration blank contamination was evaluated in a manner 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 data points 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 nitrate; results for these samples were qualified as estimated (J, UJ). Initial and continuing calibration criteria were met for all compounds. Two samples for nitrate had concentrations that exceeded the upper calibration limit; the samples were reanalyzed at a dilution. Method and calibration blanks were free from contamination with the exception of two method blanks for nitrate, which resulted in two data points qualified as non-detect. MS/MSD recoveries and RPD values met criteria. Laboratory duplicate results met criteria. 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 met for all samples. 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. No results were qualified as estimated, 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 met for all samples. Initial and continuing calibration criteria were met for ammonia. Method and calibration blanks were free from contamination. LCS recoveries were within criteria. One samples for ammonia had a concentration that exceeded the upper calibration limit; the sample was reanalyzed at a dilution. 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.

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 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; 2,4,6-trichlorophenol; 2,4-dichlorophenol; bis(2-ethylhexyl)phthalate; and PCB 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 5 times the blank concentration for all analytes, except those designated as common laboratory contaminants (i.e., methylene chloride, acetone, toluene, 2-butanone, and phthalate compounds), for which the action level is 10 times the blank concentration. Action limits for inorganics were set as 10 times the blank concentration. Reported sample concentrations are evaluated against blank action levels, and the following qualifications are made when reportable quantities of analytes were observed in the associated method blank:

- When the sample analyte concentration is above the action level (5 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.

All analytes were reported as non-detect in the trip blanks and rinsate blanks associated with this sampling event; therefore, the decontamination, transportation and sample storage processes, and 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 shipped to the appropriate laboratory location on a schedule to meet holding times; samples were received within temperature specifications and in good condition. Holding times were met for all samples except as noted previously.

Comparability, like representativeness, is a qualitative term relative to an individual project data set. This event 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 2022) 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 2022 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 or non-detect (J, UJ 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 non-detected 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 use of the project objectives and provides data for future needs.

F.6 REFERENCES

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Table F-1. Number of Samples Collected – Spring 2022 Sampling Event

Media	Environmental Samples	Field Duplicates	USACE Split Samples	Trip Blanks	Equipment Rinsate Blanks[a]	Source Water Blanks[b]
Groundwater	48	9	0	2	2	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 for parameters for which non-dedicated sampling equipment was used.

[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 2022 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-003-220601-GW	280-163753-1	DET-003-220602-GW	FWGTB-220601-TB001	X	X		X	X	X	X	X					
Groundwater	DET-004-220601-GW	280-163753-1		FWGTB-220601-TB001	X	X		X	X	X	X	X					
Groundwater	FBQmw-173-220601-GW	280-163867-1	FBQmw-173-220602-GW			X	X						X	X	X	X	
Groundwater	FBQmw-174-220601-GW	280-163867-1				X	X						X	X	X	X	
Groundwater	FBQmw-175-220601-GW	280-163867-1	FBQmw-175-220602-GW			X	X										
Groundwater	FWGmw-004-220601-GW	280-163706-1	FWGmw-004-220602-GW			X											
Groundwater	FWGmw-007-220601-GW	280-163867-1				X											
Groundwater	FWGmw-010-220601-GW	280-163487-1				X	X										
Groundwater	FWGmw-011-220601-GW	280-163594-1				X											
Groundwater	FWGmw-012-220601-GW	280-163594-1				X											
Groundwater	FWGmw-015-220601-GW	280-163557-1				X	X										
Groundwater	FWGmw-016-220601-GW	280-163557-1				X	X										
Groundwater	FWGmw-018-220601-GW	280-163557-1											X				
Groundwater	FWGmw-020-220601-GW	280-163557-1											X				
Groundwater	FWGmw-021-220601-GW	280-163557-1				X	X										
Groundwater	FWGmw-023-220601-GW	280-163867-1				X											
Groundwater	FWGmw-024-220601-GW	280-163557-1				X	X										
Groundwater	LL10mw-003-220601-GW	280-163867-1		FWGTB-220601-TB002				X*									
Groundwater	LL12mw-185-220601-GW	280-163830-1	LL12mw-185-220602-GW										X				X
Groundwater	LL12mw-187-220601-GW	280-163867-1											X				X
Groundwater	LL12mw-244-220601-GW	280-163830-1											X				X
Groundwater	LL12mw-245-220601-GW	280-163830-1											X				X
Groundwater	LL12mw-246-220601-GW	280-163830-1											X				X

Table F-2. Identification of Regular and QC Samples Collected – Spring 2022 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	LL1mw-063-220601-GW	280-163594-1				X	X										
Groundwater	LL1mw-064-220601-GW	280-163528-1				X	X										
Groundwater	LL1mw-080-220601-GW	280-163753-1				X	X						X	X	X	X	
Groundwater	LL1mw-081-220601-GW	280-163753-1				X	X										
Groundwater	LL1mw-082-220601-GW	280-163797-1				X	X										
Groundwater	LL1mw-083-220601-GW	280-163594-1				X	X						X	X	X	X	
Groundwater	LL1mw-084-220601-GW	280-163594-1	LL1mw-084-220602-GW			X	X						X	X	X	X	
Groundwater	LL1mw-086-220601-GW	280-163797-1				X	X										
Groundwater	LL1mw-087-220601-GW	280-163557-1	LL1mw-087-220602-GW			X	X										
Groundwater	LL1mw-089-220601-GW	280-163487-1	LL1mw-089-220602-GW			X	X										
Groundwater	LL2mw-059-220601-GW	280-163753-1				X	X						X	X	X	X	
Groundwater	LL3mw-237-220601-GW	280-163797-1				X	X										
Groundwater	LL3mw-238-220601-GW	280-163797-1				X	X						X	X	X	X	
Groundwater	LL3mw-239-220601-GW	280-163797-1				X	X						X	X	X	X	
Groundwater	LL3mw-241-220601-GW	280-163797-1				X	X										
Groundwater	LL3mw-245-220601-GW	280-163830-1				X	X										
Groundwater	SCFmw-004-220601-GW	280-163557-1	SCFmw-004-220602-GW			X	X										
Groundwater	WBGmw-006-220601-GW	280-163664-1				X	X						X	X	X	X	
Groundwater	WBGmw-009-220601-GW	280-163664-1				X	X						X	X	X	X	
Groundwater	WBGmw-014-220601-GW	280-163706-1				X	X										
Groundwater	WBGmw-016-220601-GW	280-163706-1				X	X										
Groundwater	WBGmw-017-220601-GW	280-163706-1				X	X										
Groundwater	WBGmw-018-220601-GW	280-163706-1				X	X						X	X	X	X	

Table F-2. Identification of Regular and QC Samples Collected – Spring 2022 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-020-220601-GW	280-163664-1				X	X										
Groundwater	WBGmw-021-220601-GW	280-163664-1				X	X										

*Carbon tetrachloride only

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
TOC = Total Organic Carbon
VOC = Volatile Organic Compound

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Table F-3. Summary of Qualified Results for Samples – Spring 2022 Sampling Event

