



**REPORT**

**QUARTERLY MONITORING REPORT  
FIRST QUARTER 2024  
RESERVE SILICA RECLAMATION SITE**

*Ecology Facility Site No. 2041/Cleanup Site No 4728  
28131 Ravensdale-Black Diamond Road  
Ravensdale, Washington 98051*

Submitted to:

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## 1.0 INTRODUCTION

This report, prepared by WSP USA Inc. (WSP) for Holcim (US) Inc., presents the results of surface water and groundwater monitoring conducted at the Reserve Silica Reclamation Site (Site) during the first quarter of 2024. The Site is located at 28131 Ravensdale-Black Diamond Road in Ravensdale, Washington. Figure 1 shows the Site location.

A Model Toxics Control Act (MTCA) Remedial Investigation/Feasibility Study (RI/FS) is being conducted at the Site under Agreed Order (AO) No. DE 16052. An RI Work Plan (Work Plan), supporting Sampling and Analysis Plan (SAP), and Quality Assurance Project Plan (QAPP) (Golder 2021) describe the RI monitoring requirements and sampling procedures. Quarterly groundwater monitoring at the Site is currently being conducted in accordance with the Work Plan and supporting documents. Historical groundwater and surface water monitoring activities at the Site were conducted under the requirements of Post-Closure Care and Maintenance Permits issued by Public Health – Seattle and King County (Public Health). The first quarter monitoring event was conducted in March 2024.

## 2.0 BACKGROUND

### 2.1 Site Background

The following briefly describes the historical mining and reclamation activities that occurred at the Site and includes a discussion of the quarterly monitoring program.

#### 2.1.1 Lower Disposal Area Background

The Lower Disposal Area (LDA) is a former open pit sand mine that was reclaimed by placing cement kiln dust (CKD) and other material into the mine excavation from June 1979 to October 1982. The LDA was filled with approximately 175,000 tons of CKD. Records indicate that a cap consisting of clay and up to 7 feet of overburden material from sand mining operations was placed over the CKD.

Historically, high pH seepage surfaced along the slope west of the LDA. The outbreaks are primarily located along the northern half of the western boundary of the LDA and records as early as 1987 indicate a leachate collection system was implemented for the LDA seepage. The leachate drained through low-lying, marshy areas and commingled with stormwater before flowing to the three Infiltration Ponds (the Infiltration Ponds as shown in Figure 2) near the Ravensdale-Black Diamond Road (ARCADIS 2004). In 2013, a new seepage collection ditch was installed to intercept and collect the seepage (see Section 2.2.3 of this report), which then flowed inside a pipe to the Infiltration Ponds. In 2018, a water treatment system was constructed, and the high pH water captured by the collection ditch is currently piped to the on-site treatment area for pH neutralization and dissolved metals removal. The treated water discharges from the treatment system to the Infiltration Ponds.

#### 2.1.2 Dale Strip Pit Background

The Dale Strip Pit (DSP) was created to mine the Dale No. 4 coal seam from the surface starting in 1946. Prior to 1946, the coal seam was worked from an underground mine. The underground mining chutes were driven upward to the surface to provide ventilation and allow the transportation of timbers into the mine. Construction of the mine allowed groundwater to drain by gravity to the mine portal (Portal). The Portal has since collapsed, and now a pipe in the collapsed Portal allows water to continuously drain from the mine under an Ecology Sand and Gravel General Permit (Ecology 2005) with monitoring as described below. The Portal is located north of the LDA on the east side of the main haul road.

The DSP was approximately 1,800 feet long (north to south), averaged 140 feet wide (east to west), and averaged 40 feet deep. It was filled in the 1970s and 1980s with approximately 250,000 cubic yards of material including CKD, borrow, and other materials pursuant to a permit from Public Health. It is estimated that about one-third of the DSP was filled with CKD (ARCADIS 2004).

## **2.2 Mitigation Activities**

### **2.2.1 LDA Cover Upgrade**

During September and October 2007, the existing soil cover on the LDA was regraded to provide positive drainage at all locations, reduce overly-steep slope areas, and place a minimum 2-foot-thick clean soil cover over the entire area, including locations where CKD was exposed at the surface. The construction activities are described in the Construction Summary Report (Golder 2008a).

### **2.2.2 LDA Seep Collection System Test Trenches**

During September and October 2008, test trenches for collecting high pH seepage were constructed (Golder 2008b). The purpose of this test system was to evaluate the feasibility of using a more extensive trench system to collect high pH seepage that would otherwise discharge at the ground surface adjacent to the LDA. Details of the test trench construction are presented in the Construction Summary Report (Golder 2009a).

Between October 2008 and September 2009, Golder monitored seepage flow rates from each of the two test trenches and the pipeline discharge once per month, on average. A summary of activities and results of this monitoring program is presented in the flow monitoring report (Golder 2009b).

### **2.2.3 LDA Seep Collection Ditch and Seepage Treatment System**

In February 2013, a surface water collection ditch and concrete catch basin were constructed on the bench below the main access road on the west side of the LDA. This system was installed to capture leachate seeps emerging from the bank along the east side of the bench (west of the main access road) and direct them into the existing pipeline that carries flow from the test trenches to the Infiltration Ponds. In April 2015, the 4-inch-diameter pipeline from the catch basin to the Infiltration Ponds, approximately 1,000 feet in length, was replaced with a 12-inch-diameter pipeline to alleviate plugging issues.

In December 2017, the seepage collection trench was further extended approximately 100 feet to the north to collect additional seepage that was not previously captured. Seepage water was then redirected into a seepage treatment system, which completed construction and started initial operations on September 28, 2018. The treatment system uses carbon dioxide (CO<sub>2</sub>) sparging to neutralize pH levels and arsenic and lead adsorption using an iron-based adsorption media.

During the initial year of operation, the system operated intermittently, with system shut-downs occurring as various upgrades and modifications were completed to increase the long-term operational efficiency of the treatment system. The system began continuously operating in June 2019, with only minor shutdowns occurring to complete routine maintenance.

### **2.2.4 LDA Interceptor Trench**

In September 2013, a gravel-filled interceptor trench that included a perforated drainpipe and vertical downgradient liner was installed south of the LDA to intercept clean groundwater moving in a northerly direction prior to encountering the CDK in the LDA.

## 2.2.5 DSP Cover Upgrade

Cover upgrade activities began at the DSP in November 2010 and were completed in July 2011. Cover upgrade activities included stripping surficial vegetation and topsoil, regrading the existing surface to establish positive drainage, placing low permeability soil to provide a minimum 2-foot-thick layer at all locations, filling the existing ditch along the northeast side of the DSP, replacing topsoil, and revegetating the cover surface.

## 3.0 MONITORING PROGRAM

The purpose of the quarterly monitoring activities is to assess the groundwater and surface water conditions with respect to potential impact from the CKD placed in the LDA and the DSP. Prior to the start of the RI, quarterly monitoring and reporting activities were conducted under requirements of Post-Closure Care and Maintenance Permits issued by Public Health. The current RI groundwater and surface water requirements are detailed within the Work Plan (Golder 2021).

### 3.1 LDA Sampling Locations

The LDA groundwater and surface water sampling locations are shown in Figure 2. Monitoring well construction details are provided in Table 1. Shallow/alluvial monitoring wells were installed near the LDA in July 2005 and are monitored to assess the shallow/alluvial groundwater conditions with respect to potential impact from the CKD. Four of the wells (MW-1A, MW-2A, MW-5A, and MW-6A) are located around the Infiltration Ponds. MW-3A is located west of the high pH seepage area. MW-4A, a background well, is located south of, and upgradient with respect to groundwater flow and surface water drainage of the high pH seepage area. P-14 was installed in November 2020 in the center of the LDA and is screened within CKD and other fill material disposed in the LDA. Groundwater samples collected from P-14 provide data on chemical composition of water in an area where saturated CKD is present. The monitoring well naming convention of assigning either the prefix MW (for monitoring well) or P (for piezometer) differentiates wells that are historically associated with or will likely be associated with the closed landfill permit required monitoring (prefix MW- or MWB- for bedrock wells), from groundwater wells that were installed for site investigation purposes (P- wells). MW and P groundwater wells are constructed similarly, and groundwater sampling of these wells follows the procedures approved in the Work Plan, thus, data collected from MW or P wells are equivalent in representativeness.

As part of the RI, during September 2021, the following groundwater monitoring wells were also installed to evaluate groundwater quality in and downgradient of the LDA:

- MW-7A and MW-8A were installed west and southwest of the Infiltration Ponds to evaluate groundwater gradients and groundwater quality.
- MW-9A and MW-10A are located west of the high pH seepage area and the South Pond, near the western property boundary to evaluate groundwater gradients and groundwater quality.
- P-15 was installed in the LDA and, like P-14, is also screened within CKD and other fill material disposed in the LDA. Groundwater samples collected from P-15 provide data on chemical composition of water just before the groundwater flows across the Lower Haul Road to daylight as seeps west of the LDA.
- P-16 was installed just west (downgradient) of the high pH seepage area and east (upgradient) of the South Pond.
- P-17 was installed per Ecology's request during their Site visit in September 2021 and is located southwest of the LDA.

The LDA surface water sampling locations evaluate the high pH seepage that occurs west of the LDA:

- The Still Well is a 2-inch-diameter flush-mount well located within the high pH seepage zone west of the LDA.
- The South Pond is a closed depression located west of the high pH seepage area.
- The Weir is located north of the access road to MW-3A immediately below the discharge point from the wetlands. If no flow is observed at the Weir, the constructed wetlands upstream are the alternative sampling location.
- The Infiltration Ponds are located at the north end of the Site near Ravensdale-Black Diamond Road and receive treated water from the on-site seepage treatment system. The surface sample is collected from the southwest area of the Infiltration Ponds.

In 2006, bedrock monitoring wells were installed along the west side of the main access road, west of the LDA. The bedrock wells were installed to assess groundwater conditions in the bedrock immediately downgradient of the LDA. MWB-1LDA is located near the northern tip of the LDA, MWB-2LDA is located near the center of the LDA, and MWB-3 LDA is located near the southern end of the LDA. In accordance with the Work Plan, field parameters are monitored in the LDA bedrock monitoring wells semi-annually, and the wells are sampled annually.

## 3.2 DSP Sampling Locations

The DSP groundwater monitoring locations are shown in Figure 2. The DSP bedrock groundwater monitoring program includes four wells in the DSP area (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, and MWB-6DSP), which evaluate groundwater quality beneath, upgradient, and downgradient of the DSP. Field parameters of groundwater discharging from the Portal are monitored semi-annually, and the Portal is sampled annually. The Portal was originally constructed to drain water from the Dale Strip Coal mine. In accordance with the Work Plan, field parameters are monitored in the DSP bedrock monitoring wells semi-annually, and the wells are sampled annually. There are two additional monitoring wells (MWB-2DSP and MWB-4SDSP) near the DSP area that are monitored semi-annually for water levels and field parameters only.

## 3.3 LDA Interceptor Trench

The purpose of the Interceptor Trench is to intercept clean shallow groundwater and direct the water away from the LDA before the water enters the LDA. Monitoring is performed at the Interceptor Trench outfall for flow, pH, turbidity, and total dissolved solids. The purpose of the monitoring is to ensure that the trench is not collecting impacted groundwater.

## 4.0 SAMPLING ACTIVITIES

The following section summarizes the activities associated with the current monitoring event.

### 4.1 Procedures

#### 4.1.1 Water Level and Field Parameter Measurements

Depth to water measurements were collected from all monitoring wells at the Site during the period of March 4 and 8, 2024. Table 1 presents depth to water measurements and elevations. Groundwater elevation contour maps are provided in Figures 3A-C.



Field parameters for groundwater and surface water were measured as part of the sampling activities described in the following sections. These measurements were performed with the following equipment:

- YSI ProDSS multimeter with pH, oxidation-reduction potential (ORP), conductivity, dissolved oxygen (DO), and temperature probes
- Hach 2100Q Turbidimeter

#### 4.1.2 Laboratory Analysis

Laboratory analyses were performed on samples collected from the various locations described in the following sections. Although the analytic parameters varied between the types of samples, the following elements are common to all the sampling and analysis activities:

- The collected samples were transported to the laboratory within appropriate sample hold times following chain-of-custody protocols.
- The testing was performed by Analytical Resources, Inc. (ARI) of Tukwila, Washington.
- All samples were tested for the following parameters using the methods indicated:

Antimony	EPA Method 200.8
Arsenic	EPA Method 200.8
Lead	EPA Method 200.8
Potassium	EPA Method 6010D
Vanadium	EPA Method 200.8
Total Dissolved Solids (TDS)	SM 2540 C

- Interceptor Trench samples are tested for the following parameters using the method indicated:

pH	Field Measurement
TDS	SM 2540 C
Turbidity	Field Measurement

- Summaries of historical analytic data for the various sampling locations are presented in Appendix A. The data validation report and the laboratory analytical data packages are provided in Appendix C. Sampling Integrity Data Sheets (SIDS) are provided in Appendix D.

#### 4.1.3 LDA Groundwater Sampling

During the period of March 4 to 7, 2024, WSP sampled groundwater from shallow/alluvial groundwater monitoring wells outside of the LDA (MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MW-8A, MW-9A, MW-10, P-16, P-17), and from two well installed within the LDA (P-14 and P-15).

The following methods and procedures were used to collect groundwater samples:

- Depth to groundwater was measured in the wells prior to purging and sampling.
- Using a dedicated bladder pump or dedicated tubing connected to a peristaltic pump (if groundwater elevation allowed), water from wells MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MW-8A, MW-9A,

MW-10, P-14, P-15, P-16, and P-17 was purged at a rate between approximately 100 and 500 milliliters (mL) per minute.

- Field parameters of pH, conductivity, temperature, DO, ORP, and turbidity were measured and recorded during purging at approximately five-minute intervals until parameters were stable.
- Once the field parameters stabilized, the purging phase of the process was concluded. Groundwater samples were then collected directly from the dedicated sample tubing.
- For quality control purposes, a duplicate sample was collected from MW-2A (labeled as MW-45A).
- Laboratory-provided containers were used to collect the samples. For each groundwater sample, one 500-mL bottle preserved with nitric acid and one 1-Liter (L) unpreserved bottle were collected. The samples were then labeled and placed in a cooler with ice.
- The pH of the water in some of the wells within the LDA (P-14 and P-15) is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2 upon receipt at the laboratory. To meet this requirement, the pH of the LDA surface water samples collected for metals analysis was checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, additional nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

All groundwater and quality control samples were analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 2.

#### **4.1.4 LDA Surface Water Sampling**

On March 4, 2024, WSP collected a sample from the Infiltrations Ponds. Then on March 5, 2024, WSP collected samples from the 3 other surface water monitoring locations (South Pond, Still Well, and Weir). The following methods and procedures were used to collect surface water samples:

- Field parameters of pH, conductivity, temperature, DO, ORP, and turbidity were measured and recorded. These parameters were measured and recorded at each of the surface water locations at the time of sample collection.
- Grab surface water samples were collected using dedicated sample tubing connected to a peristaltic pump.
- For quality control purposes, a duplicate sample was collected from the Infiltration Ponds (labeled as MW-35A).
- Laboratory-provided containers were used to collect the surface water samples. For each surface water sample, one 500-mL bottle preserved with nitric acid and one unpreserved 1-L bottle were collected. The samples were labeled and placed in a cooler with ice.
- The pH of Still Well is often greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2 upon receipt at the laboratory. To meet this requirement, the pH of the sample collected for metals analysis was checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, additional nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

All surface water and quality control samples were analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 2.

#### 4.1.5 DSP Groundwater Sampling

On March 8, 2024, WSP sampled groundwater from the DSP groundwater monitoring wells (MWB-1SDSP, MWB-1DDSP, MWB-5DSP, and MWB-6DSP) and the Portal. The following methods and procedures were used in collecting the groundwater samples:

- Depth to groundwater was measured in the wells prior to purging and sampling.
- Using the dedicated discharge tubing connected to the dedicated bladder pump, water from wells MWB-1DDSP, MWB-1SDSP, MWB-5DSP, and MWB-6DSP was purged at a rate between approximately 100 and 500 mL per minute.
- Field parameters of pH, conductivity, temperature, DO, ORP, and turbidity were measured and recorded during purging at approximately five-minute intervals until parameters were stable.
- Once the field parameters stabilized, the purging phase of the process was concluded. Groundwater samples were then collected directly from the dedicated sample tubing.
- Grab water samples were collected from the Portal using dedicated sample tubing connected to a peristaltic pump. The water quality parameters were measured and recorded at the Portal at the time of sample collection.
- For quality control purposes, a duplicate sample was collected from MWB-6DSP (labeled as MW-55A).
- Laboratory-provided containers were used to collect the samples. For each groundwater sample, two 500-mL bottles preserved with nitric acid and one 1-L unpreserved bottle were collected. The samples were labeled and placed in a cooler with ice.

All groundwater and quality control samples were analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 2.

In addition, water levels and field parameters were measured in DSP monitoring wells 2DSP and 4SDSP.

#### 4.1.6 LDA Interceptor Trench Sampling

On March 6, 2024, WSP sampled groundwater from the Interceptor Trench outfall. The following methods and procedures were used to collect the sample:

- Field pH, turbidity, and flow rate at the Interceptor Trench outfall were measured and recorded.
- Grab water samples were collected from the Interceptor Trench by placing the sample bottles under the flow of water.
- Laboratory-provided containers were used to collect the sample for TDS lab analysis. One 1-L unpreserved bottle was collected. The sample was then labeled and placed in a cooler with ice.

The Interceptor Trench sample was analyzed for the parameters listed in Section 4.1.2. Field parameters and analytical data are presented in Table 2.

## 5.0 RESULTS

Analytical results from the March 2024 monitoring round are presented in Table 2. Table 3 presents the current and historical summary of the Interceptor Trench monitoring data. Historical summary tables of analytical results at each sampling location are provided in Appendix A and concentrations trend graphs for key parameters are provided in Appendix B. All analytical data were subject to a data validation review. Data validation was conducted in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 2020), the SAP, and the QAPP (Golder 2021). Data reporting qualifiers are included with the analytical results in Appendix A. The data validation review found that all the data were considered valid and usable. The data validation and raw analytical data packages provided by the laboratory are provided in Appendix C. Data collected during this sampling round will be combined with all RI data to complete the evaluations and requirements of the RI/FS.

## 6.0 OPERATIONS AND MAINTENANCE OF THE LEACHATE TREATMENT SYSTEM

The leachate treatment system began operating in September 2018. The system operated intermittently from December 2018 to May 2019 as the system upgrades were completed during that time, which included various upgrades and modifications to improve the system's long-term operating efficiency. The system began continuous operations in June 2019, with minor shutdowns occurring to complete routine maintenance and continued minor modifications to improve long-term operating efficiency.

The treatment system includes a 4,200-gallon mixing tank (steel rectangular box-shaped tank) that receives the influent water coming from the seepage collection ditch and piping. Water from the tank constantly flows through the carbon dioxide (CO<sub>2</sub>) sparge unit, which continuously monitors the water pH and activates CO<sub>2</sub> sparging when the water pH exceeds 8.5. CO<sub>2</sub> sparging continues until the pH reduces to 8. The sparged water is pumped back into the mixing tank to maintain the neutralized water within the tank. The influent flow, pumping from the tank and through the CO<sub>2</sub> sparge unit, and discharge from the sparge unit back into the tank are all specifically located in different areas of the mixing tank to provide constant circulation effectively providing pH neutralization throughout the tank. The mixing tank contains a float switch-activated discharge pump that activates when the water reaches a set height within the tank and turns the pump off when the water is lowered to the desired height. Neutralized water pumped from the tank is discharged through filters and an iron-based adsorption media to remove arsenic, prior to discharge of the water to the Infiltration Ponds.

The continuous pH monitoring system is connected to telemetry that sends pH readings and alerts to WSP engineer's cell phones if readings outside of the set ranges occur allowing for response and troubleshooting. Routine inspections of the treatment system are conducted approximately once every two weeks. The inspections include routine maintenance activities such as cleaning scale off pump parts, hoses, and probes to sustain continued operations of the treatment system. The treatment system has been effective in reducing the pH of the seepage water to below 8 standard units and reducing metals concentrations before discharge to the Infiltration Ponds. Typical maintenance downtime of less than 1 day occasionally occurs. Optimization of the metals adsorption system continues, as calcium carbonate clogging of the adsorption system frequently arises. Table 4 provides the 2024 first quarter laboratory analytical data for samples collected: before the pH treatment tank (influent), pre-iron-based adsorption media, and post-iron-based adsorption media. The laboratory analytical report is provided in Appendix C.

The treatment system has been effective in reducing the impacts to groundwater in the immediate vicinity of the Infiltration Ponds that were historically observed in groundwater monitoring wells MW-5A and MW-6A. Additional modifications and improvements are anticipated to occur to the treatment system during the MTCA cleanup process to improve system performance and efficiency and achieve Site-specific cleanup standards that are protective of human health and the environment.

## **7.0 LIMITATIONS**

WSP prepared this report for the exclusive use of Holcim (US) Inc. and their authorized agents. It may also be submitted to regulatory agencies.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood. This report was prepared, in part, based on previous investigations and data collected by others. WSP USA Inc. is not responsible for any data that were inaccurately reported by others and reproduced here.

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## Tables

**Table 1: First Quarter 2024 Water Level Measurements**

Sample Area	Sample Location ID	Date Measured	Well Data				Water Levels		
			Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Bentonite Seal (feet bgs)	Casing Diameter (inches)	TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)
LDA - Shallow/Alluvial Groundwater	MW-1A	3/4/2024	44	28-43	2-26	2	613.44	26.79	586.65
	MW-2A	3/4/2024	40	25-40	2-23	2	607.21	20.65	586.56
	MW-3A	3/5/2024	20	4-20	2-4	2	689.11	5.05	684.06
	MW-4A	3/7/2024	20	5-20	2-4	2	705.45	3.72	701.73
	MW-5A	3/4/2024	40	25-40	2-23	2	611.23	24.62	586.61
	MW-6A	3/4/2024	39	24-39	2-22	2	608.95	22.36	586.59
	MW-7A	3/6/2024	20	10-20	2-7	2	592.69	6.52	586.17
	MW-8A	3/6/2024	26	16-26	2-13	2	601.49	15.41	586.08
	MW-9A	3/7/2024	13	8-13	2-5	2	697.29	2.58	694.71
	MW-10A	3/5/2024	29	9-29	2-6	2	698.02	5.33	692.69
Within LDA - Groundwater	P-16	3/5/2024	10	5-10	1-3	2	702.87	2.95	699.92
	P-17	3/7/2024	13	8-13	2-5	2	720.32	4.80	715.52
LDA - Bedrock Groundwater	P-14	3/7/2024	52	40-50	3-38	2	773.32	27.82	745.50
	P-15	3/6/2024	34	24-34	2-20	2	756.55	16.76	739.79
LDA - Bedrock Groundwater	MWB-1LDA	3/4/2024	135	115-135	2-105	2	704.68	21.68	683.00
	MWB-2LDA	3/6/2024	125	110-125	2-103	2	741.66	34.60	707.06
	MWB-3LDA	3/7/2024	145	125-145	2-115	2	744.19	0.19	744.00
DSP - Bedrock Groundwater	MWB-1SDSP	3/8/2024	160	150-160	138-148	2	936.29	33.71	902.58
	MWB-1DDSP	3/8/2024	265	255-265	243-253	2	935.37	47.77	887.60
	MWB-2DSP	3/6/2024	258	238-258	-	2	934.82	192.55	742.27
	MWB-4SDSP	3/8/2024	43	32-42.8	-	2	932.41	15.77	916.64
	MWB-5DSP	3/8/2024	83	73-83	2-61	2	935.05	17.79	902.77
	MWB-6DSP	3/8/2024	195	120-195	2-108	2	918.67	18.03	902.47

- Not measured or not available  
 feet bgs Feet below ground surface  
 feet bmp Feet below measuring point  
 feet NAVD88 Feet in NAVD88 datum  
 TOC Top of casing





**Table 2: First Quarter 2024 Field Parameters and Analytical Data**

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)				
			TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)*	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony, Total	Arsenic, Total	Potassium, Total	Lead, Total	Vanadium, Total
Preliminary Cleanup Level <sup>a</sup>			-	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	140
LDA - Shallow/Alluvial Groundwater	MW-1A	3/4/2024	613.44	26.79	586.65	8.4	437.2	8.26	194.8	0.42	6.56	274 J	0.83	1.02	13400	0.103 U	0.614
	MW-2A	3/4/2024	607.21	20.65	586.56	8.9	505.0	8.82	218.3	1.74	6.87	360 J	2.27	1.39	71900	0.103 U	0.97
	MW-2A Duplicate (MW-45A)	3/4/2024	-	-	-	-	-	-	-	-	-	334 J	2.29	1.41	75100	0.103 U	0.998
	MW-3A	3/5/2024	689.11	5.05	684.06	7.5	620	5.62	93.3	4.58	6.74	356	1.55	4.65	66200	0.336	0.604
	MW-4A	3/7/2024	705.45	3.72	701.73	8.7	576	4.82	171.9	0.66	6.37	320	0.202 U	0.4 U	708	0.103 U	1.18
	MW-5A	3/4/2024	611.23	24.62	586.61	8.4	1191	6.08	237	0.63	7.35	984 J	6.37	4.28	294000	0.103 U	1.62
	MW-6A	3/4/2024	608.95	22.36	586.59	7.3	1,215	7.46	232.5	0.84	7.59	1070 J	7.92	2.83	359000	0.103 U	0.928
	MW-7A	3/6/2024	592.69	6.52	586.17	6.4	850	7.35	254.1	0.66	7.24	588	3.01	2.14	111000	0.103 U	0.97
	MW-8A	3/6/2024	601.49	15.41	586.08	8.3	926	8.1	304.5	0.74	7.06	622	4.93	6.67	159000	0.103 U	3.44
	MW-9A	3/7/2024	697.29	2.58	694.71	7.6	610	6.61	186.2	1.46	6.89	360	0.202 U	0.436	1790	0.103 U	0.64 J
	MW-10A	3/5/2024	698.02	5.33	692.69	8.9	181	9.04	162.6	5.3	6.31	106	0.202 U	0.44	777	0.103 U	0.556 U
	P-16	3/5/2024	702.87	2.95	699.92	7.6	4,529	3.9	-244.4	34.7	11.99	2350	8.51	139	818000	9.09	288
	P-17	3/7/2024	720.32	4.80	715.52	8.5	761	3.46	-38.2	6.54	6.5	315	1.33	3.92	7730	0.103 U	1.38
Within LDA - Groundwater	P-14	3/7/2024	773.32	27.82	745.50	12.1	23,887	3.5	-177.6	0.38	13.19	5660	120	188	2010000	4.54	11.7
	P-15	3/6/2024	756.55	16.76	739.79	11.2	11,127	4.27	-115.3	0.8	12.88	3520	3.54	5.83	965000	106	0.464
LDA - Bedrock Groundwater <sup>b</sup>	MWB-1LDA	3/4/2024	704.68	21.68	683.00	10.2	320.6	3.65	-29.8	0.3	7.38	243 J	0.202 U	9.13	857	0.103 U	0.556 U
	MWB-2LDA	3/6/2024	741.66	34.60	707.06	10.8	320.7	5.8	84.9	0.52	7.39	218	0.202 U	5.24	952	0.103 U	0.278 U
	MWB-3LDA	3/7/2024	744.19	0.19	744.00	10.8	272.7	3.09	-27.9	1.15	6.93	138	0.202 U	6.36	796	0.174 J	0.278 U



**Table 2: First Quarter 2024 Field Parameters and Analytical Data**

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)					
			TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)*	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony, Total	Arsenic, Total	Potassium, Total	Lead, Total	Vanadium, Total
Preliminary Cleanup Level <sup>a</sup>			-	-	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	140
LDA- Surface Water	South Pond	3/5/2024	-	-	-	10.5	2327	7.99	-12.1	6.72	9.9	1220	3.99	21.6	435000	15.2	75.1	
	Still Well	3/5/2024	-	-	-	8.3	7467	8.51	-23	9.33	12.39	1700	7.25	50.1	434000	4.7	2.9	
	Weir	3/5/2024	DRY	DRY	DRY	4.10	673.00	7.31	117.10	9.45	7.09	445	5.28	4.74	76800	2.23	1.16	
	Infiltration Ponds	3/4/2024	-	-	-	6.80	1477.00	7.24	237.40	9.50	8.17	1370 J	13.3	21.8	471000	2.86	3.16	
	Infiltration Ponds Duplicate (MW-35A)	3/4/2024	-	-	-	-	-	-	-	-	-	1380 J	13.6	22.4	463000	2.73	3.1	
DSP - Bedrock Groundwater <sup>b</sup>	MWB-1SDSP	3/8/2024	936.29	33.71	902.58	11	1032	4.94	4.9	2.34	6.81	1270	0.202 U	16.5	5590	0.103 U	0.556 U	
	MWB-1DDSP	3/8/2024	935.37	47.77	887.60	11	746	4.16	-99.6	1.62	7.19	767	0.202 U	4.74	3990	0.132 J	0.556 U	
	MWB-2DSP	3/6/2024	934.82	192.55	742.27	9.1	577	8.66	35.4	4.3	7.75	-	-	-	-	-	-	
	MWB-4SDSP	3/8/2024	932.41	15.77	916.64	10.9	558	8.79	90.8	0.74	7.82	-	-	-	-	-	-	
	MWB-5DSP	3/8/2024	935.05	17.79	902.77	11.1	711	4.7	10.8	0.35	6.97	500	0.202 U	4.95	2400	0.103 U	0.556 U	
	MWB-6DSP	3/8/2024	918.67	18.03	902.47	11	370.3	4.37	40	0.34	7.24	264	0.202 U	0.966	1070	0.103 U	0.556 U	
	MWB-6DSP Duplicate (MW-55A)	3/8/2024	-	-	-	-	-	-	-	-	-	255	0.202 U	0.9	1130	0.103 U	0.556 U	
	Portal	3/8/2024	-	-	-	10.5	470.6	8.59	84	7.64	6.83	359	0.202 U	5.51	22800	0.103 U	0.556 U	

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

- Not measured or not collected.

\* Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

b LDA and DSP bedrock wells are monitored semi-annually

J Data validation code; estimated value.

J+ Data validation code; estimated value with high bias

J- Data validation code; estimated value with low bias.

U Data validation code; not detected at the Reporting Limit (RL).

DRY Location is dry. Unable to collect field parameters or samples.

TOC Top of casing inside PVC well

°C Degrees Celsius

feet bmp Feet below measuring point

feet NAVD88 Feet in NAVD88 datum

ug/L Micrograms per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

µmhos/cm Micromhos per centimeter



**Table 3: Interceptor Trench Discharge Monitoring**

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
19-Oct-13	8:45	0.3	7.47	-	-
19-Nov-13	9:25	0.7	7.52	-	-
23-Dec-13	15:25	1.2	7.27	-	-
20-Jan-14	11:15	0.8	7.58	1	277
-	-	-	-	-	-
31-Mar-14	11:12	1	7.22	1.6	257
22-Apr-14	16:05	3.6	6.85	474	214
27-May-14	15:30	0.8	7.12	21.9	294
27-Jun-14	11:10	0.3	7.13	13.3	136
31-Jul-14	19:45	0.2	6.95	4.1	305
28-Aug-14	14:00	0.1	7.2	1.8	294
29-Sep-14	13:39	0.1	7.87	1.4	340
29-Oct-14	11:45	0.3	7.03	1.1	319
24-Nov-14	11:50	0.8	7.09	0.7	229
22-Dec-14	8:00	0.4	7.08	0.4	253
30-Jan-15 <sup>1</sup>	10:10	1.1	7.09	0.7	270
4-May-15	9:30	0.31	7.54	2.05	290
4-Aug-15	12:20	0.06	7.61	1.51	268
3-Nov-15	13:15	0.8	7.38	36.9	320
8-Feb-16	10:40	1.9	7.23	9.29	279
2-May-16	16:00	0.5	7.77	22.5	431
22-Aug-16	11:00	0.08	7.78	3.34	302
1-Nov-16	11:40	2.4	8.16	96.3	345
2-Feb-17	9:25	4.5	7.61	0.85	514
30-May-17	15:45	4.5	7.33	4.04	324
18-Aug-17	8:50	0.1	7.57	34	300
10-Nov-17	11:20	1.1	6.81	12.9	365
28-Feb-18	10:16	2.22	7.02	37.9	381
2-May-18	11:45	1.18	7.46	2.89	339
22-Aug-18	10:00	0.13	7.32	19.3	287
7-Nov-18	14:40	0.33	7.24	3.05	342
13-Mar-19	11:31	1.43	7.61	19.4	313
9-May-19	10:30	0.88	7.77	8.9	394
26-Aug-19	18:15	0.42	7.25	26.4	361
14-Nov-19	13:30	0.42	7.05	34.5	447
13-Feb-20	12:35	1.58	6.95	1.76	306
13-Aug-20	12:00	0.21	7.32	20.8	339
10-Dec-20	12:22	3.8	7.7	228	691
4-Mar-21	12:20	3.5	7.23	116	584
10-Jun-21	13:10	0.2	7.02	6.31	360
15-Oct-21	13:55	0.2	7.08	31	382
7-Jan-22	11:58	9.2	7.43	6.23	288
17-Mar-22	15:25	3.5	11.75 <sup>^</sup>	3.24	368



**Table 3: Interceptor Trench Discharge Monitoring**

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
22-Jun-22	14:05	2.2	6.94	6.21	415
23-Sep-22	14:46	0.11	7.54	4.77	330
14-Dec-22	9:20	0.79	7.19	2.27	279
13-Mar-23	9:25	2.25	6.9	1.07	232
27-Jun-23	9:55	0.33	7.05	7.31	381
7-Sep-23	14:38	-	7.68	21.5	295
12-Dec-23	15:28	4.76	6.98	1.51	244
6-Mar-24	14:30	3.17	8.39	2.31	359

- Not measured or not available  
 ^ pH values error, due to faulty pH probe.  
 gpm Gallons per minute  
 NTU Nephelometric Turbidity Unit  
 mg/L Milligrams per liter