Analysis Group	Val. Qual[a]	Validation Code[b]	Number Qualified	Total Number of Analyses	Percent Qualified
All Analyses	J		27	1409	1.9
All Analyses	UJ		201	1409	14.0
All Analyses	U		8	1409	0.6
All Analyses	None		1173	1409	83.0
Metals	J	Rl	6	69	8.7
Metals	U	Mb	1	69	1.4
Metals	U	Rl, F06	4	69	5.8
Metals	None	None	58	69	84.0
Explosives	J	M08	7	934	0.7
Explosives	J	Rl	3	934	0.3
Explosives	J	Surr	2	934	0.2
Explosives	UJ	Lcs	11	934	1.2
Explosives	UJ	Ms	1	934	0.1
Explosives	UJ	Ms, Lcs	1	934	0.1
Explosives	UJ	Surr, N01	2	934	0.2
Explosives	None	None	907	934	97.1
VOCs	J	A06	1	106	0.9
VOCs	UJ	A06	105	106	99.0
SVOCs/PAHs	UJ	C14	6	123	4.9
SVOCs/PAHs	UJ	Lcs	58	123	47.0
SVOCs/PAHs	UJ	Ms, Lcs	2	123	1.6
SVOCs/PAHs	None	None	57	123	46.0
PCBs	None	None	21	21	100.0
Pesticides	UJ	C05	6	63	9.5
Pesticides	UJ	Lcs	7	63	11.0
Pesticides	UJ	Ms, Lcs	2	63	3.2
Pesticides	None	None	48	63	76.0
Cyanide	None	None	3	3	100.0
Nitrate	J	Rl	3	21	14.0
Nitrate	J	Rl, A03	1	21	4.8
Nitrate	U	A03	1	21	4.8
Nitrate	U	Mb	2	21	9.5
Nitrate	None	None	14	21	67.0
MNA (nitrite sulfate)	J	Rl	1	26	3.8
MNA (nitrite sulfate)	None	None	25	26	96.0
Alkalinity	None	None	13	13	100.0
TOC	J	Rl	1	11	9.1
TOC	None	None	10	11	91.0
Ammonia	J	Rl	2	6	33.0
Ammonia	None	None	4	6	67.0
Sulfide	None	None	13	13	100.0

[a] Validation Qualifiers: J = estimated, U = not detected, UJ = not detected and associated value estimated

[b] ADR Validation Reason Codes: Lcs = laboratory control sample, Mb = method blank, Ms = matrix spike, Rl = reporting limit, Surr = surrogate recovery

Manual Validation Reason Codes: A03 = holding time, A06 = sample condition - headspace, C14 = calibration nonconformance based on professional judgment, F06 = calibration blank, M08 = column comparison difference, N01 = professional judgment – chromatographic interference

MNA = Monitored Natural Attenuation
PAH = Polycyclic Aromatic Hydrocarbon
PCB = Polychlorinated Biphenyl
SVOC = Semivolatile Organic Compound
TOC = Total Organic Carbon
VOC = Volatile Organic Compound

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Table F-4. Detailed Listing of Qualified Results – Spring 2022 Sampling Event

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Metals	Groundwater	BERYLLIUM	280-163753-1	DET-003-220601-GW	0.11	1	J	U	Rl, F06
Metals	Groundwater	BERYLLIUM	280-163753-1	DET-003-220602-GW	0.086	1	J	U	Rl, F06
Metals	Groundwater	CHROMIUM	280-163753-1	DET-003-220602-GW	0.53	10	J	J	Rl
Metals	Groundwater	COBALT	280-163753-1	DET-003-220601-GW	0.29	1	J	U	Rl, F06
Metals	Groundwater	COBALT	280-163753-1	DET-003-220602-GW	0.29	1	J	U	Rl, F06
Metals	Groundwater	IRON	280-163753-1	DET-004-220601-GW	59	100	J	U	Mb
Metals	Groundwater	NICKEL	280-163753-1	DET-004-220601-GW	0.41	3	J	J	Rl
Metals	Groundwater	POTASSIUM	280-163753-1	DET-003-220601-GW	2000	3000	J	J	Rl
Metals	Groundwater	POTASSIUM	280-163753-1	DET-003-220602-GW	2000	3000	J	J	Rl
Metals	Groundwater	POTASSIUM	280-163753-1	DET-004-220601-GW	1100	3000	J	J	Rl
Metals	Groundwater	ZINC	280-163753-1	DET-004-220601-GW	12	20	J	J	Rl
Explosives	Groundwater	2,4,6-TRINITROTOLUENE	280-163797-1	LL3mw-237-220601-GW	42	1.3	Q D	J	Surr
Explosives	Groundwater	2-AMINO-4,6-DINITROTOLUENE	280-163753-1	LL1mw-080-220601-GW	1.8	0.12	J1	J	M08
Explosives	Groundwater	2-NITROTOLUENE	280-163557-1	FWGmw-021-220601-GW	0.31	0.23	J1	J	M08
Explosives	Groundwater	3,5-DINITROANILINE	280-163797-1	LL1mw-082-220601-GW	0.43	0.45	J	J	Rl
Explosives	Groundwater	3,5-DINITROANILINE	280-163594-1	LL1mw-084-220601-GW	1.6	0.43	J1	J	M08
Explosives	Groundwater	3,5-DINITROANILINE	280-163594-1	LL1mw-084-220602-GW	1.6	0.43	J1	J	M08
Explosives	Groundwater	3-NITROTOLUENE	280-163867-1	FBQmw-175-220601-GW	0.47	0.47	U J1	UJ	Ms
Explosives	Groundwater	3-NITROTOLUENE	280-163487-1	FWGmw-010-220601-GW	0.43	0.43	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	FWGmw-015-220601-GW	0.45	0.45	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	FWGmw-016-220601-GW	0.44	0.44	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	FWGmw-021-220601-GW	0.45	0.45	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	FWGmw-024-220601-GW	0.45	0.45	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163528-1	LL1mw-064-220601-GW	0.43	0.43	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	LL1mw-087-220601-GW	0.44	0.44	U J1 Q	UJ	Ms, Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	LL1mw-087-220602-GW	0.43	0.43	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163487-1	LL1mw-089-220601-GW	0.44	0.44	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163487-1	LL1mw-089-220602-GW	0.44	0.44	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	SCFmw-004-220601-GW	0.44	0.44	U Q	UJ	Lcs
Explosives	Groundwater	3-NITROTOLUENE	280-163557-1	SCFmw-004-220602-GW	0.44	0.44	U Q	UJ	Lcs
Explosives	Groundwater	4-AMINO-2,6-DINITROTOLUENE	280-163797-1	LL3mw-237-220601-GW	27	1.7	Q D	J	Surr

Table F-4. Detailed Listing of Qualified Results – Spring 2022 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	MNX	280-163797-1	LL3mw-237-220601-GW	3.3	5.7	U Q M	UJ	Surr, N01
Explosives	Groundwater	MNX	280-163664-1	WBGmw-006-220601-GW	0.3	0.53	J M	J	Rl
Explosives	Groundwater	RDX	280-163753-1	LL1mw-081-220601-GW	1	0.22	M J1	J	M08
Explosives	Groundwater	RDX	280-163797-1	LL3mw-237-220601-GW	6.7	0.24	M J1	J	M08
Explosives	Groundwater	RDX	280-163664-1	WBGmw-009-220601-GW	1.3	0.22	M	J	M08
Explosives	Groundwater	RDX	280-163706-1	WBGmw-018-220601-GW	0.2	0.22	J M	J	Rl
Explosives	Groundwater	TNX	280-163797-1	LL3mw-237-220601-GW	2.9	5.7	U Q M	UJ	Surr, N01
VOCs	Groundwater	1,1,1-TRICHLOROETHANE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,1,1-TRICHLOROETHANE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,1,1-TRICHLOROETHANE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,1,2,2-TETRACHLOROETHANE	280-163753-1	DET-003-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1,2,2-TETRACHLOROETHANE	280-163753-1	DET-003-220602-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1,2,2-TETRACHLOROETHANE	280-163753-1	DET-004-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1,2-TRICHLOROETHANE	280-163753-1	DET-003-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1,2-TRICHLOROETHANE	280-163753-1	DET-003-220602-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1,2-TRICHLOROETHANE	280-163753-1	DET-004-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1-DICHLOROETHANE	280-163753-1	DET-003-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1-DICHLOROETHANE	280-163753-1	DET-003-220602-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1-DICHLOROETHANE	280-163753-1	DET-004-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1-DICHLOROETHENE	280-163753-1	DET-003-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1-DICHLOROETHENE	280-163753-1	DET-003-220602-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,1-DICHLOROETHENE	280-163753-1	DET-004-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	1,2-DIBROMOETHANE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DIBROMOETHANE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DIBROMOETHANE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DICHLOROETHANE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DICHLOROETHANE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DICHLOROETHANE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DICHLOROPROPANE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DICHLOROPROPANE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	1,2-DICHLOROPROPANE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06