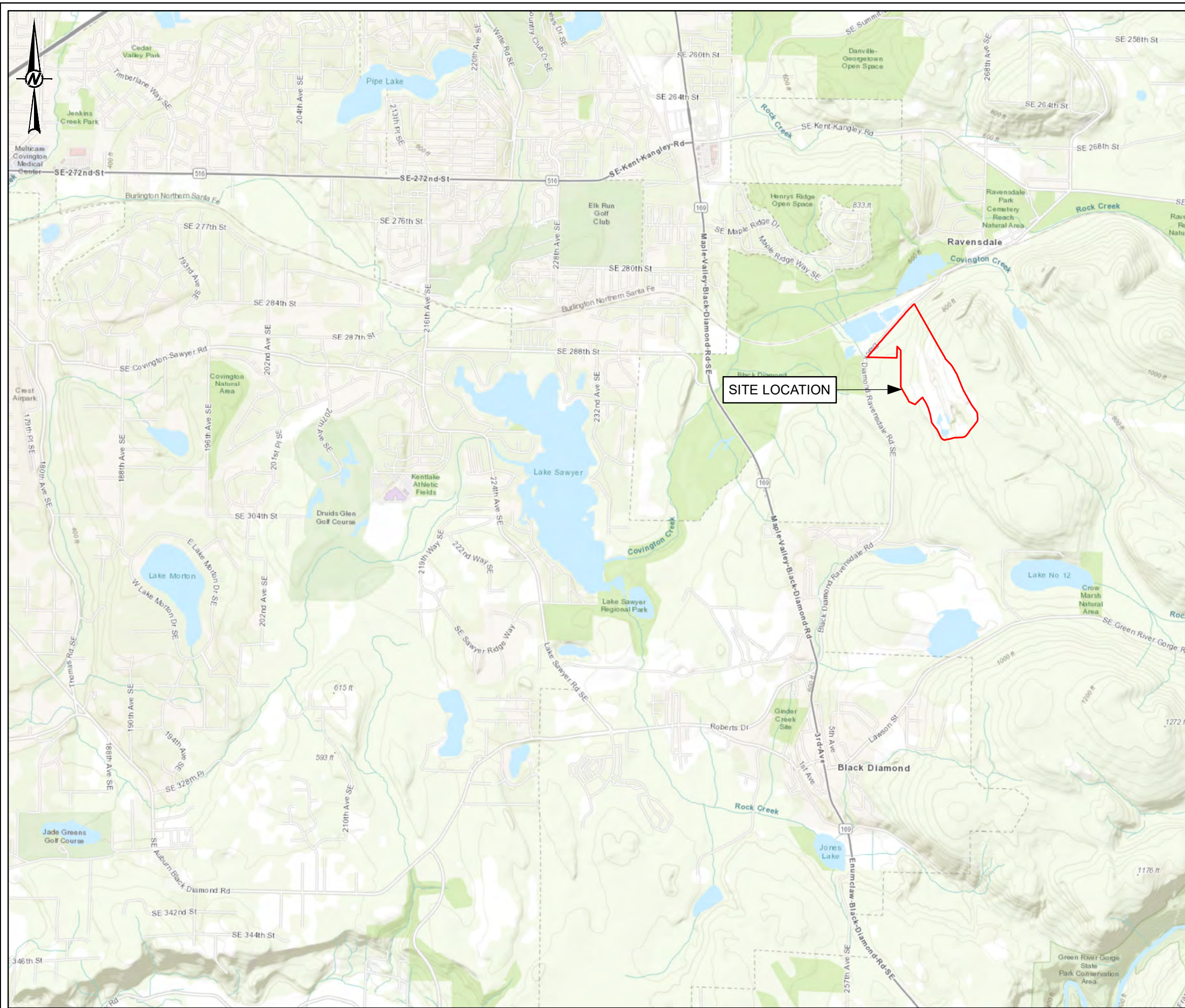
**Table 4: First Quarter 2024 Treatment System Metals Monitoring**

Sample Location	Sample ID	Date Sampled	pH (standard units)	Total Antimony (ug/L)	Dissolved Antimony (ug/L)	Total Arsenic (ug/L)	Dissolved Arsenic (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Vanadium (ug/L)	Dissolved Vanadium (ug/L)
pH Tank Influent	Tank-Influent	5-Mar-24	12.40	14.1	13.5	28.1	19.7	85.4	54.6	3.78	3.29
pH Tank Effluent/Filter Media Influent	Sand-Effluent	5-Mar-24	8.48	13	13.3	26.5	25.4	48.4	1.34	3.55	3.53
Filter Media Effluent	As-Effluent	5-Mar-24	7.66	13.6	13.3	25.5	24.5	44.1	0.74	3.6	3.42

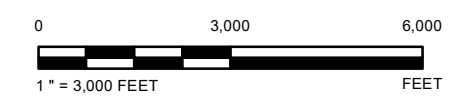
- Not measured or not available  
 ug/L Micrograms per liter  
 J Data validation code; estimated value



## Figures



**LEGEND**  
 Property Boundary



**REFERENCE(S)**  
 1. ASPECT CONSULTING (PROPERTY BOUNDARY)  
 2. ESRI (WASHINGTON STATE COUNTY BOUNDARY)  
 3. COORDINATE SYSTEM: NAD 1983 STATEPLANE WASHINGTON NORTH FIPS 4601 FEET  
 4. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY  
 SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

CLIENT  
**HOLCIM**

PROJECT  
**RI WORK PLAN 2020  
 RAVENSDALE, WA**

TITLE  
**SITE LOCATION MAP**

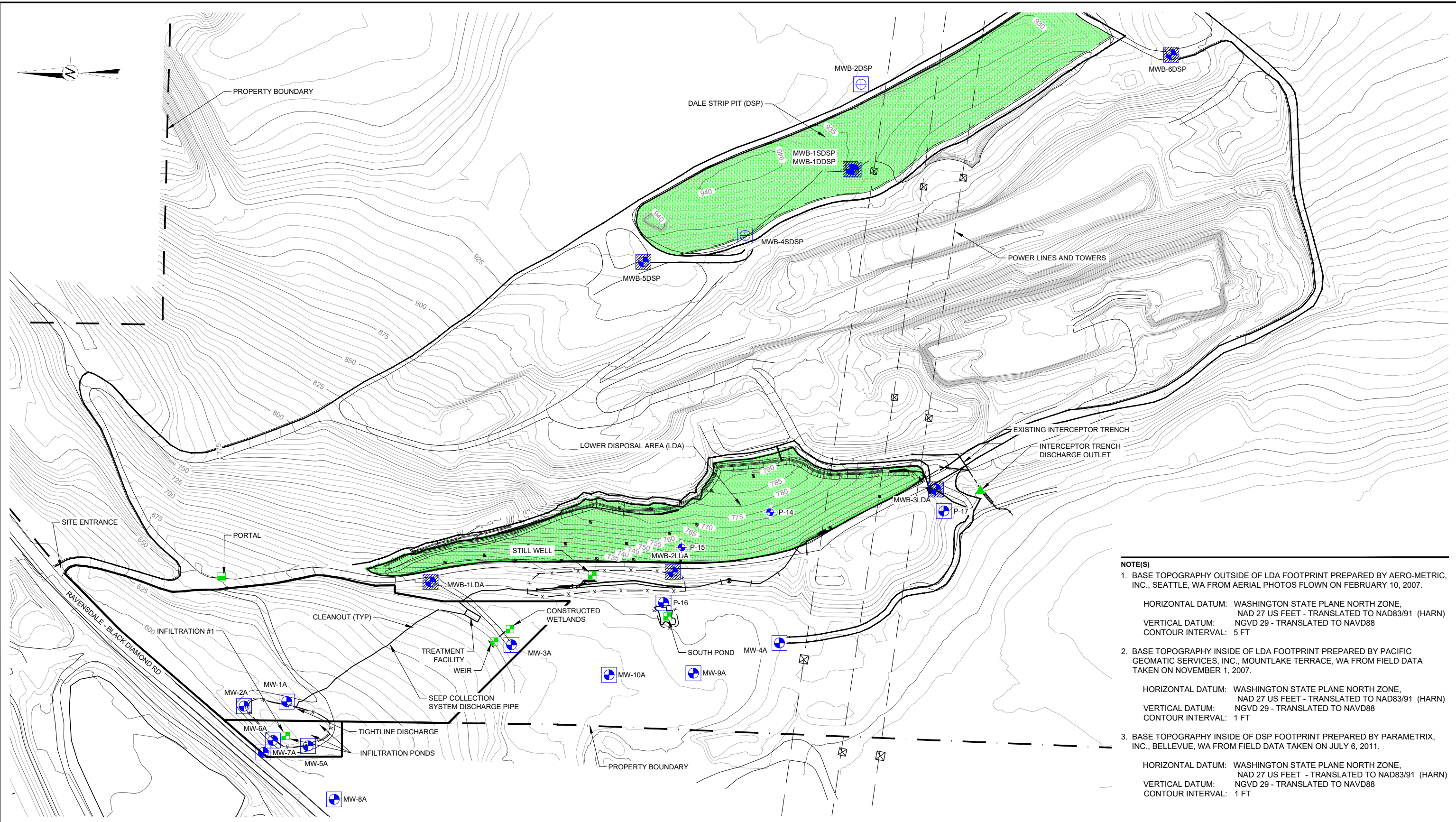
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	APPROVED		GZ

PROJECT NO. 152030420      PHASE 004      REV. A      FIGURE 1

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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**NOTE(S)**

- BASE TOPOGRAPHY OUTSIDE OF LDA FOOTPRINT PREPARED BY AERO-METRIC, INC., SEATTLE, WA FROM AERIAL PHOTOS FLOWN ON FEBRUARY 10, 2007.  
 HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)  
 VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88  
 CONTOUR INTERVAL: 5 FT
- BASE TOPOGRAPHY INSIDE OF LDA FOOTPRINT PREPARED BY PACIFIC GEOMATIC SERVICES, INC., MOUNTLAKE TERRACE, WA FROM FIELD DATA TAKEN ON NOVEMBER 1, 2007.  
 HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)  
 VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88  
 CONTOUR INTERVAL: 1 FT
- BASE TOPOGRAPHY INSIDE OF DSP FOOTPRINT PREPARED BY PARAMETRIX, INC., BELLEVUE, WA FROM FIELD DATA TAKEN ON JULY 6, 2011.  
 HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 27 US FEET - TRANSLATED TO NAD83/91 (HARN)  
 VERTICAL DATUM: NGVD 29 - TRANSLATED TO NAVD88  
 CONTOUR INTERVAL: 1 FT

LEGEND	
	COVER AREA
	MW-1A ALLUVIAL MONITORING WELL
	MWB-1DDSP BEDROCK MONITORING WELL
	MWB-2DSP BEDROCK MONITORING WELL (NOTE 4)
	DISPOSAL AREA MONITORING WELL
	LDA SURFACE WATER SAMPLING LOCATION
	DSP BEDROCK SAMPLING LOCATION (PORTAL)
	INTERCEPTOR TRENCH SAMPLING LOCATION
	FENCE LINE



CLIENT  
**HOLCIM**

CONSULTANT



YYYY-MM-DD	2022-01-20
DESIGNED	JX
PREPARED	REDMOND
REVIEWED	JX
APPROVED	GZ

PROJECT  
**RI WORK PLAN 2020  
RAVENSDALE, WA**

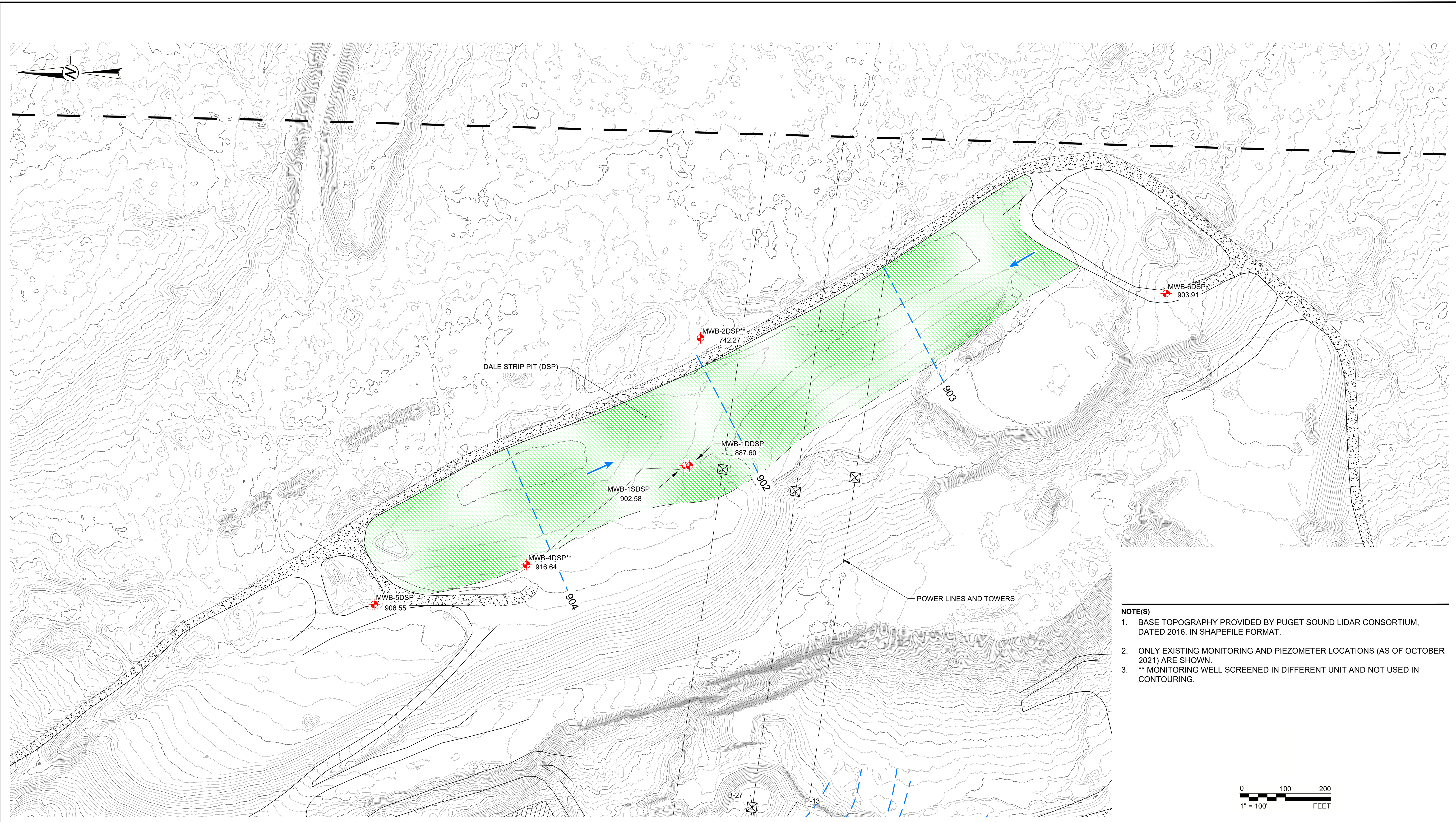
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PROJECT NO.	PHASE	REV.	FIGURE
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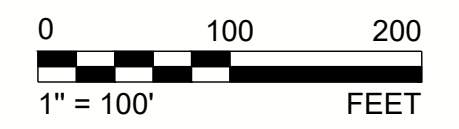
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- NOTE(S)**
1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
  2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.
  3. \*\* MONITORING WELL SCREENED IN DIFFERENT UNIT AND NOT USED IN CONTOURING.



LEGEND	
	COVER AREA
	MW-1A ALLUVIAL MONITORING WELL
	MWB-1DDSP BEDROCK MONITORING WELL
	P-14 LDA MONITORING WELL
	AMW-1 PLANT SITE MONITORING WELLS
	P-1 GOLDER PIEZOMETER
	LDA SURFACE WATER SAMPLING LOCATION
	DSP BEDROCK SAMPLING LOCATION (PORTAL)
	INTERCEPTOR TRENCH SAMPLING LOCATION
	FENCE LINE

CLIENT  
**HOLCIM**

CONSULTANT



YYYY-MM-DD	2024-05-03
DESIGNED	AW
PREPARED	TR
REVIEWED	AP
APPROVED	GZ

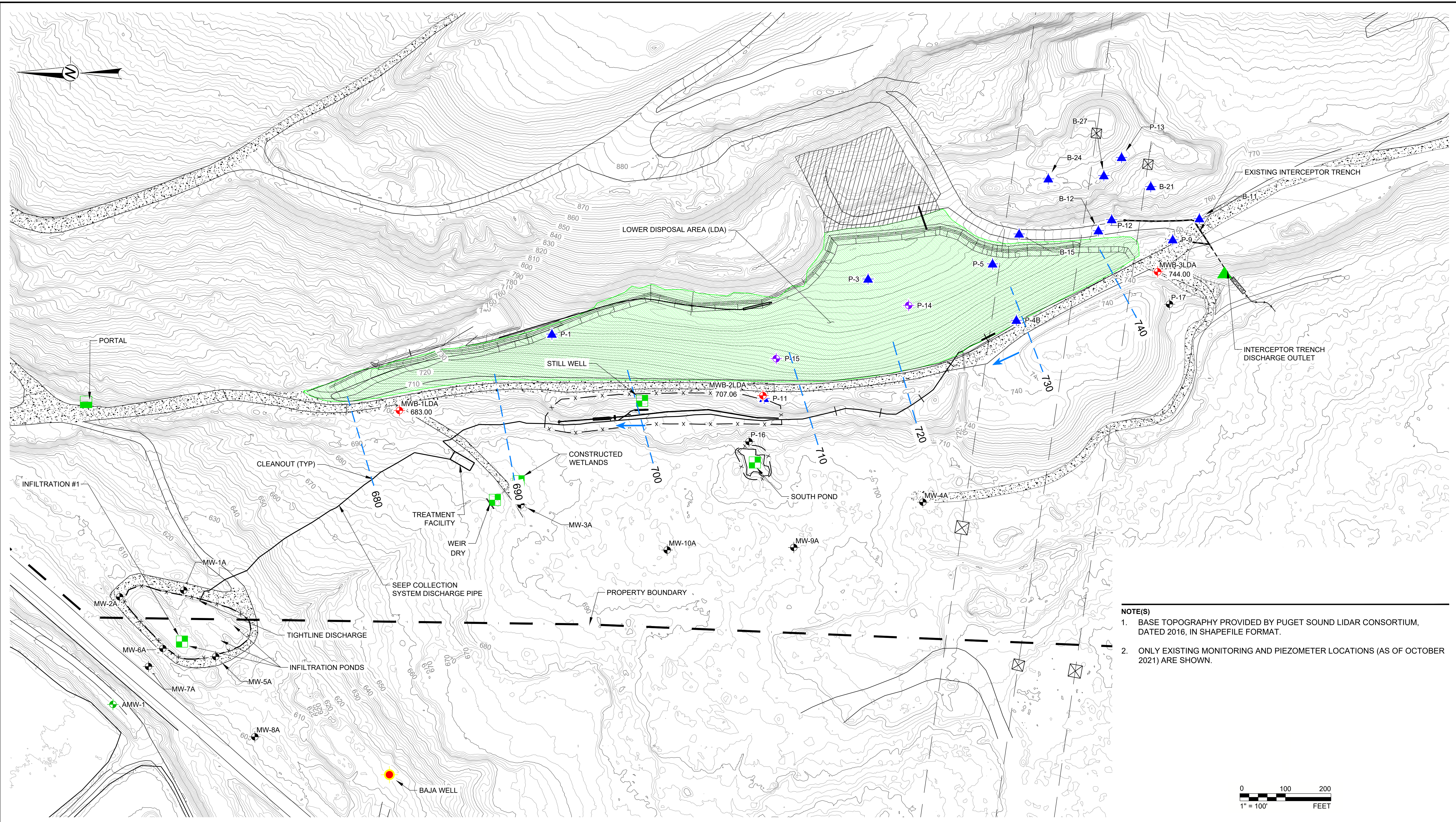
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RAVENSDALE, WA**

TITLE  
**DSP BEDROCK GROUNDWATER ELEVATIONS**

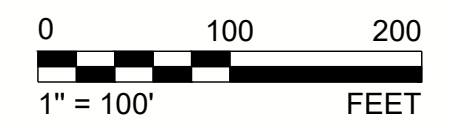
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GL152030402.001 03 A 3A

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- NOTE(S)**
1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
  2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.



	COVER AREA		P-1		PRIVATE WELL
	MW-1A	ALLUVIAL MONITORING WELL		LDA SURFACE WATER SAMPLING LOCATION	
	MWB-1DDSP	BEDROCK MONITORING WELL		DSP BEDROCK SAMPLING LOCATION (PORTAL)	
	P-14	LDA MONITORING WELL		INTERCEPTOR TRENCH SAMPLING LOCATION	
	AMW-1	PLANT SITE MONITORING WELLS		FENCE LINE	

CLIENT  
**HOLCIM**

CONSULTANT



YYYY-MM-DD	2024-05-03
DESIGNED	AW
PREPARED	TR
REVIEWED	AP
APPROVED	GZ

PROJECT  
**MARCH 4-7, 2024 GROUNDWATER ELEVATIONS  
RAVENSDALE, WA**

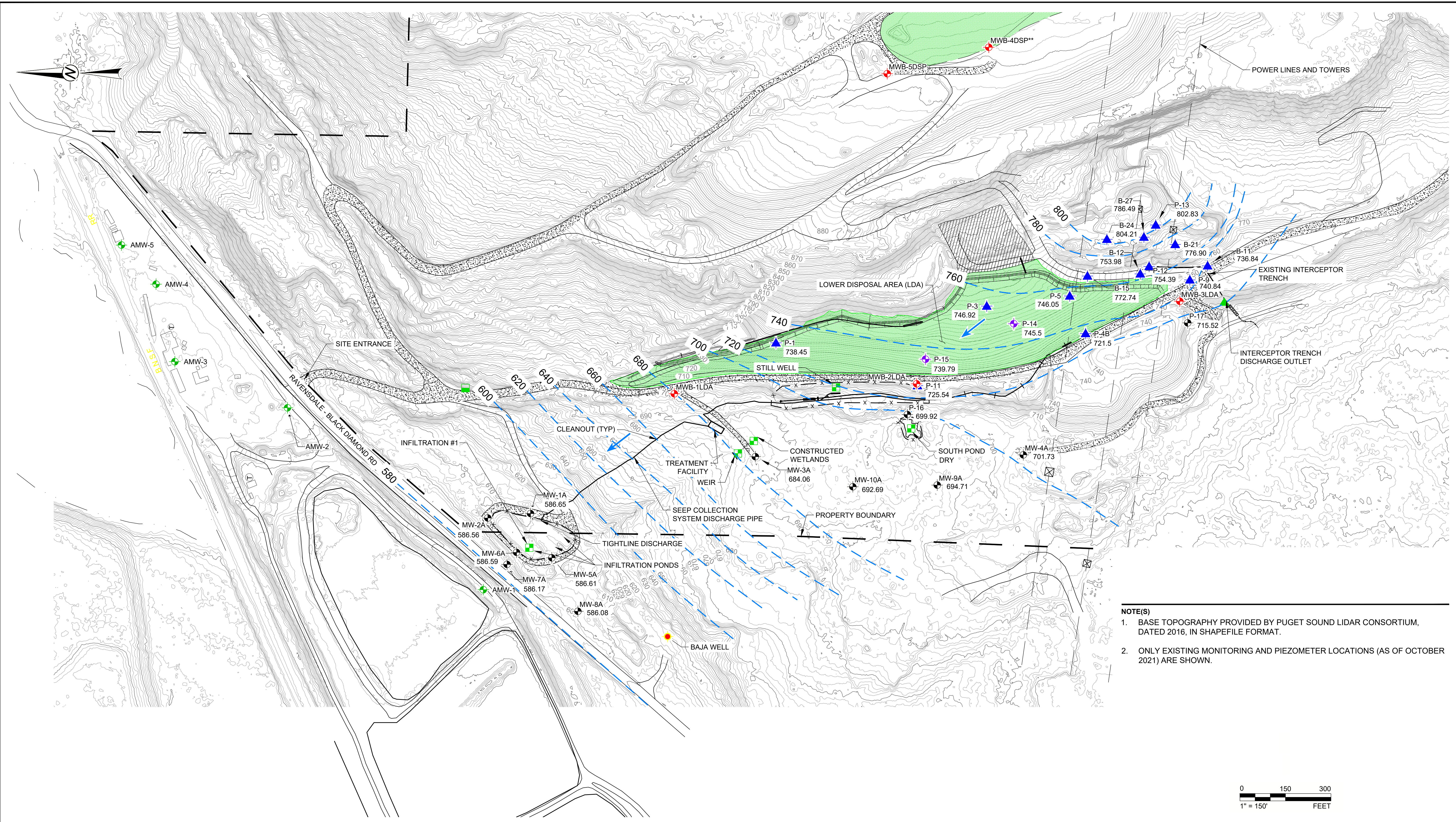
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PROJECT NO.	TASK	REV.
GL152030402.001 03		A

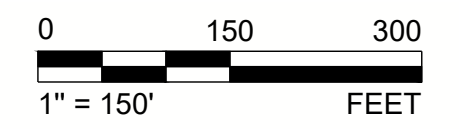
FIGURE  
**3B**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS/D

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- NOTE(S)**
1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
  2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.



LEGEND	
	COVER AREA
	P-1 GOLDER PIEZOMETER
	MW-1A ALLUVIAL MONITORING WELL
	LDA SURFACE WATER SAMPLING LOCATION
	MWB-1DDSP BEDROCK MONITORING WELL
	DSP BEDROCK SAMPLING LOCATION (PORTAL)
	P-14 LDA MONITORING WELL
	INTERCEPTOR TRENCH SAMPLING LOCATION
	AMW-1 PLANT SITE MONITORING WELLS
	FENCE LINE
	PRIVATE WELL

CLIENT  
**HOLCIM**

CONSULTANT



YYYY-MM-DD	2024-05-03
DESIGNED	AW
PREPARED	TR
REVIEWED	AP
APPROVED	GZ

PROJECT  
**MARCH 4-7, 2024 GROUNDWATER ELEVATIONS  
RAVENSDALE, WA**

TITLE  
**ALLUVIAL - SHALLOW GROUNDWATER ELEVATIONS**

PROJECT NO.	TASK	REV.	FIGURE
GL152030402.001 03		A	3C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/D

**APPENDIX A**

**Summary Data Tables for Individual  
Wells and Monitoring Locations**

**APPENDIX A-1**

## Summary of Lower Disposal Area – Surface Water Sampling Results

Table A-1A Still Well  
Table A-1B Infiltration Ponds  
Table A-1C Weir  
Table A-1D South Pond

**Table A-1a: Summary of Lower Disposal Area - Surface Water Sampling Results - Still Well  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
Preliminary Cleanup Level <sup>c</sup>	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	-	-	140
1-Feb-05	8.1	10658	-	-	6.59	12.87	2860	-	49.9	100 U	5.52	10 U	-	-
9-Mar-05	13.23	7393	-	-	7.42	12.51	2860	-	115	228	14.7	10 U	-	-
5-Apr-05	9.5	11310	-	-	10.9	12.44	2900	-	55.6	100 U	11.6	20 U	-	-
10-May-05	13.99	11871	-	-	3.6	12.53	2810	-	55.4	100 U	12.5	20 U	-	-
7-Jun-05	13.83	10888	-	-	22.6	12.54	2490	-	5 U	100 U	5 U	20 U	-	-
15-Jul-05 <sup>a</sup>	18.21	11331	-	-	14.8	12.5	3800	-	2.72	150 U	6.07	10 U	-	-
15-Jul-05 <sup>b</sup>	-	-	-	-	-	-	2540	-	39.8	100 U	7.57	20 U	-	-
9-Aug-05 <sup>a</sup>	21.45	12087	-	-	17.9	11.78	3500	-	120	288	10.9	10.1	-	-
9-Aug-05 <sup>b</sup>	-	-	-	-	-	-	2820	-	91.5	100 U	9.53	20 U	-	-
14-Sept-05 <sup>a</sup>	17.38	9507	-	-	14	12.36	3600	-	118	750 U	11.2	50 U	-	-
14-Sept-05 <sup>b</sup>	-	-	-	-	-	-	2830	-	115	363	14.4	-	-	-
5-Oct-05	13.31	11481	-	-	62.7	12.47	3020	-	85.2	100 U	11.9	20 U	-	-
9-Nov-05	9.58	14417	-	-	11	12.34	3400	-	74	150 U	10 U	10 U	-	-
9-Dec-05	6.18	7138	-	-	12.5	12.82	2800	-	14.5	150 U	1.07	10 U	-	-
19-Jan-06	8.66	8265	1.74	-	11.8	13.06	1900 J	-	15.2 J	150 U	1 U	10 U	-	-
16-Feb-06	8.13	9019	2.81	195.6	6.16	12.27	3200 J	-	13.4 J	150 U	1.89	10 U	-	-
15-Mar-06	7.98	9033	0.79	114.8	8.93	12.6	3300 J	-	2.36	150 U	2.5 J	10 U	-	-
7-Apr-06	9.98	10450	0.57	34.8	6.08	12.51	3400	-	15.2	150 U	2.83	10 U	-	-
16-May-06	12.79	11060	0.14	45.4	9.28	12.4	3500	-	4.04	150 U	1.59	10 U	-	-
23-Jun-06	13.29	11680	0.44	-	14.6	12.9	3600	-	52.6	150 U	16.5	10 U	-	-
20-Jul-06	16.2	12240	0.14	-217.8	10.4	12.47	4300	-	19.3	150 U	3.57	10 U	-	-
22-Aug-06	17.14	10920	1.22	-146	13.3	12.66	3800	-	144	150 U	9.14 J	10 U	-	-
26-Sep-06	15.72	9599	0.42	-263.3	61.4	12.59	3800	-	123	171	4.63	15.4	-	-
26-Oct-06	10.99	9955	0.88	-207.5	82.3	12.93	3600	-	161	1500 U	19.5	10 U	-	-
15-Nov-06	10.58	12040	1.82	149.2	188	12.87	3400	-	30.6 J	150 U	4.5	10 U	-	-
20-Dec-06	8.85	10990	0.71	-152	32.8	13.02	2600 J	-	52.6	150 U	13	10 U	-	-
24-Jan-07	8.29	10440	0.97	-139.8	13.7	13.05	2500 J	-	58.6	150 U	13.1	10 U	-	-
12-Feb-07	8.88	10590	0.86	-125.8	56.4	13.06	3400	-	61.3	150 U	14	10 U	-	-
27-Mar-07	9.45	9163	1.25	-42.4	18.4	11.53	2900 J	-	44.1	150 U	1.81	10 U	-	-
18-Apr-07	8.9	8155	2.63	2.3	37.2	12.77	3300 J	-	29.3	150 U	1.98	10 U	-	-
31-May-07	20.12	11050	5.3	-153.9	9.31	11.59	2800 J	-	48.5	150 U	15.1 J	10 U	-	-
20-Jun-07	18.28	12000	5.41	-122.5	16.1	12.04	4300 J	-	26.8	150 U	2.33	10 U	-	-
31-Jul-07	16.53	12200	1.7	-151.6	24.8	12.48	6000	-	87.6	150 U	1.03	10 U	-	-
29-Aug-07	17	9570	1.12	-183.1	268	12.78	4600 J	-	106	150 U	9.46	10 U	-	-
27-Sep-07	14.49	8263	52.4	-183	211	12.42	2800	-	125	150 U	15.4	10 U	-	-
26-Oct-07	9.49	6144	4.88	-147.2	92.4	12.85	3300 J	-	124	260	24.9	10.1	-	-
30-Nov-07	5.53	7703	2.13	-122.6	127	12.67	2200	-	174	184	14.1	10 U	-	-
12-Dec-07	5.24	11609	3.43	-144.8	116	12.6	4100	-	110	150 U	11.3	10 U	-	-
24-Jan-08	3.73	9649	13.81	-138	-	10.74	2500	-	101	1530	9.74	81.5	-	-
28-Feb-08	-	-	-	-	51.2	-	2900	-	58.5	150 U	12.6	10 U	-	-
25-Mar-08	7.06	8623	5.52	-11.2	17.4	11.26	3400	-	74.3	150 U	10.4	10 U	-	-
29-Apr-08	9.74	11332	4.29	-1.3	27.7	12.82	3000 J	-	76.6	150 U	13.3	10 U	-	-
20-May-08	14.53	11955	1.74	-35.8	72.7	12.82	3400	-	87.3	150 U	15.1	10 U	-	-
18-Jun-08	12.77	10267	3.34	-27	34	12.86	3200 J	-	63.2	150 U	16.9	10 U	-	-
26-Aug-08	15.86	7703	1.06	-72.8	38.3	12.67	2600 J	-	430	1220	35	49.7	759000	-
20-Nov-08	9.59	8762	0.91	-65.6	74.1	13.32	3500	-	70	150 U	16.8	10 U	848000	-
12-Feb-09	3.25	554	14.29	-	108	13.03	550	-	47.2	150 U	13.7	10 U	551000	-
19-May-09	11.53	276	8.8	26	43.4	9.83	2500 J	-	37.8	150 U	15	10 U	689000	-
22-Sep-09	12.47	9760	1.5	159.1	625	12.47	3000	-	160	200	37	10 J	990000	-
15-Dec-09	5.2	11650	1.9	237	26.3	12.85	3000	-	86	67 J	21	4.7 J	900000 J	-
22-Mar-10	9.7	1035	-	182	19.4	12.58	3000	-	73	200 U	17	20 U	870000	-
17-Jun-10	11.7	9610	0.08	-	6.59	12.48	2700	-	66	95 J	15	2 J	780000	-
21-Sep-10	15	6710	1.26	152.6	140	12.29	2400	-	300	1100 J+	39	30 J+	570000	-
8-Dec-10	8.3	10110	1	-	5.44	12.63	2600	-	64	200 U	10	20 U	860000	-
30-Mar-11	8.6	4810	0.46	136.3	13.7	14.31	2500 J	-	65	200 U	9.6	20 U	720000	-
21-Jun-11	16.6	10420	1.63	111.9	3.4	12.36	5200	-	60	200 U	9.1	1.7 J	770000	-
28-Sep-11	14.8	5270	2.34	70	66.7	12.17	2200	-	220	360	11	7.2 J	1000000	-
15-Dec-11	6	7330	2.47	104.2	18.3	13.09	2800	-	83	200 U	2.9	20 U	880000	-
21-Mar-12	5.5	11040	3.15	294.2	12	12.39	2600	-	67	200 U	4.7	20 U	760000	-
19-Jun-12	5.5	11040	3.15	294.2	12	12.39	2600	-	58	200 U	6.7	20 U	690000	-
20-Sep-12	16.1	9560	3.27	76	10.7	12.35	2900	-	84	200 U	3	20 U	830000	-
19-Dec-12	4.1	1320	10.11	303.1	5.86	9.69	700	-	75	690	4.3	71	250000	-
26-Feb-13	7.3	9950	1.77	161.8	25.5	12.66	2000	-	70	500 U	0.29 J	20 U	720000	-
23-May-13	11.5	8040	2.23	266.8	22.7	12.47	2500	-	57	500 U	3.4	20 U	690000	-
22-Aug-13	17.4	8810	2.42	10.8	38.5	12.79	2590	-	57.8	100 U	1.5	2	863000	-
19-Nov-13	9	7090	2.47	79	62.8	12.54	2720	-	52.5	100 U	4.2	2 U	909000	-
1-Apr-14	10.3	6080	0.55	128.2	37.1	6.08	1890	-	54.6	100 U	1.1	1.3 U	687000	-
22-May-14	13.6	7360	1.22	34.4	-	11.75	2330	-	60.9	100 U	2	2 U	689000	-
13-Aug-14	18.26	7844	0.33	1.2	7.3	12.53	2770	-	70	100 U	2.1	2 U	849000	-
12-Nov-14	9	585	3.17	-47.8	17.5	12.93	2450	-	83.2	100 U	3.9	2 U	837000	-
12-Feb-15	10.7	7540	2.68	-18.6	9.64	12.71	2150	-	51.6	100 U	0.3	2 U	690000	-
4-May-15	12.9	9140	2.73	110.4	26.8	13.02	2520	-	54.6	100 U	0.22 J	2 U	734000	-
5-Aug-15	19.5	8060	2.58	-29.8	61.1	12.62	2980	-	63.9	250 U	1.7	4.7 J	898000	-
3-Nov-15	11.1	5150	0.37	38.6	171	8.93	1840	-	109	270	21.7	13	747000	-
9-Feb-16	9.7	7390	0.78	80.8	7.79	13.07	2170	-	53.6	100 U	1.2	6	601000	-