Table F-4. Detailed Listing of Qualified Results – Spring 2022 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	2-BUTANONE	280-163753-1	DET-003-220601-GW	4	15	U	UJ	A06
VOCs	Groundwater	2-BUTANONE	280-163753-1	DET-003-220602-GW	4	15	U	UJ	A06
VOCs	Groundwater	2-BUTANONE	280-163753-1	DET-004-220601-GW	4	15	U	UJ	A06
VOCs	Groundwater	2-HEXANONE	280-163753-1	DET-003-220601-GW	4	5	U	UJ	A06
VOCs	Groundwater	2-HEXANONE	280-163753-1	DET-003-220602-GW	4	5	U	UJ	A06
VOCs	Groundwater	2-HEXANONE	280-163753-1	DET-004-220601-GW	4	5	U	UJ	A06
VOCs	Groundwater	4-METHYL-2-PENTANONE	280-163753-1	DET-003-220601-GW	3.2	5	U	UJ	A06
VOCs	Groundwater	4-METHYL-2-PENTANONE	280-163753-1	DET-003-220602-GW	3.2	5	U	UJ	A06
VOCs	Groundwater	4-METHYL-2-PENTANONE	280-163753-1	DET-004-220601-GW	3.2	5	U	UJ	A06
VOCs	Groundwater	ACETONE	280-163753-1	DET-003-220601-GW	6.4	15	U	UJ	A06
VOCs	Groundwater	ACETONE	280-163753-1	DET-003-220602-GW	6.4	15	U	UJ	A06
VOCs	Groundwater	ACETONE	280-163753-1	DET-004-220601-GW	6.4	15	U	UJ	A06
VOCs	Groundwater	BENZENE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BENZENE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BENZENE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BROMOCHLOROMETHANE	280-163753-1	DET-003-220601-GW	0.2	1	U	UJ	A06
VOCs	Groundwater	BROMOCHLOROMETHANE	280-163753-1	DET-003-220602-GW	0.2	1	U	UJ	A06
VOCs	Groundwater	BROMOCHLOROMETHANE	280-163753-1	DET-004-220601-GW	0.2	1	U	UJ	A06
VOCs	Groundwater	BROMODICHLOROMETHANE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BROMODICHLOROMETHANE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BROMODICHLOROMETHANE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BROMOFORM	280-163753-1	DET-003-220601-GW	0.9	2	U	UJ	A06
VOCs	Groundwater	BROMOFORM	280-163753-1	DET-003-220602-GW	0.9	2	U	UJ	A06
VOCs	Groundwater	BROMOFORM	280-163753-1	DET-004-220601-GW	0.9	2	U	UJ	A06
VOCs	Groundwater	BROMOMETHANE	280-163753-1	DET-003-220601-GW	0.8	5	U	UJ	A06
VOCs	Groundwater	BROMOMETHANE	280-163753-1	DET-003-220602-GW	0.8	5	U M	UJ	A06
VOCs	Groundwater	BROMOMETHANE	280-163753-1	DET-004-220601-GW	0.8	5	U M	UJ	A06
VOCs	Groundwater	BROMOBENZENE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BROMOBENZENE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	BROMOBENZENE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CARBON DISULFIDE	280-163753-1	DET-003-220601-GW	0.8	2	U	UJ	A06

Table F-4. Detailed Listing of Qualified Results – Spring 2022 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	CARBON DISULFIDE	280-163753-1	DET-003-220602-GW	0.8	2	U M	UJ	A06
VOCs	Groundwater	CARBON DISULFIDE	280-163753-1	DET-004-220601-GW	0.8	2	U	UJ	A06
VOCs	Groundwater	CARBON TETRACHLORIDE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CARBON TETRACHLORIDE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CARBON TETRACHLORIDE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CARBON TETRACHLORIDE	280-163867-1	LL10mw-003-220601-GW	4	1		J	A06
VOCs	Groundwater	CHLOROBENZENE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CHLOROBENZENE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CHLOROBENZENE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CHLOROETHANE	280-163753-1	DET-003-220601-GW	1.6	4	U	UJ	A06
VOCs	Groundwater	CHLOROETHANE	280-163753-1	DET-003-220602-GW	1.6	4	U	UJ	A06
VOCs	Groundwater	CHLOROETHANE	280-163753-1	DET-004-220601-GW	1.6	4	U	UJ	A06
VOCs	Groundwater	CHLOROFORM	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CHLOROFORM	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CHLOROFORM	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	CHLOROMETHANE	280-163753-1	DET-003-220601-GW	0.8	2	U	UJ	A06
VOCs	Groundwater	CHLOROMETHANE	280-163753-1	DET-003-220602-GW	0.8	2	U	UJ	A06
VOCs	Groundwater	CHLOROMETHANE	280-163753-1	DET-004-220601-GW	0.8	2	U	UJ	A06
VOCs	Groundwater	CIS-1,3-DICHLOROPROPENE	280-163753-1	DET-003-220601-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	CIS-1,3-DICHLOROPROPENE	280-163753-1	DET-003-220602-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	CIS-1,3-DICHLOROPROPENE	280-163753-1	DET-004-220601-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	DIBROMOCHLOROMETHANE	280-163753-1	DET-003-220601-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	DIBROMOCHLOROMETHANE	280-163753-1	DET-003-220602-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	DIBROMOCHLOROMETHANE	280-163753-1	DET-004-220601-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	ETHYLBENZENE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	ETHYLBENZENE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	ETHYLBENZENE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	METHYLENE CHLORIDE	280-163753-1	DET-003-220601-GW	2	2	U	UJ	A06
VOCs	Groundwater	METHYLENE CHLORIDE	280-163753-1	DET-003-220602-GW	2	2	U	UJ	A06
VOCs	Groundwater	METHYLENE CHLORIDE	280-163753-1	DET-004-220601-GW	2	2	U	UJ	A06
VOCs	Groundwater	STYRENE	280-163753-1	DET-003-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	STYRENE	280-163753-1	DET-003-220602-GW	0.8	1	U	UJ	A06

Table F-4. Detailed Listing of Qualified Results – Spring 2022 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	STYRENE	280-163753-1	DET-004-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	TETRACHLOROETHENE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TETRACHLOROETHENE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TETRACHLOROETHENE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TOLUENE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TOLUENE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TOLUENE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TRANS-1,3-DICHLOROPROPENE	280-163753-1	DET-003-220601-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	TRANS-1,3-DICHLOROPROPENE	280-163753-1	DET-003-220602-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	TRANS-1,3-DICHLOROPROPENE	280-163753-1	DET-004-220601-GW	0.4	2	U	UJ	A06
VOCs	Groundwater	TRICHLOROETHENE	280-163753-1	DET-003-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TRICHLOROETHENE	280-163753-1	DET-003-220602-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	TRICHLOROETHENE	280-163753-1	DET-004-220601-GW	0.4	1	U	UJ	A06
VOCs	Groundwater	VINYL CHLORIDE	280-163753-1	DET-003-220601-GW	0.2	2	U	UJ	A06
VOCs	Groundwater	VINYL CHLORIDE	280-163753-1	DET-003-220602-GW	0.2	2	U	UJ	A06
VOCs	Groundwater	VINYL CHLORIDE	280-163753-1	DET-004-220601-GW	0.2	2	U	UJ	A06
VOCs	Groundwater	XYLENES (TOTAL)	280-163753-1	DET-003-220601-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	XYLENES (TOTAL)	280-163753-1	DET-003-220602-GW	0.8	1	U	UJ	A06
VOCs	Groundwater	XYLENES (TOTAL)	280-163753-1	DET-004-220601-GW	0.8	1	U	UJ	A06
SVOCs/PAHs	Groundwater	1-METHYLNAPHTHALENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	1-METHYLNAPHTHALENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	1-METHYLNAPHTHALENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs	Groundwater	2,4-DINITROPHENOL	280-163753-1	DET-003-220601-GW	31	31	U	UJ	C14
SVOCs	Groundwater	2,4-DINITROPHENOL	280-163753-1	DET-003-220602-GW	31	31	U	UJ	C14
SVOCs	Groundwater	2,4-DINITROPHENOL	280-163753-1	DET-004-220601-GW	29	29	U	UJ	C14
SVOCs/PAHs	Groundwater	2-METHYLNAPHTHALENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	2-METHYLNAPHTHALENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	2-METHYLNAPHTHALENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs	Groundwater	4-NITROPHENOL	280-163753-1	DET-003-220601-GW	9	10	U Q J1	UJ	Ms, Lcs
SVOCs	Groundwater	4-NITROPHENOL	280-163753-1	DET-003-220602-GW	9.1	10	U Q	UJ	Lcs
SVOCs	Groundwater	4-NITROPHENOL	280-163753-1	DET-004-220601-GW	8.5	9.6	U Q	UJ	Lcs