**Table A-1a: Summary of Lower Disposal Area - Surface Water Sampling Results - Still Well  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)						
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Iron	Lead	Manganese	Potassium	Vanadium
Preliminary Cleanup Level <sup>c</sup>	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	-	-	140
3-May-16	14.7	7530	1.4	358.1	2.65	12.98	2480	-	54.2	100 U	1.7 J-	2	711000	-
22-Aug-16	20.5	7.91	2.1	-	59	12.95	2780	-	91.3	250 U	5.87	2.3 J	831000	-
1-Nov-16	12.3	2884	2.66	-72.1	19.1	13.17	2620	-	46.2	100 U	9.64	2 U	841000	-
31-Jan-17	7.4	8510	2.37	-167	7.35	13.17	2050	-	52.5	26 J	1.19	1.6 J	582000	-
31-May-17	14.6	7500	2.44	-	4.17	12.89	1900	-	45.4	11 J	0.68 J+	0.7 J	615000	-
17-Aug-17	18.3	8460	3.35	-84	15.9	12.79	2680	-	56.8	3 J	2.14	1.3 J	750000	-
9-Nov-17	8.2	7215	3.48	90.9	18.2	12.65	2360	-	62.1	100 U	3.52	2.5	822000	-
27-Feb-18	6.6	5312	3.75	2.3	2.49	12.11	1970	-	50.2	100 U	7.53	2.5	521000	-
2-May-18	11.1	8260	1.7	-	13	12.92	2360	-	43.4	133	21.7 J+	8.8	552000	-
21-Aug-18	20.22	6260	4.71	-42.1	5.84	12.58	2100	-	52.2	100 U	0.138	2 U	629000	-
7-Nov-18	9.7	995	6.72	126.8	20.6	9.15	1880	-	644	1350	80.2	49.1	502000 J+	-
11-Mar-19	10.6	1354	5.93	-18.7	7.19	10.31	1710	-	52.8	9.1 J	21.2	1.3 J	501000	-
9-May-19	13.8	6973	6.4	18.1	16.7	12.36	1980	-	41.6	7.9 J	13.4	0.8 J	521000	-
26-Aug-19	17.8	6405	3.91	Note 1	5.15	12.56	2570	-	42.5	100 U	15.4	1 J	722000	-
14-Nov-19	9.7	6065	0.41	-53.3	12	12.67	1750	-	167	121 J	23.9	6.5	563000	-
13-Feb-20	7.6	4936	0.37	-139	2.56	12.66	1630	-	48.6	13.6 J	6.08	3.1	490000	-
13-Aug-20	15	6817	2.55	-42.8	2.02	12.39	2620	-	41.9	6.3 J	0.86	0.9 J	659000	-
10-Dec-20	8.8	4534	0.55	-26.2	5.87	12.79	1670	-	82.7	241	11.1	10.8	510000	-
4-Mar-21	7.7	4728	0.05	-42	0.85	11.94	1470	-	61.8	100 U	1.49	8 U	512000	-
9-Jun-21	13.4	5213	0.89	-148.4	4.06	12.56	1600	-	91.7	-	5.72	-	471000	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	-	DRY	DRY
7-Jan-22	8.8	4103	2.53	55.4	3.04	12.88	1900	8.39	50.3	-	4.26	-	486000	3.34
17-Mar-22	9	4955	7.42	153.1	1.88	13.71	2070	8.23	51.7	-	5.88	-	517000	3.02
21-Jun-22	15.4	5090	2.53	156.3	3.4	11.96	2180	9.34	51.6	-	3.08	-	465000	3.7
14-Sep-22	16.6	6728	6	68	44.5	12.33	2480	7.82	52.3	-	6.96	-	669000	3.47
13-Dec-22	7.7	1419	7.42	-92.9	9.97	11.6	967	71	125	-	9.95	-	309000	11.1
15-Mar-23	7.5	7393	3.03	77	42	12.72	2070	10.1	39.1	-	6.26	-	478000	3.06
28-Jun-23	15.6	6301	2.79	-109.2	3.74	12.33	2240	27.6	42.1	-	0.977	-	450000	4.49
6-Sep-23	17.2	5942	2.55	-53.7	10.5	12.46	1740 J-	271	78.5	-	4.35	-	541000	18.1
15-Dec-23	10.3	4630	9.48	81.6	6.81	12.38	1120	25.5	35.8	-	4.91	-	367000	2.87
5-Mar-24	8.3	7467	8.51	-23	9.33	12.39	1700	7.25	50.1	-	4.7	-	434000	2.9

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not analyzed or not available
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- a North Creek Analytical, Inc.
- b Severn Trent Laboratories
- c Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- Note 1 ORP measurements not available due to faulty sensor.
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L
- mV
- NTU



**Table A-1b: Summary of Lower Disposal Area - Surface Water Sampling Results - Infiltration Ponds #1 Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>c</sup>	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
1-Feb-05	8.17	1315	-	-	8.13	9.95	874	-	84.9	4.99	-	-
9-Mar-05	14.04	1183	-	-	23.00	9.59	960	-	96.2	3.92	-	-
5-Apr-05	11.00	1115	-	-	43.70	9.80	800	-	62.3	3.21	-	-
10-May-05	14.91	1275	-	-	564.00	9.83	844	-	76.5	5 U	-	-
7-Jun-05	15.11	1140	-	-	239.00	9.61	804	-	84.3	5 U	-	-
15-Jul-05 <sup>a</sup>	23.56	1276	-	-	94.40	9.30	1100	-	92.5	4.14	-	-
15-Jul-05 <sup>b</sup>	-	-	-	-	-	-	874	-	99.9	3.82	-	-
9-Aug-05 <sup>a</sup>	19.05	1744	-	-	57.20	9.44	1000	-	123	5.1	-	-
9-Aug-05 <sup>b</sup>	-	-	-	-	-	-	1030	-	140	6.12	-	-
14-Sept-05 <sup>a</sup>	13.59	1154	-	-	99.80	8.97	790	-	110	3.54	-	-
14-Sept-05 <sup>b</sup>	-	-	-	-	-	-	806	-	118	5.18	-	-
5-Oct-05	14.82	970	-	-	82.70	8.98	736	-	89.3	2.83	-	-
9-Nov-05	8.43	1285	-	-	135.00	8.83	970	-	46	10 U	-	-
9-Dec-05	2.12	1361	-	-	14.20	9.71	980	-	64.6	3.11	-	-
19-Jan-06	6.66	728	7.96	-	64.70	10.13	470 J	-	40.7	2.29	-	-
16-Feb-06	2.63	624	9.75	30.3	25.20	8.54	530 J	-	13.3	1 U	-	-
15-Mar-06	7.16	639	11.61	236.8	23.10	9.22	530 J	-	22.5	1 U	-	-
7-Apr-06	11.91	1013	10.81	27.8	18.80	9.98	780	-	63.8	3.24	-	-
16-May-06	15.58	1160	7.58	50.6	16.50	9.57	950	-	77.9	2.49	-	-
23-Jun-06	18.63	1261	7.41	-	126.00	9.85	920	-	70.7	3.65	-	-
20-Jul-06	20.65	932	5.36	-35.1	279.00	8.94	980	-	108	3.48	-	-
22-Aug-06	15.65	860	7.64	86.5	218.00	9.22	760	-	116	3.84	-	-
26-Sep-06	21.86	903	8.98	-72.8	263.00	8.89	820	-	75.8	3.06	-	-
26-Oct-06	11.04	702	9.97	90.4	221.00	8.56	760	-	68.3	1.66	-	-
15-Nov-06	7.73	715	9.21	149.2	33.60	9.07	500	-	20.8	2.29	-	-
20-Dec-06	4.98	1082	9.05	86.3	9.29	9.78	680	-	51.3	2.67	-	-
24-Jan-07	2.12	1058	10.71	130.4	20.50	9.97	640 J	-	66.1	7.58	-	-
12-Feb-07	10.10	1218	12.40	-61.8	103.00	9.98	860	-	90.1	4.49	-	-
27-Mar-07	7.94	772	9.67	13.3	25.50	8.27	540 J	-	49.8	2.74	-	-
18-Apr-07	7.52	2418	9.23	84.4	58.10	11.73	1400	-	79.2	10.5	-	-
31-May-07	15.45	1879	6.47	-92.2	3.15	9.79	1300	-	165	8.11	-	-
20-Jun-07	24.18	1925	10.88	-52.1	251.00	10.24	1300 J	-	144	5.34	-	-
31-Jul-07	19.05	1418	5.97	-36.1	128.00	9.81	1200	-	140	7.23	-	-
29-Aug-07	18.00	1193	5.60	-35.4	158.00	9.29	1300 J	-	164	7.01	-	-
27-Sep-07	14.97	987	5.44	45.9	186.00	8.99	970	-	196	5.49	-	-
26-Oct-07	2.66	504	6.02	63.1	282.00	8.64	770 J	-	42.9	2.25	-	-
30-Nov-07	1.86	955	9.77	190.1	163.00	10.02	570	-	48.9	1.62	-	-
12-Dec-07	4.22	790	11.11	126.8	56.00	9.40	520	-	34.3	1.67	-	-
24-Jan-08	2.12	875	19.35	142.0	-	8.68	640	-	42.8	1.66	-	-
28-Feb-08	-	-	-	-	25.60	-	510	-	41.3	2.66	-	-
25-Mar-08	5.27	937	14.46	91.0	86.80	9.60	630	-	50.2	2.15	-	-
29-Apr-08	9.02	1079	10.56	190.8	61.30	9.87	670 J	-	66	2.87	-	-
20-May-08	15.42	1191	7.58	160.0	91.40	9.75	820	-	85.9	4.85	-	-
18-Jun-08	12.94	1124	9.62	167.3	76.90	9.65	810 J	-	77.6	3.67	-	-
26-Aug-08	15.95	880	3.75	53.5	490.00	8.00	650 J	-	76.9	1.64	144000	-
20-Nov-08	6.91	897	7.02	183.5	376.00	10.22	960	-	87.2	4.21	313000	-
12-Feb-09	1.29	-	13.72	-	10.20	10.52	800	-	118	5.84	271000	-
19-May-09	11.90	862	6.52	71.9	133.00	9.59	840 J	-	91.3	3.99	238000	-
18-Nov-09	5.70	852	6.61	185.9	68.00	9.88	490	-	40	4.4	160000	-
15-Dec-09	2.30	1162	8.22	460.1	63.30	9.97	640	-	71	7.2	220000	-
24-Mar-10	13.00	1299	5.83	408.2	13.00	10.48	1000	-	140	8.5	340000	-
17-Jun-10	12.00	947	4.45	332.1	33.60	10.56	540	-	62	6.2	220000	-
22-Sep-10	15.60	1736	3.14	342.5	33.00	9.84	1300	-	130	21	360000	-
8-Dec-10	5.40	1382	7.73	371.1	12.10	10.75	870	-	100	12	300000	-
29-Mar-11	9.60	627	5.16	577.6	19.80	11.05	760 J	-	78	3.1	270000	-
21-Jun-11	21.00	1778	5.46	239.1	11.60	10.44	1700 J	-	78	11	340000	-
27-Sep-11	14.80	1382	3.98	239.8	33.40	9.58	1600	-	120	13	670000	-
14-Dec-11	3.10	1046	5.60	281.7	15.70	9.93	1100	-	87	14	330000	-
20-Mar-12	6.10	986	11.04	271.1	11.70	10.32	500	-	71	3.3	180000	-
19-Jun-12	14.80	862	7.83	352.2	38.80	9.57	500	-	64	3.7	180000	-
20-Sep-12	12.40	1961	1.81	419.0	10.30	9.43	4600 J	-	130	2.1	440000	-
19-Dec-12	4.10	1320	10.11	303.1	5.86	9.69	700	-	75	4.3	250000	-
25-Feb-13	7.10	1963	9.30	234.7	26.60	11.30	1000	-	90	6	370000	-
22-May-13	10.50	4380	7.72	411.7	202.00	12.56	1400	-	25	11	530000	-
21-Aug-13	20.10	12850	1.24	-2.3	18.20	12.18	3430	-	106	47.5	1180000	-
20-Nov-13	5.70	1198	8.03	131.9	22.20	10.23	704	-	41.3	6.2	260000	-
1-Apr-14	9.80	1708	9.77	136.4	8.79	12.26	832	-	24.1	3	317000	-
23-May-14	12.63	6574	8.63	120.8	-	12.61	2120	-	4.8	35.4	811000	-
13-Aug-14	18.99	3273	6.29	77.7	89.00	12.34	1660	-	71.4	6.3 J	548000	-
11-Nov-14	8.80	578	3.55	179.2	62.50	12.73	2000	-	56.7	20.4	739000	-
11-Feb-15	9.70	487	9.97	66.2	42.00	9.40	337	-	9.1	0.9	87700	-
4-May-15	14.30	4210	5.60	281.2	7.67	12.53	1670	-	35.3	7.4	589000	-
5-Aug-15	19.90	4890	5.14	18.8	89.80	11.79	3080	-	85.4	18.1	1150000	-
3-Nov-15	9.20	760	6.39	129.9	34.60	9.78	707	-	23.5	5.3	235000	-
9-Feb-16	10.20	-	10.29	100.3	8.01	12.78	1330	-	5.3	24.8	530000	-





**Table A-1b: Summary of Lower Disposal Area - Surface Water Sampling Results - Infiltration Ponds #1 Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>c</sup>	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
2-May-16 <sup>d</sup>	-	-	-	-	-	-	2490	-	24	37 J-	996000	-
23-Aug-16	19.30	4250	3.95	386.5	46.30	11.76	2970	-	105	14.3	989000	-
1-Nov-16	11.70	229	9.26	185.2	48.90	10.33	508	-	12.6	0.792	164000	-
1-Feb-17	2.40	8890	10.78	26.1	3.17	13.36	2220	-	10.1	46.8	854000	-
30-May-17	14.70	6800	56.90	17.7	1.38	12.73	1720	-	1.75	31.6 J+	759000	-
17-Aug-17	18.10	5410	3.88	-19.5	14.90	11.93	3080	-	62.6	32.8	1150000	-
10-Nov-17	7.90	2016	7.72	64.4	30.70	12.00	1520	-	63	32.2	578000	-
27-Feb-18	5.70	5062	8.76	42.0	3.74	12.28	1620	-	15	54.6	678000	-
1-May-18	12.30	6620	5.25	-	1.94	12.73	2070	-	2.42	30.1 J+	745000	-
21-Aug-18	23.85	5058	2.95	106.0	5.62	11.64	3090	-	77.3	28.8	1200000	-
6-Nov-18	11.70	1078	3.50	-5.4	46.90	8.48	1180	-	6.03	5.44	359000 J+	-
13-Mar-19	3.90	331	8.08	183.7	29.10	10.72	455	-	11.9	2.21	185000	-
8-May-19	17.20	6113	6.38	6.4	6.17	12.39	2040	-	7.7	26.8	830000	-
26-Aug-19	24.22	4177	2.47	Note 1	7.21	9.12	2840	-	17.2 J	5.27 J	1020000	-
13-Nov-19	8.70	2523	1.61	-201.7	33.00	8.67	1930	-	32.5	4.44	726000	-
12-Feb-20	7.80	971	7.99	150.3	16.00	7.92	836	-	14.3	3.96	243000	-
12-Aug-20	18.30	3655	4.33	123.5	5.74	8.98	2570	-	20.8	2.59	988000	-
9-Dec-20	8.30	740	7.80	202.0	18.40	8.21	632	-	14.9	5.11	207000	-
3-Mar-21	8.30	1446	7.87	217.0	15.50	8.56	1310	-	35.3	6.11	509000	-
9-Jun-21	15.10	2963	4.88	174.9	4.37	8.79	2400	-	23.7	1.51	923000	-
13-Oct-21	9.30	2563	4.73	34.2	39.30	8.84	2610 J-	16.1	19.7	6.12	831000	3.11
5-Jan-22	1.20	510	9.85	236.4	14.00	8.01	679	6.32	12.1	6.31	226000	3.36
16-Mar-22	11.10	786	10.41	172.1	12.8	7.45	733	7.59	10.6	4.77	236000	1.82
23-Jun-22	14.90	1982	2.58	156.8	5.3	8.34	1650	8.5	10.2	3.44	549000	0.97
28-Sep-22	16.20	3251.00	7.06	-49.10	3.18	8.75	2730 J	24	5.88	1.11	1040000	0.516
5-Jan-23	8.80	1047.00	8.40	191.00	8.47	8.16	1560	18.8	26.7	2.49	567000	4.45
13-Mar-23	7.20	1831.00	11.21	177.80	31.80	8.29	1050	8.27	16.3	5.8	401000	4
28-Jun-23	19.90	3514.00	4.58	91.00	4.73	8.64	2270	8.82	8.35	1.37	879000	0.935 J
8-Sep-23	19.50	3882.00	2.26	48.50	14.50	8.96	2550 J-	10.2	11.5	3.91	929000	0.929
15-Dec-23	6.90	2395.00	9.94	163.00	3.19	8.49	1240	22.7	15.3	2.16	447000	3.31
4-Mar-24	6.80	1477.00	7.24	237.40	9.50	8.17	1370 J	13.3	21.8	2.86	471000	3.16

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not analyzed or not available
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- a North Creek Analytical, Inc.
- b Severn Trent Laboratories
- c Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- d Field parameters for Infiltration Ponds #1 were inadvertently not collected during May 2016 sampling
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- Note 1 ORP measurements not available due to faulty sensor.
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L
- mV
- NTU



**Table A-1c: Summary of Lower Disposal Area - Surface Water Sampling Results - Weir Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen-Chem	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	pH (standard units)	Weir Flow Rate (gpm)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium	
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	140	
1-Feb-05	8.47	2205	-	-	6.24	10.23	-	1440	-	149	10.7	-	-	
9-Mar-05	11.38	2054	-	-	7.80	10.15	2.64	1630	-	200	11.9	-	-	
5-Apr-05	7.7	2169	-	-	7.99	10.42	10.00	1420	-	129	8.61	-	-	
10-May-05	14.1	1912	-	-	562.00	9.87	25.00	1210	-	105	7.63	-	-	
7-Jun-05	15.74	2588	-	-	11.60	10.03	6.82	1570	-	138	10.1	-	-	
15-Jul-05 <sup>a</sup>	20.38	3184	-	-	8.91	10.36	0.94	3200	-	192	9.98	-	-	
15-Jul-05 <sup>b</sup>	-	-	-	-	-	-	-	1990	-	189	10.8	-	-	
9-Aug-05 <sup>a</sup>	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-	
9-Aug-05 <sup>b</sup>	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-	
14-Sept-05 <sup>a</sup>	15.60	3792	-	-	14.50	9.92	0.07	2800	-	208	57.8	-	-	
14-Sept-05 <sup>b</sup>	-	-	-	-	-	-	-	2730	-	223	73.3	-	-	
5-Oct-05	12.96	3237	-	-	4.99	9.89	0.32	2150	-	170	12.5	-	-	
9-Nov-05	8.40	2545	-	-	13.80	9.64	7.50	1900	-	78.2	10 U	-	-	
9-Dec-05	3.34	1377	-	-	8.03	10.43	5.00	1700	-	130	6.12	-	-	
19-Jan-06	7.37	1424	7.92	-	12.20	10.61	7.50	1000 J	-	89.5	4.81	-	-	
16-Feb-06	3.74	1680	12.19	*	14.60	10.78	7.50	1400 J	-	105	5.46	-	-	
15-Mar-06	7.21	1634	12.61	194.4	7.44	10.63	5.28	1300 J	-	128	6.38	-	-	
7-Apr-06	14.33	2055	8.54	55.3	9.21	10.84	3.17	1500	-	143	6.63	-	-	
16-May-06	21.65	2474	6.09	11.6	9.37	10.69	0.83	2000	-	157	8.19	-	-	
23-Jun-06	24.58	2820	6.66	-	15.40	11.64	0.63	1400	-	154	13.1	-	-	
20-Jul-06	21.17	3291	8.56	-85.5	68.30	10.75	DRY*	2300	-	131	9.41	-	-	
22-Aug-06	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-	
26-Sep-06	16.38	2997	3.00	-57.1	31.60	9.92	DRY*	2900	-	103	16.8	-	-	
26-Oct-06	11.00	2650	5.35	59.6	25.80	9.65	0.63	2300	-	132	26.3	-	-	
15-Nov-06	8.51	1708	8.16	-35.7	34.70	10.15	17.14	1200	-	67.4	8.07	-	-	
20-Dec-06	5.07	1927	8.84	14.8	7.94	10.67	10.91	1200	-	99.7	4.78	-	-	
24-Jan-07	2.30	1846	10.72	5.9	11.70	10.37	9.00	1100 J	-	126	16.1	-	-	
12-Feb-07	9.26	1777	11.75	-91.3	26.70	10.56	6.00	1100	-	139	7.12	-	-	
27-Mar-07	8.71	1219	9.18	-12.6	13.80	8.70	24.00	840 J	-	88.5	4.86	-	-	
18-Apr-07	7.39	4563	8.65	41.0	16.80	12.12	9.00	2000	-	97.5	32.5	-	-	
31-May-07	-	3916	6.33	-149.5	10.70	10.96	1.36	2100	-	275	22.9	-	-	
20-Jun-07	22.59	3336	8.50	-20.4	42.50	10.46	0.29	2400 J	-	255	27.4	-	-	
31-Jul-07	18.94	3915	7.85	-69.2	41.30	10.92	0.06	3300	-	236	12.6	-	-	
29-Aug-07	21.52	2406	5.75	-5.3	24.10	9.72	DRY*	2300 J	-	129	8.45	-	-	
27-Sep-07	13.88	2009	5.75	15.5	28.30	9.56	0.06	1600	-	207	4.37	-	-	
26-Oct-07	7.68	1662	9.06	80.5	13.00	9.92	2.04	1800 J	-	132	7.53	-	-	
30-Nov-07	4.34	2446	9.63	26.7	11.70	9.86	2.63	1600	-	135	8.27	-	-	
12-Dec-07	5.88	2056	10.34	39.3	10.30	10.18	2.63	1500	-	105	5.73	-	-	
24-Jan-08	3.05	1601	15.03	42.3	-	9.40	2.63	1000	-	87.4	4.06	-	-	
28-Feb-08	-	-	-	-	9.22	-	4.13	1200	-	118	8.92	-	-	
25-Mar-08	6.80	1622	12.37	95.1	16.40	9.98	5.25	1100	-	110	3.86	-	-	
29-Apr-08	7.53	1997	9.10	137.4	11.90	10.29	7.50	1100 J	-	124	7.05	-	-	
20-May-08	16.35	2504	9.03	77.4	32.90	10.92	7.50	1700	-	146	14.7	-	-	
18-Jun-08	11.82	2925	8.32	68.3	25.70	11.14	1.69	1800 J	-	208	8.48	-	-	
26-Aug-08	17.69	3376	7.98	62.8	41.10	10.43	0.84	2200 J	-	287	13.2	647000	-	
20-Nov-08	8.10	1447	9.65	112.0	43.70	11.00	11.25	1400	-	121	16.2	485000	-	
12-Feb-09	2.99	1214	14.46	-	14.60	10.93	4.06	1200	-	219	11.8	434000	-	
19-May-09	13.05	1962	7.92	32.6	36.70	10.23	7.50	1800 J	-	210	13.7	521000	-	
24-Sep-09	16.30	2792	1.59	263.8	13.70	8.82	DRY*	2400	-	130	53	730000	-	
15-Dec-09	2.80	1702	7.47	343.0	-	10.18	6.67	1200	-	170	22	330000	-	
24-Mar-10	13.80	2629	2.09	270.7	263.00	11.46	6.03	1800	-	180	20	600000	-	
17-Jun-10	12.00	1876	0.01	-	157.00	10.76	14.15	1200	-	27	3.9	410000	-	
20-Sep-10	11.40	3100	6.34	198.6	12.20	10.63	2.38	2800	-	250	40	580000	-	
7-Dec-10	6.60	2455	4.03	154.0	11.00	11.61	16.69	1600	-	240	26	510000	-	
30-Mar-11	8.10	848	0.22	136.1	31.50	13.08	58.61	940 J	-	91	9.9	330000	-	
22-Jun-11	14.40	2286	5.68	164.2	13.20	11.28	5.68	2600 J	-	120	25	490000	-	
27-Sep-11	16.20	1911	4.62	253.4	39.10	10.07	13.40	2100	-	170	45	880000	-	
15-Dec-11	4.10	1439	7.40	139.4	10.60	10.33	6.65	1400	-	180	21	500000	-	
20-Mar-12	5.20	1687	8.50	27.5	9.60	11.17	60.00	410	-	130	7.4	290000	-	
18-Jun-12	14.70	2336	0.11	326.9	15.60	11.25	60.00	410	-	130	9.8	430000	-	
20-Sep-12	15.30	2972	7.81	106.0	12.10	9.55	0.10	1400 J	-	130	2.2	450000	-	
18-Dec-12	4.80	1908	9.34	-14.2	7.41	10.28	18.50	870	-	120	8.1	390000	-	
26-Feb-13	5.80	6470	11.27	161.6	22.00	12.46	9.90	1800	-	99	62	710000	-	
23-May-13	10.50	1625	9.14	291.8	14.40	9.93	4.84	980	-	94	21	310000	-	
21-Aug-13	15.70	7260	7.69	51.6	9.00	10.71	0.32	2780	-	342	18.3	954000	-	
19-Nov-13	8.10	2032	10.00	87.4	9.95	11.19	25.40	1270	-	70.8	16.9	487000	-	
1-Apr-14	13.70	3420	9.11	129.4	59.00	12.57	20.77	1300	-	37.3	12	572000	-	
23-May-14	12.83	986	11.63	105.7	-	9.36	-	822	-	47	13.9	274000	-	
13-Aug-14	18.38	2000	5.52	63.6	8.93	8.02	2.00	1250	-	13.4	0.6	326000	-	
11-Nov-14	6.70	259	9.77	164.8	4.27	8.09	1.50	955	-	19	0.2	315000	-	
12-Feb-15	10.00	669	11.13	142.9	2.75	8.62	40.00	1490	-	14.9	1.8	155000	-	
4-May-15	13.70	1293	8.69	181.7	155.00	9.38	0.09	1100	-	43.3	11.3	292000	-	
5-Aug-15	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-	
3-Nov-15	9.70	1296	7.66	165.6	13.70	8.03	1.98	1200	-	11.4	0.8	355000	-	
9-Feb-16	9.10	838	8.79	181.4	2.17	7.87	0.69	529	-	7.8	0.5 J+	145000	-	
2-May-16	23.40	1126	6.16	128.1	7.59	7.63	DRY*	688	-	7.6	0.06 J-	162000	-	
23-Aug-16	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-	



**Table A-1c: Summary of Lower Disposal Area - Surface Water Sampling Results - Weir Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters							Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	pH (standard units)	Weir Flow Rate (gpm)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	140
1-Nov-16	11.70	332	7.12	97.5	7.71	7.76	7.24	703	-	9.18	0.3	207000	-
1-Feb-17	2.30	925	11.55	39.1	2.04	7.71	0.30	567	-	4.9	0.09 J	135000	-
30-May-17	13.30	817	57.50	8.3	22.20	7.40	0.30	516	-	13.1	0.08 J+	94300	-
17-Aug-17	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
9-Nov-17	7.00	851	7.57	88.0	67.30	8.43	-	865	-	36.6	10.7	236000	-
27-Feb-18	5.50	498	10.68	106.0	5.39	8.60	-	503	-	9.7	1.23	127000	-
1-May-18	12.80	894	8.87	-	2.39	7.97	-	656	-	7.81	0.1 UJ	195000	-
21-Aug-18	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
7-Nov-18	8.50	1079	7.37	166.6	5.48	7.94	-	1030	-	15.7	0.089 J	322000 J+	-
11-Mar-19	5.00	525	9.79	146.3	1.28	7.76	-	541	-	4.21	0.1 U	133000	-
9-May-19	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
26-Aug-19	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
14-Nov-19	7.40	842	4.10	214.3	19.00	7.74	DRY*	783	-	11.3	0.076 J	242000	-
12-Feb-20	7.20	401	8.41	-38.3	2.47	7.53	3.96	348	-	4.81	0.1 U	86900	-
13-Aug-20	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
10-Dec-20	7.20	581	6.72	185.0	0.96	7.80	8	560	-	5.13	0.1 U	126000	-
4-Mar-21	4.90	427	7.11	146.0	2.50	7.86	3	424	-	3.7	0.114	80600	-
10-Jun-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	4.90	269	10.81	211.8	15.90	7.63	300	228	5.52	4.33	0.698	50500	1
17-Mar-22	7.00	410	9.46	157.2	0.91	7.43	8	394	5.37	3.5	0.055 J	86000	1
21-Jun-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12-Sep-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	5.60	712	6.9	12.5	1.29	7.83	-	535	10.5	3.27	0.113 J+	111000	1.01
15-Mar-23	5.10	758.2	6.46	202.5	9.22	7.49	0.1	437	5.92	3.49	0.197	96000	0.825
26-Jun-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
7-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
5-Mar-24	4.10	673	7.31	117.1	9.45	7.09	1.59	445	5.28	4.74	2.23	76800	1.16

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- \* Sample collected from constructed wetland (alternative sampling location) upstream of weir
- Not analyzed or not available
- Dry Weir dry; unable to collect field parameters or samples
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- gpm Gallons per minute
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit

**Table A-1d: Summary of Lower Disposal Area - Surface Water Sampling Results - South Pond Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>c</sup>	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
1-Feb-05	7.13	9580	-	-	4.19	13.02	4080	-	174	24.3	-	-
9-Mar-05	14.28	9979	-	-	6.79	12.52	4640	-	240	42.1	-	-
5-Apr-05	9.90	10820	-	-	43.50	11.99	3830	-	133	9.85	-	-
10-May-05	15.10	6091	-	-	45.60	12.14	3270	-	92.9	25.5	-	-
7-Jun-05	14.49	8257	-	-	24.20	12.19	3780	-	132	24.7	-	-
15-Jul-05 <sup>a</sup>	18.34	6937	-	-	6.89	11.69	5000	-	281	31.8	-	-
15-Jul-05 <sup>b</sup>	-	-	-	-	-	-	4260	-	237	34.2	-	-
9-Aug-05 <sup>a</sup>	23.53	7654	-	-	17.1	10.26	6600	-	322	44.5	-	-
9-Aug-05 <sup>b</sup>	-	-	-	-	-	-	5580	-	340	37.1	-	-
14-Sept-05 <sup>a</sup>	18.55	6730	-	-	10.00	10.51	5100	-	235	19.3	-	-
14-Sept-05 <sup>b</sup>	-	-	-	-	-	-	4750	-	268	34.2	-	-
5-Oct-05	12.14	4323	-	-	17.60	9.80	3090	-	130	26.5	-	-
9-Nov-05	6.78	3784	-	-	11.80	11.12	2600	-	121	21.7	-	-
9-Dec-05	3.22	8745	-	-	12.90	12.85	3900	-	175	14.1	-	-
19-Jan-06	7.73	5215	5.43	-	13.30	12.52	2000 J	-	20.3	3.24	-	-
16-Feb-06	3.96	9342	8.97	231.2	9.08	12.30	4100 J	-	43	25.6	-	-
15-Mar-06	8.72	12910	9.59	222.1	7.64	12.60	5100 J	-	38.6	41.8	-	-
7-Apr-06	14.26	15220	6.90	18.9	3.65	12.92	5700	-	48.5	65.6	-	-
16-May-06	19.75	10880	2.61	33.8	15.40	12.46	5100	-	130	92.1	-	-
23-Jun-06	22.76	7586	2.98	-	14.10	12.65	5100	-	130	57.9	-	-
20-Jul-06	24.33	7457	0.73	-148.4	16.70	11.33	6400	-	272	51.3	-	-
22-Aug-06	15.03	7481	3.75	61.0	14.10	10.40	6100	-	318	33.2	-	-
26-Sep-06	17.30	8409	1.31	-312.4	15.10	12.38	5500	-	230	45.7	-	-
26-Oct-06	10.95	6075	4.10	-265.6	13.30	12.18	4600	-	243	41.5	-	-
15-Nov-06	8.07	5022	7.71	-152.7	21.50	12.24	2600	-	76.2	3.68	-	-
20-Dec-06	6.32	9148	5.73	-139.6	12.20	12.85	2900 J	-	46.1	1.28	-	-
24-Jan-07	2.15	12690	9.24	-98.4	9.74	13.10	3000 J	-	19.2	26.8	-	-
12-Feb-07	9.35	14110	8.43	-86.7	32.50	13.13	4700	-	96.2	83.5	-	-
27-Mar-07	9.16	10560	8.41	-46.2	7.42	11.31	2900 J	-	5.98	14.5	-	-
18-Apr-07	8.27	14570	8.32	10.8	10.30	12.79	5200	-	19.8	22.1	-	-
31-May-07	23.66	13410	6.42	-95.0	31.20	11.77	5100	-	78.4	50.4	-	-
20-Jun-07	26.35	10050	5.53	-195.7	27.90	12.29	5300 J	-	112	38.2	-	-
31-Jul-07	21.39	6666	4.76	-106.4	72.00	10.86	6300	-	208	68.8	-	-
29-Aug-07	22.61	6950	1.57	-193.4	61.80	12.05	6300 J	-	149	30.6	-	-
27-Sep-07	11.45	5059	2.66	-180.4	78.40	11.43	4800	-	190	17.4	-	-
26-Oct-07	6.98	4147	1.44	-204.7	39.50	12.48	3900 J	-	168	25.5	-	-
30-Nov-07	2.86	5030	8.50	-74.9	12.40	12.20	2600	-	121	14.3	-	-
12-Dec-07	4.45	3564	2.03	-141.8	20.70	10.93	2700	-	79.3	9.87	-	-
24-Jan-08	1.13	4859	4.10	-186.8	-	11.19	2200	-	86.1	6.79	-	-
28-Feb-08	-	-	-	-	18.10	-	2800	-	183	73.4	-	-
25-Mar-08	7.37	5413	7.88	-58.2	122.00	12.29	2900	-	182	13	-	-
29-Apr-08	8.43	3685	9.04	59.3	19.20	11.63	2400 J	-	152	16	-	-
20-May-08	18.03	3554	6.69	58.0	156.00	11.01	2100	-	137	38.3	-	-
18-Jun-08	13.01	5680	6.46	57.5	71.80	11.14	4000 J	-	279	34.4	-	-
26-Aug-08	18.02	2800	5.72	16.9	49.80	10.08	2500 J	-	91.7	18.6	557000	-
20-Nov-08	7.46	2011	9.04	38.3	23.60	10.49	2300	-	72.9	9.2	566000	-
12-Feb-09	1.63	1870	11.74	-	46.10	10.83	2300	-	129	17.2	738000	-
19-May-09	12.73	1895	5.37	-16.4	168.00	9.82	1700 J	-	78.9	11.3	515000	-
23-Sep-09	21.50	4190	0.09	175.1	14.40	9.70	4100	-	120	99	1300000	-
14-Dec-09	+	+	+	+	+	+	+	-	+	+	+	+
22-Mar-10	13.10	2480	-	342.0	15.60	10.05	1700	-	76	34	520000	-
17-Jun-10	13.40	2429	5.14	-	26.10	10.77	2100	-	120	89	630000	-
21-Sep-10	16.30	2733	1.10	216.8	21.50	9.81	2200	-	25	27	510000	-
8-Dec-10	6.00	1994	2.70	-	18.70	10.05	1400	-	53	18	490000	-
30-Mar-11	9.10	509	0.37	179.2	13.80	12.04	730 J	-	36	14	260000	-
21-Jun-11	21.60	2092	1.90	192.2	13.60	10.07	2800 J	-	62	29	380000	-
27-Sep-11	14.60	1516	9.34	220.4	32.50	9.34	1800	-	78	36	780000	-
15-Dec-11	3.00	1449	1.90	94.6	13.80	10.75	2100	-	140	74	630000	-
21-Mar-12	2.60	1088	8.10	285.7	13.10	9.95	780	-	30	7.2	240000	-
19-Jun-12	17.10	1747	5.54	345.3	10.80	9.93	780	-	70	29	400000	-
20-Sep-12	-	-	-	-	-	-	-	-	-	-	-	-
19-Dec-12	4.00	1771	6.37	104.0	6.12	10.71	1300	-	47	18	440000	-
26-Feb-13	6.90	3720	5.40	196.7	10.60	11.86	1100	-	140	39	690000	-
23-May-13	11.50	2335	5.21	323.5	44.10	12.48	1800	-	130	50	530000	-
22-Aug-13	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
19-Nov-13	8.20	1256	4.12	79.3	18.20	9.89	1260	-	39.8	20.4	487000	-
1-Apr-14	15.30	2053	4.42	130.9	772.00	11.27	1800	-	113	42.2	649000	-
23-May-14	14.15	2187	5.50	77.3	-	10.19	1860	-	112	23.6	623000	-
13-Aug-14	20.29	1298	5.35	40.1	24.80	9.63	949	-	44.9	22.8	306000	-
12-Nov-14	1.30	315	4.55	-0.5	22.10	10.45	2440	-	122	34.2	804000	-
12-Feb-15	11.10	1267	4.01	-8.2	23.90	10.20	905	-	27.2	9.6	320000	-
4-May-15	15.60	3200	4.35	240.5	9.21	10.42	2280	-	154	30.8	774000	-
5-Aug-15	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
3-Nov-15	8.30	1143	2.01	88.1	35.40	9.22	1050	-	28	28.2	364000	-
9-Feb-16	7.30	1672	3.45	95.9	7.79	10.45	1170	-	51 J+	34	410000	-
3-May-16	14.20	3150	3.61	335.2	63.80	10.35	2260	-	148	97.9 J-	777000	-