Table F-4. Detailed Listing of Qualified Results – Spring 2022 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
SVOCs/PAHs	Groundwater	ACENAPHTHENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ACENAPHTHENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ACENAPHTHENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ACENAPHTHYLENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ACENAPHTHYLENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ACENAPHTHYLENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ANTHRACENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ANTHRACENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	ANTHRACENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(A)ANTHRACENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(A)ANTHRACENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(A)ANTHRACENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(A)PYRENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(A)PYRENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(A)PYRENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(B)FLUORANTHENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(B)FLUORANTHENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(B)FLUORANTHENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(G,H,I)PERYLENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(G,H,I)PERYLENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(G,H,I)PERYLENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(K)FLUORANTHENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(K)FLUORANTHENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	BENZO(K)FLUORANTHENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	CHRYSENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	CHRYSENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	CHRYSENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	DIBENZO(A,H)ANTHRACENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	DIBENZO(A,H)ANTHRACENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	DIBENZO(A,H)ANTHRACENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	FLUORANTHENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	FLUORANTHENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs

Table F-4. Detailed Listing of Qualified Results – Spring 2022 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
SVOCs/PAHs	Groundwater	FLUORANTHENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	FLUORENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	FLUORENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	FLUORENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	INDENO(1,2,3-CD)PYRENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	INDENO(1,2,3-CD)PYRENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	INDENO(1,2,3-CD)PYRENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	NAPHTHALENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	NAPHTHALENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	NAPHTHALENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs	Groundwater	PENTACHLOROPHENOL	280-163753-1	DET-003-220601-GW	41	51	U	UJ	C14
SVOCs	Groundwater	PENTACHLOROPHENOL	280-163753-1	DET-003-220602-GW	41	51	U	UJ	C14
SVOCs	Groundwater	PENTACHLOROPHENOL	280-163753-1	DET-004-220601-GW	39	48	U	UJ	C14
SVOCs/PAHs	Groundwater	PHENANTHRENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	PHENANTHRENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U M Q	UJ	Lcs
SVOCs/PAHs	Groundwater	PHENANTHRENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U Q	UJ	Lcs
SVOCs	Groundwater	PHENOL	280-163753-1	DET-003-220601-GW	8.2	10	U J1 Q	UJ	Ms, Lcs
SVOCs	Groundwater	PHENOL	280-163753-1	DET-003-220602-GW	8.2	10	U Q	UJ	Lcs
SVOCs	Groundwater	PHENOL	280-163753-1	DET-004-220601-GW	7.7	9.6	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	PYRENE	280-163753-1	DET-003-220601-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	PYRENE	280-163753-1	DET-003-220602-GW	0.087	0.11	U Q	UJ	Lcs
SVOCs/PAHs	Groundwater	PYRENE	280-163753-1	DET-004-220601-GW	0.074	0.093	U M Q	UJ	Lcs
Pesticides	Groundwater	4,4'-DDT	280-163753-1	DET-003-220601-GW	0.054	0.054	U Q	UJ	C05
Pesticides	Groundwater	4,4'-DDT	280-163753-1	DET-003-220602-GW	0.054	0.054	U Q	UJ	C05
Pesticides	Groundwater	4,4'-DDT	280-163753-1	DET-004-220601-GW	0.048	0.048	U Q	UJ	C05
Pesticides	Groundwater	ALDRIN	280-163753-1	DET-003-220601-GW	0.022	0.054	U Q J1	UJ	Ms, Lcs
Pesticides	Groundwater	ALDRIN	280-163753-1	DET-003-220602-GW	0.022	0.054	U Q	UJ	Lcs
Pesticides	Groundwater	ALDRIN	280-163753-1	DET-004-220601-GW	0.019	0.048	U Q	UJ	Lcs
Pesticides	Groundwater	ENDRIN	280-163753-1	DET-003-220601-GW	0.022	0.054	U	UJ	C05
Pesticides	Groundwater	ENDRIN ALDEHYDE	280-163753-1	DET-003-220601-GW	0.022	0.054	U Q	UJ	Lcs
Pesticides	Groundwater	ENDRIN ALDEHYDE	280-163753-1	DET-003-220602-GW	0.022	0.054	U Q	UJ	Lcs
Pesticides	Groundwater	ENDRIN ALDEHYDE	280-163753-1	DET-004-220601-GW	0.019	0.048	U Q	UJ	Lcs

Table F-4. Detailed Listing of Qualified Results – Spring 2022 Sampling Event (Continued)

Analysis Type	Media	Chemical	Sample Delivery Group	Sample ID	Results	Det. Limit	Lab Qual	Val. Qual[a]	Validation Code[b]
Pesticides	Groundwater	HEPTACHLOR	280-163753-1	DET-003-220601-GW	0.022	0.054	U M Q J	UJ	Ms, Lcs
Pesticides	Groundwater	HEPTACHLOR	280-163753-1	DET-003-220602-GW	0.022	0.054	U Q	UJ	Lcs
Pesticides	Groundwater	HEPTACHLOR	280-163753-1	DET-004-220601-GW	0.019	0.048	U M Q	UJ	Lcs
Pesticides	Groundwater	METHOXYCHLOR	280-163753-1	DET-003-220602-GW	0.054	0.054	U Q	UJ	C05
Pesticides	Groundwater	METHOXYCHLOR	280-163753-1	DET-004-220601-GW	0.048	0.048	U Q	UJ	C05
Nitrate	Groundwater	NITRATE as N	280-163867-1	FBQmw-173-220601-GW	0.15	0.5	J M	U	Mb
Nitrate	Groundwater	NITRATE as N	280-163867-1	FBQmw-173-220602-GW	0.11	0.5	J M	U	Mb
Nitrate	Groundwater	NITRATE as N	280-163557-1	FWGmw-018-220601-GW	0.2	0.5	U M H	UJ	A03
Nitrate	Groundwater	NITRATE as N	280-163557-1	FWGmw-020-220601-GW	0.11	0.5	J M H	J	Rl, A03
Nitrate	Groundwater	NITRATE as N	280-163753-1	LL1mw-080-220601-GW	0.098	0.5	J M	J	Rl
Nitrate	Groundwater	NITRATE as N	280-163594-1	LL1mw-083-220601-GW	0.25	0.5	J M	J	Rl
Nitrate	Groundwater	NITRATE as N	280-163706-1	WBGmw-018-220601-GW	0.23	0.5	J M	J	Rl
MNA	Groundwater	NITRITE as N	280-163867-1	FBQmw-174-220601-GW	0.07	0.5	J Q M	J	Rl
TOC	Groundwater	TOTAL ORGANIC CARBON (TOC)	280-163867-1	FBQmw-173-220601-GW	0.86	1	J	J	Rl
Ammonia	Groundwater	Ammonia	280-163830-1	LL12mw-185-220602-GW	0.039	0.1	J	J	Rl
Ammonia	Groundwater	Ammonia	280-163830-1	LL12mw-245-220601-GW	0.049	0.1	J	J	Rl

[a] Validation Qualifiers: J = estimated, U = not detected, UJ = not detected and associated value estimated
[b] ADR Validation Reason Codes: Lcs = laboratory control sample, Mb = method blank, Ms = matrix spike, Rl = reporting limit, Surr = surrogate recovery
Manual Validation Reason Codes: A03 = holding time, A06 = sample condition - headspace, C14 = calibration nonconformance based on professional judgment, F06 = calibration blank, M08 = column comparison difference, N01 = professional judgment – chromatographic interference

ID = Identifier
MNX = Hexahydro-1-Nitroso-3,5-Dinitro-1,3,5-Triazine
PAH = Polycyclic Aromatic Hydrocarbon
RDX = Hexahydro-1,3,5-Trinitro-1,3,5-Triazine
SVOC = Semivolatile Organic Compound
TNT = 2,4,6-Trinitrotoluene
VOC = Volatile Organic Compound

Table F-5. Results for Analytes Detected in Field Blanks or Trip Blanks – Spring 2022 Sampling Event

Sample ID	Analysis Type	Analyte Name	Result
FWGTB-220601-TB001	VOC	All	Non-detect
FWGTB-220601-TB002	VOC	All	Non-detect
WBGmw-RB06212022	Ammonia, Nitrate	All	Non-detect
LL12mw-RB06272022	Explosives, MNA	All	Non-detect

Sample Type: TB = Trip Blank
Data Qualifiers: J = estimated

ID = Identifier
MNA = Monitored Natural Attenuation
VOC = Volatile Organic Compound

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Table F-6. Field Duplicate Pair Comparisons for Analytes Detected in Samples – Spring 2022 Sampling Event

Sample No.	Analysis Type	Chemical	Parent Result (mg/L)	Duplicate Result (mg/L)	RPD % or (Absolute Difference)[a]	Test[b]
DET-003-220601-GW/ DET-003-220602-GW	Metals	ARSENIC	0.0095	0.0092	(0.06)	D
DET-003-220601-GW/ DET-003-220602-GW	Metals	BARIUM	0.045	0.045	0%	RPD
DET-003-220601-GW/ DET-003-220602-GW	Metals	CALCIUM	93 J	92	1%	RPD
DET-003-220601-GW/ DET-003-220602-GW	Metals	CHROMIUM	0.0018 U	0.00053 J	(0.13)	D
DET-003-220601-GW/ DET-003-220602-GW	Metals	IRON	1.9	1.9	0%	RPD
DET-003-220601-GW/ DET-003-220602-GW	Metals	MAGNESIUM	35 J	35	0%	RPD
DET-003-220601-GW/ DET-003-220602-GW	Metals	MANGANESE	0.23	0.23	0%	RPD
DET-003-220601-GW/ DET-003-220602-GW	Metals	POTASSIUM	2 J	2 J	(0.00)	D
DET-003-220601-GW/ DET-003-220602-GW	Metals	SODIUM	13	13	0%	RPD
FBQmw-173-220601-GW/ FBQmw-173-220602-GW	MNA	SULFATE	35	36	3%	RPD
FBQmw-173-220601-GW/ FBQmw-173-220602-GW	Alkalinity	ALKALINITY	23	22	(0.10)	D
LL12mw-185-220601-GW/ LL12mw-185-220602-GW	Nitrate	NITRATE as N	71	74	4%	RPD
LL12mw-185-220601-GW/ LL12mw-185-220602-GW	Ammonia	AMMONIA	0.05 U	0.039 J	(0.11)	D
LL1mw-084-220601-GW/ LL1mw-084-220602-GW	Explosives	2,4,6-TRINITROTOLUENE	0.0027	0.0029	7%	RPD
LL1mw-084-220601-GW/ LL1mw-084-220602-GW	Explosives	2-AMINO-4,6-DINITROTOLUENE	0.0077	0.0078	1%	RPD
LL1mw-084-220601-GW/ LL1mw-084-220602-GW	Explosives	3,5-DINITROANILINE	0.0016 J	0.0016 J	(0.00)	D
LL1mw-084-220601-GW/ LL1mw-084-220602-GW	Explosives	4-AMINO-2,6-DINITROTOLUENE	0.023	0.024	4%	RPD
LL1mw-084-220601-GW/ LL1mw-084-220602-GW	Nitrate	NITRATE as N	0.61	0.59	(0.04)	D
LL1mw-084-220601-GW/ LL1mw-084-220602-GW	MNA	SULFATE	110	110	0%	RPD
LL1mw-084-220601-GW/ LL1mw-084-220602-GW	Alkalinity	ALKALINITY	69	63	9%	RPD
DET-003-220601-GW/ DET-003-220602-GW	Metals	ARSENIC	0.0095	0.0092	(0.06)	D
DET-003-220601-GW/ DET-003-220602-GW	Metals	BARIUM	0.045	0.045	0%	RPD

[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.

Data Qualifiers: J = estimated, U = not detected, and UJ = not detected and reporting limit estimated.

D = Absolute Difference
MNA = Monitored Natural Attenuation
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 ≤ 6°C	14 days
Semivolatile Organic Compounds	Two 1-L amber glass	1 L	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Polycyclic Aromatic Hydrocarbon Compounds	Two 1-L amber glass	1 L	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Pesticide Compounds	Two 1-L amber glass	1 L	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Polychlorinated Biphenyls	Two 1-L amber glass	1 L	Cool ≤6°C	1 year (extraction) 40 days (analysis)
Explosive Compounds	Two 500-mL amber glass	500 mL	Cool ≤6°C	7 days (extraction) 40 days (analysis)
Metals (TAL)+Phosphorus+Mercury	500-mL HDPE poly	100 mL	HNO_3 to pH <2 Cool ≤ 6°C	180 days; Hg at 28 days
Sulfide	500-mL HDPE	250 mL	NaOH/Zn Acetate, pH >9; Cool ≤ 6°C	7 days
Anions	50-mL HDPE	15 mL	Cool ≤ 6°C	48 hours (nitrate, nitrite) 28 days (sulfate)
Alkalinity	250-mL HDPE	250 mL	Cool ≤ 6°C	14 days
Total Cyanide	250-mL HDPE	100 mL	NaOH, Cool ≤ 6°C	14 days

HCl = Hydrochloric Acid
HDPE = High-Density Polyethylene
Hg = Mercury
HNO_3 = Nitric Acid
L = Liter
mL = Milliliter
NaOH = Sodium Hydroxide
TAL = Target Analyte List
Zn = Zinc

APPENDIX G

Ohio EPA Correspondence

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Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Anne M. Vogel, Director

April 28, 2023

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

Sent via email to: Kevin.m.sedlak.ctr@army.mil

Subject: Response to Ohio EPA Comments on the "Draft RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 Sampling Event" dated March 14, 2023

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 2022 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 March 14, 2023. The response was prepared for the United States Army Corps of Engineers (USACE) on behalf of the National Guard Bureau by Leidos.

Based on our review of the Army National Guard's Response to Ohio EPA comments provided in your letter dated March 14, 2023, 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.

If you have questions, you can reach me at kevin.palombo@epa.ohio.gov or at (330) 963-1292.