**Table A-1d: Summary of Lower Disposal Area - Surface Water Sampling Results - South Pond Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters						Gen-Chem Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>c</sup>	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
24-Aug-16	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
1-Nov-16	12.10	401	5.56	-65.9	15.00	9.43	742	-	21.9	14.1	356000	-
1-Feb-17	2.10	2064	4.82	5.0	17.80	10.27	1330	-	57.6	139	455000	-
31-May-17	14.50	2594	5.36	-	22.70	9.93	1920	-	105	51.5 J+	664000	-
17-Aug-17	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
9-Nov-17	6.50	1049	6.38	92.3	14.40	10.13	1260	-	58.8	53.4 J+	441000	-
27-Feb-18	6.50	1379	4.05	-71.0	6.11	10.94	865	-	61.7	47.7 J-	429000	-
2-May-18	11.60	2547	-	-	25.30	10.36	1860	-	85.9	26.7 J+	611000	-
22-Aug-18	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
7-Nov-18	9.70	995	6.72	126.8	20.60	9.15	1040	-	76	65.5	333000 J+	-
11-Mar-19	10.60	1354	5.93	-18.7	7.19	10.31	1270	-	49.3	41.7	458000	-
9-May-19	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
26-Aug-19	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
14-Nov-19	8.70	1180	5.98	30.9	7.38	9.03	1120	-	67.2	76.4	418000	-
13-Feb-20	4.30	1032	2.51	-126.9	6.10	10.46	927	-	28.1	13	348000	-
13-Aug-20	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
10-Dec-20	5.60	1000	2.52	66.8	6.02	9.66	952	-	12	6.63	318000	-
4-Mar-21	8.10	1271	1.98	38.0	8.02	10.35	4820	-	50.6	35.7	435000	-
10-Jun-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	4.50	305	10.57	-30.2	4.07	9.42	300	2.29	4.42	2.29	77100	4.27
17-Mar-22	8.80	997	8.53	-66.4	4.54	11.32	912	4.85	22.60	16.70	358000	37.80
21-Jun-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12-Sep-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	4.1	1319	8.1	-51.9	15.8	9.45	1170	17.5	40.5	33.1	384000	79.3
15-Mar-23	8.9	1467	10.36	-7.6	6.57	9.33	913	2.75	8.5	4.84	347000	12.3
26-Jun-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-23	5.2	2217	7.86	-41.2	8.63	9	1180	3.98	21.1	15.8	394000	53.4
5-Mar-24	10.5	2327	7.99	-12.1	6.72	9.9	1220	3.99	21.6	15.2	435000	75.1

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not analyzed or not available
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- + South Pond frozen; unable to collect field parameters or samples
- Dry South Pond dry; unable to collect field parameters or samples
- a North Creek Analytical, Inc.
- b Severn Trent Laboratories
- c Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L
- mV
- NTU



**APPENDIX A-2**

**Summary of Lower Disposal Area –  
Shallow/Alluvial Groundwater  
Sampling Results**

Table A-2A Well MW-1A  
Table A-2B Well MW-2A  
Table A-2C Well MW-3A  
Table A-2D Well MW-4A  
Table A-2E Well MW-5A  
Table A-2F Well MW-6A  
Table A-2G Well MW-7A  
Table A-2H Well MW-8A  
Table A-2I Well MW-9A  
Table A-2J Well MW-10A  
Table A-2K Well P-16  
Table A-2L Well P-17

**Table A-2a: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-1A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	140
15-Jul-05	35.43	578.01	15.17	883	-	-	358	7.03	664	-	8.47	2 U	-	-	
9-Nov-05	31.83	581.61	10.77	1037	-	-	22.2	6.89	680	-	3.45	1 U	-	-	
15-Feb-06	23.91	589.53	9.14	623	1.53	497.4	6.76	7.26	470 J	-	3.25	1 U	-	-	
17-May-06	31.91	581.53	11.32	1029	1.33	121.6	10.3	7.18	600	-	5.18	1 U	-	-	
23-Aug-06	35.35	578.09	19.21	481	5.97	60.4	6.3	6.67	340	-	1.7	1 U	-	-	
14-Nov-06	20.00	593.44	10.35	635	4.55	95.1	22.2	7.23	550	-	3.07	1 U	-	-	
14-Feb-07	29.29	584.15	11.13	435	3.88	85.6	32.1	6.76	260	-	2	1 U	-	-	
30-May-07	32.90	580.54	10.30	545	6.63	145.7	6.93	6.81	320	-	2.48	1 U	-	-	
27-Aug-07	35.68	577.76	10.49	428	7.13	76.7	8.65	6.95	260 J	-	1.87	1 U	-	-	
29-Nov-07	32.75	580.69	10.10	625	7.14	144.3	12.2	6.96	340 J	-	2.32	1 U	-	-	
27-Feb-08	27.83	585.61	-	-	-	-	19.6	-	320	-	2.58	1 U	-	-	
20-May-08	31.86	581.58	10.22	471	6.38	177.0	109	6.48	290 J	-	2.24	1 U	-	-	
27-Aug-08	36.04	577.40	9.84	427	7.40	118.4	63.6	7.08	260	-	2.05	1 U	23000	-	
26-Sep-08	<i>Test Trench Drain Line Installed</i>														
16-Oct-08	35.65	577.79	9.51	443	9.78	113.9	38	7.38	260 J	-	1.79	1 U	22900	-	
20-Nov-08	25.62	587.82	9.49	563	6.11	231.0	5.48	7.18	430	-	3.68	1 U	106000	-	
30-Dec-08	23.14	590.30	9.84	402	8.40	106.9	8.92	7.25	280 J	-	2.47	1 U	43900	-	
15-Jan-09	20.66	592.78	8.40	336	9.65	229.6	1.07	6.88	290	-	2.25	1 U	35700	-	
12-Feb-09	30.00	583.44	9.05	372	8.46	-	16.7	7.34	320	-	1.93	1 U	27000	-	
12-Mar-09	31.30	582.14	9.13	409	8.60	174.9	15.8	7.03	340	-	1.66	1 U	20600	-	
16-Apr-09	23.88	589.56	8.17	343	10.24	131.8	13.5	6.78	310	-	1.77	1 U	24600	-	
19-May-09	30.50	582.94	8.99	392	8.69	82.6	23.7	7.75	340 J	-	1.56	1 U	19600	-	
23-Jun-09	34.00	579.44	9.21	480	9.56	79.0	22.9	7.89	430	-	2 U	2 U	20000	-	
25-Aug-09	36.95	576.49	13.10	373	6.47	311.9	4.98	6.76	270 J+	-	0.64 J	2 U	17000	-	
23-Sep-09	37.12	576.32	11.30	336	6.90	368.3	21.3	6.73	240	-	2 U	0.18 J	14000	-	
15-Dec-09	28.30	585.14	9.20	643	5.30	567.0	18	6.72	330	-	2 U	2 U	26000	-	
24-Mar-10	30.03	583.41	9.80	562	5.72	545.9	5.04	6.74	370	-	1.9 J	2 U	19000	-	
16-Jun-10	23.55	589.89	9.20	506	5.93	405.4	16.1	6.53	40 U	-	3.6	2 U	20000	-	
21-Sep-10	35.89	577.55	10.40	593	4.82	288.5	117	6.96	370	-	2.6	0.23 J	19000	-	
7-Dec-10	27.39	586.05	10.00	504	1.45	198.4	139	7.15	330	-	2.3	2 U	14000	-	
29-Mar-11	29.76	583.68	8.10	247	2.47	169.0	6.81	7.14	300	-	2.4	2 U	15000	-	
21-Jun-11	30.45	582.99	9.30	606	4.58	332.9	3.56	7.17	400 J	-	5 U	2 U	16000	-	
27-Sep-11	36.65	576.79	9.90	366	7.27	356.2	2.18	6.85	310	-	5 U	2 U	17000	-	
14-Dec-11	31.53	581.91	9.20	407	1.97	234.7	20.4	7.09	370	-	5 U	2 U	16000	-	
20-Mar-12	21.60	591.84	7.70	561	7.06	385.4	4.8	7.18	280	-	2.3	0.4 U	16000	-	
19-Jun-12	21.60	591.84	10.00	575	7.04	378.2	5.6	7.31	330	-	2.5	0.4 U	16000	-	
19-Sep-12	36.42	577.02	11.30	561	8.76	286.0	2.49	7.02	310	-	2.4	0.4 U	17000	-	
19-Dec-12	23.43	590.01	9.30	671	6.67	348.2	0.74	7.26	20 U	-	1.7	0.4 U	17000	-	
25-Feb-13	29.32	584.12	8.00	572	9.51	337.0	26	7.28	300	-	2.5	0.4 U	16000	-	
22-May-13	31.23	582.21	9.00	518	8.59	397.7	4.68	7.40	310	-	1.8	0.4 U	15000	-	
21-Aug-13	37.02	576.42	10.20	534	9.27	152.7	1.46	7.11	227	-	1.2	0.1 U	14100	-	
20-Nov-13	29.69	583.75	9.50	852	7.62	243.5	39.5	6.75	419	-	1.6	0.1 U	19900	-	
1-Apr-14	23.29	590.15	8.90	347	7.60	248.1	2.54	7.30	247	-	2	0.1 U	16500	-	
21-May-14	28.31	585.13	9.50	349	4.02	178.6	-	7.12	280	-	1.8	0.1 U	15100	-	
13-Aug-14	36.52	576.92	12.10	441	9.22	51.9	6.2	7.10	283	-	1.4	0.1 U	15200	-	
13-Nov-14	31.63	581.81	11.50	438	8.80	173.0	14.7	7.10	352	-	1.6	0.1 U	17100	-	
11-Feb-15	23.02	590.42	9.40	498	3.89	98.1	10.5	7.72	319	-	9.1	0.3	42900	-	
4-May-15	31.93	581.51	9.80	578	7.35	416.9	1.05	7.26	413	-	1.7	0.1 U	16000	-	
6-Aug-15	37.65	575.79	10.70	447	0.17	71.6	49	7.21	343	-	3.9	0.1 U	10300	-	
4-Nov-15	32.89	580.55	9.50	657	8.56	240.5	5.7	6.92	554	-	2.3	0.1 U	49300	-	
10-Feb-16	25.39	588.05	9.80	322	7.36	204.8	3.21	7.31	202	-	2	0.1 U	22200	-	
2-May-16	32.32	581.12	10.80	579	5.95	250.2	4.7	7.02	350	-	1.8	0.04 J-	17800	-	
23-Aug-16	37.66	575.78	11.00	488	1.34	459.9	259	7.08	413	-	3.88	0.07 J	14600	-	
2-Nov-16	31.30	582.14	9.70	280	3.94	225.0	6.13	7.18	531	-	2.13	0.12	37700	-	
1-Feb-17	29.01	584.43	8.60	510	5.26	187.7	0.97	7.04	270	-	1.47	0.1 U	19000	-	
30-May-17	28.47	584.97	9.50	483	6.89	4.7	4.85	6.96	290	-	2.09	0.1 U	15700	-	
17-Aug-17	36.30	577.14	10.50	536	3.79	82.5	6.44	6.96	283	-	1.55	0.1 U	15500	-	
9-Nov-17	32.20	581.24	9.20	460	5.89	75.1	2.7	7.01	380	-	1.63	0.1 U	16300	-	
27-Feb-18	25.18	588.26	8.90	215	7.35	121.6	6.04	6.31	186	-	1.72	0.1 U	15500	-	
1-May-18	26.98	586.46	9.50	391	7.82	-	3.06	6.94	214	-	1.65	0.1 UJ	14100	-	
21-Aug-18	37.29	576.15	10.02	266	7.37	75.6	129	6.84	215	-	1.51	0.1 U	13300	-	
6-Nov-18	34.18	579.26	9.60	340	9.13	215.4	1	6.93	327	-	1.67	0.1 U	16600	-	
11-Mar-19	27.75	585.69	8.90	323	5.65	185.3	4.29	6.94	269	-	1.36	0.1 U	14400	-	
8-May-19	30.05	583.39	9.80	448	7.77	97.6	1.11	6.87	320	-	1.25	0.1 U	15100	-	
26-Aug-19	37.02	576.42	9.83	329	1.16	Note 1	7.97	7.11	258	-	0.904	0.1 U	10700	-	
13-Nov-19	35.13	578.31	9.20	376	5.50	144.0	8.26	6.87	320	-	1.23	0.1 U	15800	-	
12-Feb-20	20.38	593.06	9.00	381	2.58	191.6	1.33	7.15	268	-	1.25	0.1 U	26600	-	
12-Aug-20	36.61	576.83	9.50	285	5.01	198.7	0.8	6.96	214	-	1.14	0.1 U	14100	-	