Sincerely,

Kevin M. Palombo, Environmental Specialist
Division of Environmental Response and Revitalization

KP/cm

ec: Jennifer Tierney, Chenega,
Katie Tait, OHARNG RTLS
Steven Kvaal, USACE Louisville
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Megan Oravec, Ohio EPA, NEDO, DERR
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Thomas Schneider, Ohio EPA, SWDO, DERR
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Allan Brillinger, Chenega (Info Only)

RECEIVED 1 MAY 2023

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

March 14, 2023

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, Ohio, Responses to Comments on the Draft RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 Sampling Event (Work Activity No. 267-000-859-036)

Reference: 1) Ohio EPA Comment Letter, dated 1/25/23
2) Army Responses to Ohio EPA Comments, dated 2/7/23
3) Ohio EPA's Response Letter, dated 3/6/23

Dear Mr. Palombo:

The Army appreciates your comments on the Draft RVAAP-66 Facility-wide Groundwater Monitoring Program Semi-Annual Report for Spring 2022 Sampling Event and feedback provided regarding the Army's comment response letter. Enclosed for your review is a revised response to Ohio EPA Comment 4. Upon final resolution of all 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,

TAIT.KATHRYN.SERENA.1289508275 Digitally signed by TAIT.KATHRYN.SERENA.1289508275 Date: 2023.03.14 10:10:22 -04'00'

FOR Kevin M. Sedlak
RVAAP Restoration Program Manager
Army National Guard Directorate

ec: Natalie Oryshkewych, Ohio EPA, NEDO, DERR
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Ryan Laurich, Leidos
Jennifer Tierney, Chenega Reliable Services

Subject: Former Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 Sampling Event (Work Activity No. 267-000-859-036)

COMMENTS

<u>Ohio EPA Comment 1</u>: Appendix B Completeness: A review of Appendix B (Field Forms) included daily log sheets, well purge forms, chain-of-custody sheets, and calibration reports for field equipment.

Appendix B.3 Chains of Custody section still has the first three pages denoted as place holders for "RVAAP-191-TA_06142022", "RVAPP-192-TA_06142022", and "RVAAP193-TA_06152022". Appropriate Chains of Custody documents should be inserted into the final version of the report.

> *Army Response*: Agree. Appendix B has been revised to include Chains of Custody for RVAAP-191-TA_06142022, RVAPP-192-TA_06142022, and RVAAP193-TA_06152022.

Ohio EPA Response (dated 3/6/23): Ohio finds the response generally acceptable.

<u>Ohio EPA Comment 2</u>: Section 3.2 Field Change Requests: Section 3.2 (Page 3-1, line 153) documents four previously approved field change requests (FCR) submitted and applicable to the Spring 2022 sampling event, (LEIDOS_FWGW_001, LEIDOS_FWGW_004, and LEIDOS_FWGW_006 from 2018 and LEIDOS_FWGW_010 from 2019).

These four FCRs are included within Appendix A, along with LEIDOS_FWGW_009, (October 2019 FWGWMP-Additional Sampling Suite) which was submitted September 26, 2019, and LEIDOS_FWGW_0011 (December 2021 FWGWMP-Additional Sampling Suite) was submitted December 15, 2021.

Since LEIDOS_FWGW_009 and LEIDOS_FWGW_0011 are included in Appendix A, they should also be included in the Section 3.2 list.

> *Army Response*: Clarification and agree. As noted in the comment, FCRs LEIDOS_FWGW_009 and LEIDOS_FWGW_0011 are not applicable to the Spring 2022 sampling event. Accordingly, these FCRs have been removed from Appendix A and a description of these FCRs will not be added to Section 3.2.

Ohio EPA Response (dated 3/6/23): Ohio finds the response generally acceptable.

<u>Ohio EPA Comment 3</u>: Table 4-1 Data Summary Completeness: Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2022 indicated that all 48 wells were analyzed for the proper analytical parameters in accordance with the Final FWGWMP Addendum for 2022 (well-specific combinations of volatile organic compounds (VOCs), semi-volatile organic compound (SVOCs), polycyclic aromatic hydrocarbons (PAHs), phenols, polychlorinated biphenyls (PCBs), perchlorate, explosives, expanded 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 presented confusing information when compared to Appendix D.1 and Appendix D.3 tables. Table 4.1 sometimes presents any detected data concentrations and sometimes it only presents concentrations that exceed screening or background criteria. Additionally, reporting units ug/L and mg/L are alternately used on the D.1 and D.3 tables, and to a lesser degree within Table 4.1. The Appendix D.3 Table has been modified from the 2021 version to add a "Results Exceeds Screening and Background Criteria (Y/N)" column, which shows a "N" if the concentration

did not exceed both values, but Table 4.1 sometimes presents summaries if either value is exceeded, or if there are no screening criteria. To clarify and avoid the need to consult multiple tables to get the whole picture of the available lab data, it may be beneficial to reconfigure tables throughout the report to have a consistent viewpoint and consistent reporting units. It had previously been suggested (during the Spring 2021 report review) that Appendix D.3 table denote 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: Agree. The following revisions have been made to the report:

1) The data table presented as Appendix D.3 has been revised so that results exceeding the applicable screening criteria are highlighted in bold text.
2) The data table presented as Appendix D.2 has been revised so that units of concentration are presented consistently across Tables 4.1, D.1, D.2, and D.3. Units of concentration for Explosives, SVOCs, PCBs, Pesticides, VOCs are presented in µg/L, this is consistent with the presentation of historical data results. Units of concentration for Metals and Miscellaneous analytes are presented in mg/L. This is consistent with the presentation of historical data results.

Ohio EPA Response (dated 3/6/23): Ohio finds the response generally acceptable.

Ohio EPA Comment 4: Well Redevelopment – Elevated Turbidity Results: Section 6.0 Well redevelopment of the Draft FWGWMP Semi-Annual Report for Spring 2022 indicated that no permanent monitoring wells were redeveloped for the 2022 spring sampling event. This section also stated that a list of recommended wells to be redeveloped was presented within the 2021 Annual Report (Leidos 2022c). Upon review of the 2021 Annual Report, Section 8.2.1 Well Redevelopment, wells to be considered for redevelopment prior to sampling included LL1mw-086, LL1mw-089, and LL12mw-244. It is not further explained as to why these proposed wells were not redeveloped prior to sampling for this Spring 2022 event.

It should be noted that well LL12mw-244 was found to have a reading of 7,537.2 NTUs during 2021 sampling, and Ohio EPA comment at that time was that 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 LL12mw244."

Future well redevelopment activities should be conducted in accordance with Section 3.5.2 of the approved Revised Final Remedial Investigation Work Plan (RIWP) produced by TEC-Weston and dated December 21, 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).

Please provide further explanation as to why wells LL1mw-086, LL1mw-089, and LL12mw-244 were not redeveloped prior to sampling for this Spring 2022 event and provide a potential schedule or rationale to follow for future redevelopment.

Army Response: Clarification and agree. While Section 8.2.1 of the FWGWMP Annual Report present recommendations for future monitoring well redevelopment, these are only provided as proposed recommendations. LL1mw-086 was redeveloped in April 2020, and LL12mw-244 was recently redeveloped on April 21, 2021. The Army elected not to redevelop the wells in 2022. These wells will continue to be analyzed for COCs identified in the RI Report (explosives, nitrate, and ammonia), and

the results are not influenced by elevated turbidity. The high turbidity associated with these wells do not appear to create issues with the dataset and risk management decisions.

Ohio EPA Response (dated 3/6/23): Previous Ohio EPA comment was that wells to be considered for redevelopment prior to sampling included LL1mw-086, LL1mw-089, and LL12mw-244, but that these proposed wells were not redeveloped prior to sampling for this Spring 2022 event. Well LL12mw-244 was found to have a turbidity reading of 7,537.2 NTUs during 2021 sampling. Ohio EPA requested further information on not redeveloping these wells prior to the 2022 sampling events, or possibly present a schedule for future redevelopment. Army responded that the redevelopment of these wells in their 2021 Annual Report was a proposed recommendation and was decided to not redevelop as they state that the elevated turbidity does not influence the explosives, nitrate or ammonia readings from these wells. The Army also states that the high turbidity associated with these wells does not appear to create issues with the dataset or risk management decisions.

Ohio EPA states that while high turbidity levels might not interfere with the chemicals of concern (COCs) directly, it can present a Data Quality Objectives (DQO) issue if the wells are becoming silted and starts filling the well screen (resulting in not getting a representative sample across the screened zone). Chapter 8 of the Ohio EPA Technical Guidance Manual (TGM) states “At minimum, wells should be redeveloped when 20% of the well screen is occluded by sediments”. Monitoring well sampling events should include total depth measurements to help determine if sediment is obscuring the well screen interval. DERR does not necessarily concur with the Army statements, but will review the data from these wells in the future to evaluate if turbidity is affecting the quality of the analytical data from the wells.

Army Response (Revised): Agree. During the upcoming 2023 Spring FWGWMP sampling event, the permanent pumps will be removed from monitoring wells LL1mw-086, LL1mw-089, and LL12mw-244 and total depth of the wells will be measured. If it is concluded that a well screen is in excess of 20% occluded by sediments, that monitoring well will be redeveloped prior to sampling.

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Anne M. Vogel, Director

March 6, 2023

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

Sent via email to: Kevin.m.sedlak.ctr@army.mil

Subject: Response to Ohio EPA Comments on the Draft RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 Sampling Event dated February 7, 2023

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 2022 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 February 7, 2023. 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-21-D-0016.

Based on our review of the Army National Guard's Response to Ohio EPA comments provided in in your letter dated February 7, 2023, we find the responses generally acceptable, however, we had an additional comment regarding the response to our comment number 4.

Comment 4 – Previous Ohio EPA comment was that wells to be considered for redevelopment prior to sampling included LL1mw-086, LL1mw-089, and LL12mw-244, but that these proposed wells were not redeveloped prior to sampling for this Spring 2022 event. Well LL12mw-244 was found to have a turbidity reading of 7,537.2 NTUs during 2021 sampling. Ohio EPA requested further information on not redeveloping these wells prior to the 2022 sampling events, or possibly present a schedule for future redevelopment. Army responded that the redevelopment of these wells in their 2021 Annual Report was a proposed recommendation and was decided to not redevelop as they state that the elevated turbidity does not influence the explosives, nitrate or ammonia readings from these wells. The Army

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also states that the high turbidity associated with these wells does not appear to create issues with the dataset or risk management decisions.

Ohio EPA states that while high turbidity levels might not interfere with the chemicals of concern (COCs) directly, it can present a Data Quality Objectives (DQO) issue if the wells are becoming silted and starts filling the well screen (resulting in not getting a representative sample across the screened zone). Chapter 8 of the Ohio EPA Technical Guidance Manual (TGM) states "At minimum, wells should be redeveloped when 20% of the well screen is occluded by sediments". Monitoring well sampling events should include total depth measurements to help determine if sediment is obscuring the well screen interval. DERR does not necessarily concur with the Army statements, but will review the data from these wells in the future to evaluate if turbidity is affecting the quality of the analytical data from the wells.

Once this response is clarified, the document can be finalized. Please be sure that all agreed-upon changes, additions and clarifications are provided in the final document.

If you have questions, please contact me at (330) 963-1292 or by email at kevin.palombo@epa.ohio.gov.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/cm

ec: Al Brillinger, Chenega Reliable Services
Katie Tait, OHARNG RTLS
Steven Kvaal, USACE Louisville
Nat Peters, USACE Louisville
Megan Oravec, Ohio EPA, NEDO, DERR
Natalie Oryshkewych, Ohio EPA, NEDO, DERR
Liam McEvoy, Ohio EPA, NEDO, DERR
Thomas Schneider, Ohio EPA, SWDO, DERR
Carrie Rasik, Ohio EPA, CO, DERR

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

February 7, 2023

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 2022 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 RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 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,

TAIT.KATHRYN.SERENA.1289508275 Digitally signed by TAIT.KATHRYN.SERENA.1289508275 Date: 2023.02.07 08:28:31 -05'00'

FOR Kevin M. Sedlak
RVAAP Restoration Program Manager
Army National Guard Directorate

ec: Natalie Oryshkewych, 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
Steve Kvaal, USACE Louisville
Jay Trumble, USACE Louisville
Jed Thomas, Leidos
Ryan Laurich, Leidos
Jennifer Tierney, Chenega Reliable Services

Subject: Former Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 Sampling Event (Work Activity No. 267-000-859-036)

COMMENTS

<u>Ohio EPA Comment 1</u>: Appendix B Completeness: A review of Appendix B (Field Forms) included daily log sheets, well purge forms, chain-of-custody sheets, and calibration reports for field equipment.

Appendix B.3 Chains of Custody section still has the first three pages denoted as place holders for "RVAAP-191-TA_06142022", "RVAPP-192-TA_06142022", and "RVAAP193-TA_06152022". Appropriate Chains of Custody documents should be inserted into the final version of the report.

> *Army Response*: Agree. Appendix B has been revised to include Chains of Custody for RVAAP-191-TA_06142022, RVAPP-192-TA_06142022, and RVAAP193-TA_06152022.

<u>Ohio EPA Comment 2</u>: Section 3.2 Field Change Requests: Section 3.2 (Page 3-1, line 153) documents four previously approved field change requests (FCR) submitted and applicable to the Spring 2022 sampling event, (LEIDOS_FWGW_001, LEIDOS_FWGW_004, and LEIDOS_FWGW_006 from 2018 and LEIDOS_FWGW_010 from 2019).

These four FCRs are included within Appendix A, along with LEIDOS_FWGW_009, (October 2019 FWGWMP-Additional Sampling Suite) which was submitted September 26, 2019, and LEIDOS_FWGW_0011 (December 2021 FWGWMP-Additional Sampling Suite) was submitted December 15, 2021.

Since LEIDOS_FWGW_009 and LEIDOS_FWGW_0011 are included in Appendix A, they should also be included in the Section 3.2 list.

> *Army Response*: Clarification and agree. As noted in the comment, FCRs LEIDOS_FWGW_009 and LEIDOS_FWGW_0011 are not applicable to the Spring 2022 sampling event. Accordingly, these FCRs have been removed from Appendix A and a description of these FCRs will not be added to Section 3.2.

<u>Ohio EPA Comment 3</u>: Table 4-1 Data Summary Completeness: Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2022 indicated that all 48 wells were analyzed for the proper analytical parameters in accordance with the Final FWGWMP Addendum for 2022 (well-specific combinations of volatile organic compounds (VOCs), semi-volatile organic compound (SVOCs), polycyclic aromatic hydrocarbons (PAHs), phenols, polychlorinated biphenyls (PCBs), perchlorate, explosives, expanded 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 presented confusing information when compared to Appendix D.1 and Appendix D.3 tables. Table 4.1 sometimes presents any detected data concentrations and sometimes it only presents concentrations that exceed screening or background criteria. Additionally, reporting units ug/L and mg/L are alternately used on the D.1 and D.3 tables, and to a lesser degree within Table 4.1. The Appendix D.3 Table has been modified from the 2021 version to add a "Results Exceeds Screening and Background Criteria (Y/N)" column, which shows a "N" if the concentration did not exceed both values, but Table 4.1 sometimes presents summaries if either value is exceeded, or if there are no screening criteria. To clarify and avoid the need to consult multiple tables to get the whole picture of the available lab data, it may be beneficial to reconfigure tables throughout the report to have a consistent viewpoint and consistent reporting units. It had previously been suggested (during the Spring 2021 report review) that Appendix D.3 table denote 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: Agree. The following revisions have been made to the report:

1) The data table presented as Appendix D.3 has been revised so that results exceeding the applicable screening criteria are highlighted in bold text.
2) The data table presented as Appendix D.2 has been revised so that units of concentration are presented consistently across Tables 4.1, D.1, D.2, and D.3. Units of concentration for Explosives, SVOCs, PCBs, Pesticides, VOCs are presented in µg/L, this is consistent with the presentation of historical data results. Units of concentration for Metals and Miscellaneous analytes are presented in mg/L. This is consistent with the presentation of historical data results.

<u>Ohio EPA Comment 4</u>: Well Redevelopment – Elevated Turbidity Results: Section 6.0 Well redevelopment of the Draft FWGWMP Semi-Annual Report for Spring 2022 indicated that no permanent monitoring wells were redeveloped for the 2022 spring sampling event. This section also stated that a list of recommended wells to be redeveloped was presented within the 2021 Annual Report (Leidos 2022c). Upon review of the 2021 Annual Report, Section 8.2.1 Well Redevelopment, wells to be considered for redevelopment prior to sampling included LL1mw-086, LL1mw-089, and LL12mw-244. It is not further explained as to why these proposed wells were not redeveloped prior to sampling for this Spring 2022 event.

It should be noted that well LL12mw-244 was found to have a reading of 7,537.2 NTUs during 2021 sampling, and Ohio EPA comment at that time was that 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 LL12mw244."

Future well redevelopment activities should be conducted in accordance with Section 3.5.2 of the approved Revised Final Remedial Investigation Work Plan (RIWP) produced by TEC-Weston and dated December 21, 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).

Please provide further explanation as to why wells LL1mw-086, LL1mw-089, and LL12mw-244 were not redeveloped prior to sampling for this Spring 2022 event and provide a potential schedule or rationale to follow for future redevelopment.

Army Response: Clarification and agree. While Section 8.2.1 of the FWGWMP Annual Report present recommendations for future monitoring well redevelopment, these are only provided as proposed recommendations. LL1mw-086 was redeveloped in April 2020, and LL12mw-244 was recently redeveloped on April 21, 2021. The Army elected not to redevelop the wells in 2022. These wells will continue to be analyzed for COCs identified in the RI Report (explosives, nitrate, and ammonia), and the results are not influenced by elevated turbidity. The high turbidity associated with these wells do not appear to create issues with the dataset and risk management decisions.

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Anne M. Vogel, Director

January 25, 2023

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

Sent via email to:
kevin.m.sedlak.ctr@army.mil

Subject: Ohio EPA Comments on the "Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 Sampling Event" dated November 17, 2022.

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 2022 Sampling Event"** 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 November 21, 2022. 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 enclosed comments in accordance with the Directors Findings and Orders.

DRAFT FWGWMP SEMI-ANNUAL REPORT FOR SPRING 2022

The Draft Facility- Wide Groundwater Monitoring Program (FWGWMP) Semi-Annual Report for Spring 2022 summarizes ground water monitoring activities conducted during the Spring 2022 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 Final FWGWMP Addendum for 2022 dated April 28, 2022.

According to the Final FWGWMP Addendum for 2022, a total of 48 wells (including two of the five formerly identified RCRA wells; RVAAP-04 Open Demolition Area #2 wells DETmw-003 and DETmw-004) were slated for resampling in 2022. The remaining three formerly identified RCRA wells, RVAAP-01 Ramsdell Quarry Landfill wells RQLmw-007, RQLmw-008, RQLmw-

Received
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009 were not sampled during the 2022 FWGWMP event and are currently being proposed for No Further Action under the Draft Remedial Investigation (RI) report (Leidos 2020b). Ohio EPA requested in our June 28, 2022, correspondence that the remaining three formerly identified RCRA wells around Ramsdell Quarry not be abandoned prior to final remedy selection.

In 2021, a total of 53 wells (including the two former identified RCRA wells (DETmw-003 and DETmw-004) were sampled under the FWGWMP. Based on those results, seven of these wells were discontinued from sampling, while a new set of two wells (not sampled in 2021) were added to the list to achieve the total of 48 wells to be sampled for 2022.

According to Section 3.1, Table 3-1, and Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2022, all 48 wells specified in the Draft FWGWMP Addendum for 2022 were sampled.

COMMENTS

1. Appendix B Completeness:

A review of Appendix B (Field Forms) included daily log sheets, well purge forms, chain-of-custody sheets, and calibration reports for field equipment.

Appendix B.3 Chains of Custody section still has the first three pages denoted as place holders for “RVAAP-191-TA_06142022”, “RVAPP-192-TA_06142022”, and “RVAAP-193-TA_06152022”. Appropriate Chains of Custody documents should be inserted into the final version of the report.

2. Section 3.2 Field Change Requests:

Section 3.2 (Page 3-1, line 153) documents four previously approved field change requests (FCR) submitted and applicable to the Spring 2022 sampling event, (LEIDOS_FWGW_001, LEIDOS_FWGW_004, and LEIDOS_FWGW_006 from 2018 and LEIDOS_FWGW_010 from 2019).

These four FCRs are included within Appendix A, along with LEIDOS_FWGW_009, (October 2019 FWGWMP-Additional Sampling Suite) which was submitted September 26, 2019, and LEIDOS_FWGW_0011 (December 2021 FWGWMP-Additional Sampling Suite) was submitted December 15, 2021.

Since LEIDOS_FWGW_009 and LEIDOS_FWGW_0011 are included in Appendix A, they should also be included in the Section 3.2 list.

3. Table 4-1 Data Summary Completeness:

Table 4-1 of the Draft FWGWMP Semi-Annual Report for Spring 2022 indicated that all 48 wells were analyzed for the proper analytical parameters in accordance with the Final FWGWMP Addendum for 2022 (well-specific combinations of volatile organic compounds (VOCs), semi-volatile organic compound (SVOCs), polycyclic aromatic hydrocarbons (PAHs), phenols, polychlorinated biphenyls (PCBs), perchlorate, explosives, expanded 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 presented confusing information when compared to Appendix D.1 and Appendix D.3 tables. Table 4.1 sometimes presents any detected data concentrations and sometimes it only presents concentrations that exceed screening or background criteria. Additionally, reporting units ug/L and mg/L are alternately used on the D.1 and D.3 tables, and to a lesser degree within Table 4.1. The Appendix D.3 Table has been modified from the 2021 version to add a “Results Exceeds Screening and Background Criteria (Y/N)” column, which shows a “N” if the concentration did not exceed both values, but Table 4.1 sometimes presents summaries if either value is exceeded, or if there are no screening criteria. To clarify and avoid the need to consult multiple tables to get the whole picture of the available lab data, it may be beneficial to reconfigure tables throughout the report to have a consistent viewpoint and consistent reporting units. It had previously been suggested (during the Spring 2021 report review) that Appendix D.3 table denote 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.

4. Well Redevelopment – Elevated Turbidity Results:

Section 6.0 Well Redevelopment of the Draft FWGWMP Semi-Annual Report for Spring 2022 indicated that no permanent monitoring wells were redeveloped for the 2022 spring sampling event. This section also stated that a list of recommended wells to be redeveloped was presented within the 2021 Annual Report (Leidos 2022c). Upon review of the 2021 Annual Report, Section 8.2.1 Well Redevelopment, wells to be considered for redevelopment prior to sampling included LL1mw-086, LL1mw-089, and LL12mw-244. It is not further explained as to why these proposed wells were not redeveloped prior to sampling for this Spring 2022 event.

It should be noted that well LL12mw-244 was found to have a reading of 7,537.2 NTUs during 2021 sampling, and Ohio EPA comment at that time was that 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.”

Future well redevelopment activities should be conducted in accordance with Section 3.5.2 of the approved Revised Final Remedial Investigation Work Plan (RIWP)

produced by TEC-Weston and dated December 21, 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).

Please provide further explanation as to why wells LL1mw-086, LL1mw-089, and LL12mw-244 were not redeveloped prior to sampling for this Spring 2022 event and provide a potential schedule or rationale to follow for future redevelopment.

This **"Draft Facility-wide Groundwater Monitoring Program Plan RVAAP-66 Facility-wide Groundwater Semi-Annual Report for Spring 2022 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 at kevin.palombo@epa.ohio.gov.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/cm

ec: Rebecca Shreffler, Chenega Reliable Services
Katie Tait, OHARNG RTLS
Steven Kvaal, USACE Louisville
Nat Peters, USACE Louisville
Megan Oravec, Ohio EPA, NEDO, DERR
Natalie Oryshkewych, Ohio EPA, NEDO, DERR
Liam McEvoy, Ohio EPA, NEDO, DERR
Thomas Schneider, Ohio EPA, SWDO, DERR
Carrie Rasik, Ohio EPA, CO, DERR