**Table A-2a: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-1A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
9-Dec-20	32.05	581.39	9.10	425	7.17	211.0	1.57	6.86	347	-	1.11	0.1 U	17100	-
3-Mar-21	27.01	586.43	8.60	383	5.71	248.0	0.6	6.83	299	-	1.16	0.1 U	17400	-
9-Jun-21	35.32	578.12	9.20	422	8.47	151.0	2.22	6.68	310	-	1.39	0.1 U	16300	-
12-Oct-21	33.84	579.60	9.30	329	9.07	160.8	1.55	6.34	236 J-	0.846	1.13	0.1 U	12500	0.801
5-Jan-22	25.20	588.24	9.20	344	7.96	170.2	0.67	6.54	255	1.06	1.02	0.1 U	18100	0.782
16-Mar-22	23.67	589.77	9.30	386	7.79	155.0	0.96	5.60	350	1.58	1.33	0.1 U	36800	0.887
23-Jun-22	27.91	585.53	9.80	356	7.21	152.8	2.55	6.93	281	1.08	1.04	0.1 U	16500	0.86
23-Sep-22	37.05	576.39	13.2	312.5	6.93	128.4	2.84	6.91	222	0.83	1.2	0.137	14100	0.786
13-Dec-22	32.35	581.09	9.4	394.6	8.79	99.3	0.31	6.77	234	0.955	1.13	0.1 U	14500	0.791
13-Mar-23	29.36	584.08	8	584.2	9.22	90.2	0.29	6.85	298	0.86	1.27	0.053 J	14000	0.935
28-Jun-23	34.78	578.66	9.4	527	9.69	277.4	0.85	6.68	363	0.87	1.18	0.1 U	16600	0.862
5-Sep-23	37.62	575.82	9.5	586.1	5.14	77.6	3.75	6.97	360 J-	0.41	3.82	0.586	13300	2.23
12-Dec-23	22.16	591.28	9.2	806	7.53	120.7	1.27	6.7	424	1.71	1.39	0.103 U	43400	0.986
4-Mar-24	26.79	586.65	8.4	437.2	8.26	194.8	0.42	6.56	274 J	0.83	1.02	0.103 U	13400	0.614

Notes:

Top of casing elevation (feet NAVD88): 613.44

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- Note 1 ORP measurements not available due to faulty sensor.
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit





**Table A-2b: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-2A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Jul-05	29.18	578.03	13.78	853	-	-	28.3	7.7	606	-	2 U	2 U	-	-
9-Nov-05	25.64	581.57	10.95	860	-	-	3.82	7.43	550	-	1.31	1 U	-	-
15-Feb-06	17.64	589.57	7.81	709	0.82	467.7	3.96	7.86	520 J	-	1.06	1 U	-	-
17-May-06	25.76	581.45	9.67	810	2.17	246.1	3.01	7.06	490	-	1.13	1 U	-	-
23-Aug-06	29.13	578.08	12.86	759	2.6	12	9.82	7.4	570	-	1.54	1 U	-	-
14-Nov-06	13.74	593.47	10.44	649	3.72	63.6	9.78	7.72	460	-	1.36	1 U	-	-
14-Feb-07	22.09	585.12	10.77	648	1.69	11.5	52.4	7.51	380	-	1.07	1 U	-	-
30-May-07	26.72	580.49	11.46	732	2.05	72.2	12.8	7.44	480	-	1.17	1 U	-	-
27-Aug-07	29.45	577.76	10.8	829	7.41	62.8	117	7.58	590 J	-	1.09	1 U	-	-
29-Nov-07	26.57	580.64	10.74	899	2	81.1	392	6.05	490	-	1.03	1 U	-	-
27-Feb-08	21.45	585.76	-	-	-	-	446	-	400	-	1.09	1 U	-	-
20-May-08	25.73	581.48	9.48	706	3.07	110.2	419	7.26	420 J	-	1.21	1 U	-	-
27-Aug-08	29.84	577.37	9.87	824	4.74	91.5	571	7.43	550 J	-	1.3	1 U	65100	-
26-Sep-08	Test Trench Drain Line Installed													
16-Oct-08	29.13	578.08	9.76	820	4.56	53.6	227	7.33	520 J	-	1.3	1 U	76300	-
20-Nov-08	19.48	587.73	9.31	462	5.24	240.1	6.16	7.35	360	-	1.76	1 U	67000	-
30-Dec-08	16.93	590.28	9.85	480	6.18	66.8	56.1	7.35	390 J	-	1.55	1 U	61500	-
15-Jan-09	14.46	592.75	7.71	402	7.47	177.8	1.61	7.61	360	-	1.57	1 U	58500	-
12-Feb-09	23.84	583.37	9.63	-	8.72	-	74.9	7.54	390	-	1.3	1 U	48100	-
12-Mar-09	25.15	582.06	9.11	454	7.22	163.7	573	7.19	400	-	1.17	1 U	43100	-
16-Apr-09	17.72	589.49	8.4	417	8.27	126.4	128	7.26	400	-	1.4	1 U	48800	-
19-May-09	24.38	582.83	8.8	448	6.88	72	178	7.95	410 J	-	1.1	1 U	44000	-
23-Jun-09	27.85	579.36	8.95	507	7.76	61.9	256	8.07	490	-	2 U	2 U	39000	-
25-Aug-09	30.68	576.53	10.5	707	6.94*	307.4	4.38	7.17	530 J+	-	2 U	0.18 J	49000	-
23-Sep-09	30.84	576.37	11.2	661	5.41	374.7	15	7.28	500	-	2 U	2 U	51000	-
15-Dec-09	22.10	585.11	9.5	720	5.1	579	39	6.92	380	-	2 U	2 U	42000	-
24-Mar-10	23.82	583.39	10	602	4.1	535.3	43.3	6.93	370	-	1.7 J	2 U	39000	-
17-Jun-10	17.45	589.76	9.3	547	4.06	-	157	6.57	350	-	3.9	2 U	39000	-
22-Sep-10	29.66	577.55	10.2	722	5.77	360.2	7.2	7.22	450	-	3.3	2 U	55000	-
8-Dec-10	22.10	585.11	9.9	566	6.69	-	64.6	7.09	350	-	2 U	2 U	35000	-
29-Mar-11	19.94	587.27	8.4	251.3	6.95	620	28	7.13	250 J	-	1.4 J	2 U	30000	-
21-Jun-11	24.25	582.96	9.9	628	5.23	344.3	37	7.29	410 J	-	5 U	2 U	28000	-
28-Sep-11	30.41	576.8	9.5	57.5	6.54	481.7	13.8	7.24	500	-	5 U	2 U	54000	-
14-Dec-11	25.35	581.86	9.3	441	3.86	346.5	386	7.26	440	-	5 U	2 U	29000	-
20-Mar-12	15.45	591.76	7.7	580	1.53	382	32.3	7.4	280	-	2.2	0.4 U	26000	-
19-Jun-12	23.88	583.33	9	590	1.85	388.1	55.7	7.74	320	-	2.5	0.4 U	23000	-
19-Sep-12	30.18	577.03	11.1	695	7.03	297	9.31	7.41	420	-	2.7	0.4 U	42000	-
19-Dec-12	17.24	589.97	9.4	704	6.33	317	55.2	7.4	310	-	1.7	0.4 U	25000	-
25-Feb-13	23.12	584.09	9.1	585	6.04	339	110	7.46	370	-	2.5	0.4 U	24000	-
22-May-13	25.05	582.16	8.6	537	8.41	391.5	12.3	7.51	310	-	1.9	0.4 U	22000	-
21-Aug-13	30.75	576.46	10.6	684	8.42	150.2	5.85	7.74	419	-	1.5	0.2	27700	-
20-Nov-13	23.51	583.7	9.6	513	6.19	230.4	32.1	6.81	364	-	1.3	0.1 U	27500	-
1-Apr-14	17.11	590.1	8.5	386	7.32	243.1	14.6	7.46	294	-	1.4	0.1 U	31700	-
21-May-14	22.07	585.14	9.1	365	6.02	212.7	-	6.93	273	-	1.3	0.1 U	24700	-
12-Aug-14	31.32	575.89	13.16	552	6.56	76.7	6.8	7.36	394	-	1.5	0.1 U	25300	-
13-Nov-14	25.48	581.73	12.3	459.5	7.22	189.8	7.2	7.19	367	-	1.4	0.1 U	25500	-
11-Feb-15	16.83	590.38	9.3	447	6.76	134.4	36.6	7.52	286	-	1.7	0.1 U	30400	-
4-May-15	25.78	581.43	10.2	619	6.27	407.1	7.7	7.36	382	-	1.4	0.1 U	25200	-
6-Aug-15	31.87	575.34	11.3	500	9.18	207.1	28.1	7.23	394	-	1.5	0.1 U	22000	-
4-Nov-15	26.74	580.47	9.9	481	8.76	222.6	16.8	6.88	381	-	1.1	0.1 U	21800	-
10-Feb-16	19.19	588.02	9	376	7.35	206	40.2	7.68	261	-	3.6	0.1 U	37100	-
2-May-16	26.14	581.07	11.3	552	3.19	194.5	87.8	7.35	344	-	2.1	0.01 J	31200	-
23-Aug-16	31.64	575.57	10.5	545	7.62	486.5	10.8	7.18	412	-	1.54	0.1 U	32600	-
2-Nov-16	25.12	582.09	10.2	220	4.01	238.9	245	7.19	431	-	1.4	0.1 U	30600	-
1-Feb-17	22.84	584.37	9.1	580	5.06	186.3	13.6	7.35	317	-	3.17	0.1 U	51100	-
30-May-17	22.31	584.9	9.4	520	7.01	4.99	40.2	7.18	322	-	1.78	0.1 U	34100	-
17-Aug-17	30.08	577.13	10.6	626	5.63	134.2	32.3	7.21	370	-	1.28	0.1 U	28900	-
9-Nov-17	26.04	581.17	9.8	479.5	5.79	74.4	68.8	7	391	-	1.39	0.1 U	25400	-
27-Feb-18	19.03	588.18	8.8	293.1	7.43	185.2	15.1	6.9	254	-	3.98	0.1 U	41900	-
1-May-18	20.84	586.37	9.1	531	7.46	-	25	7.35	316	-	3	0.1 UJ	40600	-
21-Aug-18	31.09	576.12	10.39	437	7.33	115.2	19.1	7.04	358	-	1.48	0.1 U	26900	-
6-Nov-18	28.00	579.21	9.7	420.1	8.17	210.3	6.74	6.97	418	-	1.3	0.1 U	23400	-
11-Mar-19	21.61	585.6	9	351.2	9.2	187.1	20.6	7.11	312	-	1.57	0.1 U	32700	-
8-May-19	23.88	583.33	9.8	443.1	8.05	109.6	7.79	7.06	316	-	1.66	0.1 U	32900	-
26-Aug-19	30.90	576.31	10.91	495	8.65	Note 1	12.7	6.91	394	-	1.28	0.1 U	21100	-
13-Nov-19	28.91	578.3	9.8	506	7.81	180.4	14.4	6.87	429	-	1.34	0.1 U	22900	-
12-Feb-20	14.21	593	8.1	319.3	9.95	189.3	14.6	7.27	277	-	1.95	0.1 U	56300	-
12-Aug-20	30.41	576.8	9.5	463.3	6.6	185.5	72.9	7.03	359	-	1.2	0.1 U	22400	-
9-Dec-20	25.91	581.3	9.4	533	6.44	213	9.96	6.97	400	-	1.38	0.49 J	26800	-
3-Mar-21	20.83	586.38	8.9	330	5.24	216.5	12.4	7.18	268	-	1.8	0.219	61100	-

**Table A-2b: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-2A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
9-Jun-21	29.14	578.07	9.1	459.8	8.65	193.6	1.34	6.88	360 J	-	1.25	0.058 J	21800	-
12-Oct-21	27.75	579.46	10.4	595	9.33	188.2	0.56	6.53	439 J-	1.19	1.1	0.1 U	21900	1.07
6-Jan-22	19.05	588.16	10.2	466.3	4.66	197.7	2.69	7.14	368	3.24	1.89	0.1 U	80700	1.19
16-Mar-22	17.54	589.67	8.4	304.1	9.88	154.6	6.43	6	291	3.26	1.85	0.218	60900	1.15
23-Jun-22	21.76	585.45	9.5	442.6	6.06	158.8	1.49	7.10	369	1.94	1.5	0.1 U	37500	1.15
23-Sep-22	30.87	576.34	11.2	471.5	8.5	190.3	2.04	6.82	351	0.923	1.17	0.13	23300	1.18
13-Dec-22	26.24	580.97	9.9	557	8.35	117.4	4.38	6.81	319	1.17	1.28 J	0.218 J+	21800	1.59
14-Mar-23	23.24	583.97	8.6	664.2	7.67	174.1	0.97	7.08	368	1.65	1.49	0.1 U	28800	1.03
28-Jun-23	28.64	578.57	10.5	521	9.26	275.7	2.1	6.79	361	1.05	1.12	0.371 J	19600	1.02
5-Sep-23	31.49	575.72	9.6	699	11.67	128.3	3.01	7.06	400 J-	0.74	1.1	0.383 J	19800	1.06
12-Dec-23	16.04	591.17	9.9	894	8.57	137	4.29	7.01	529	3.53	1.94	0.103 U	133000	1.5
4-Mar-24	20.65	586.56	8.9	505	8.82	218.3	1.74	6.87	360 J	2.27	1.39	0.103 U	71900	0.97

Notes:

Top of casing elevation (feet NAVD88): 607.21

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

\* Dissolved Oxygen meter working incorrectly at the time of sample collection

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-2c: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-3A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Jul-05	6.09	683.02	13.8	1124	-	-	30.3	6.96	922	-	2.41	2 U	-	-
10-Nov-05	5.50	683.61	10.8	1518	-	-	2.32	6.88	960	-	10.5	1 U	-	-
15-Feb-06	5.31	683.80	9.52	1357	0.46	217.4	58.2	6.33	930 J	-	6.66	1 U	-	-
16-May-06	6.25	682.86	10.4	1296	0.96	91	11.4	6.91	910	-	10.1	1 U	-	-
22-Aug-06	8.85	680.26	12.84	1362	1.28	-64.8	56	6.97	900	-	12.1	1 U	-	-
13-Nov-06	5.03	684.08	11.24	1392	2.12	-74.4	234	6.89	910	-	5.73	1 U	-	-
16-Feb-07	5.55	683.56	8.99	1155	0.75	-71.3	12.3	6.96	770	-	3.74	1 U	-	-
30-May-07	6.72	682.39	11.86	1297	0.75	-25.2	12.5	7.04	790	-	5.2	1 U	-	-
27-Aug-07	8.38	680.73	12.65	1483	0.71	-96.3	15.3	6.73	1100 J	-	8.74	1 U	-	-
28-Nov-07	5.66	683.45	10.47	1363	1.05	-72.9	26.9	7.31	730	-	4.24	1 U	-	-
27-Feb-08	5.57	683.54	-	-	-	-	121	-	860	-	9.76	1 U	-	-
19-May-08	5.94	683.17	9.39	1346	0.66	-52.6	20	6.93	820 J	-	6.64	1 U	-	-
26-Aug-08	6.44	682.67	12.15	1495	0.85	-53.6	5.85	6.88	820	-	3.42	1 U	30300	-
18-Nov-08	5.50	683.61	10.5	975	1.87	-67.4	225	6.93	880 J	-	7.48	1 U	62500	-
11-Feb-09	5.62	683.49	7.67	877	0.98	-	68	7.28	810	-	5.2	1 U	50600	-
19-May-09	5.60	683.51	8.52	847	0.91	-63.4	52	8.21	750 J	-	2.51	1 U	49500	-
22-Sep-09	8.36	680.75	15.7	1149	0.1	132.1	75.1	7.05	910	-	6.6	2 U	53000	-
17-Dec-09	4.59	684.52	8.9	1300	0.4	194	401	7.08	710	-	2 U	2 U	62000	-
24-Mar-10	5.40	683.71	11.2	1010	0.12	-	226	6.76	800	-	3.8	2 U	46000	-
16-Jun-10	5.27	683.84	10.1	1123	0.2	188	6.19	8.43	570	-	13	2 U	49000	-
21-Sep-10	6.01	683.10	12.7	1314	0.19	177.7	2.97	6.91	1,000	-	6.2	0.19 J	160000	-
7-Dec-10	5.23	683.88	9.7	1183	0.23	182.7	25.3	6.86	840	-	3.2	2 U	82000	-
30-Mar-11	5.04	684.07	8.3	498	0.28	174	4.93	7.89	700	-	3.6	2 U	36000	-
22-Jun-11	6.77	682.34	9.7	895	0.43	172.2	9.18	7.01	700 J	-	5 U	2 U	34000	-
28-Sep-11	7.83	681.28	12.6	99	0.18	141.8	6.07	6.83	840	-	8.8	2 U	83000	-
15-Dec-11	5.40	683.71	9	785	0.6	179.8	24.4	6.98	760	-	4.5 J	2 U	73000	-
20-Mar-12	4.96	684.15	7.1	1092	0.16	22.6	12.1	7.11	470	-	5.2	2 U	73000	-
19-Jun-12	6.76	682.35	10.3	1077	0.11	198.6	11.3	7.07	660	-	12	0.4 U	78000	-
20-Sep-12	8.67	680.44	12.3	1235	0.15	111	1.96	6.99	710	-	11	0.05 J	100000	-
18-Dec-12	4.98	684.13	8.7	1450	0.3	-40.6	18.7	7.25	740	-	4.8	0.4 U	150000	-
26-Feb-13	5.25	683.86	7.8	1211	0.15	186.6	27.8	7.21	740	-	4.7	0.4 U	98000	-
23-May-13	6.56	682.55	9.9	1000	0.18	242.3	16.9	7.21	460	-	14	2.8	150000	-
21-Aug-13	9.01	680.10	12.1	917	0.12	-14.2	1.24	7.27	772	-	7.6	0.05 J	94000	-
19-Nov-13	6.09	683.02	9.9	697	0.07	61.8	2.93	6.77	852	-	12.3	0.2	169000	-
1-Apr-14	5.75	683.36	9	722	0.1	131.3	4.47	7.07	624	-	10.5	0.06 J	104000	-
22-May-14	5.80	683.31	9.8	580	1.08	185.3	-	6.85	494	-	5.2	0.1	66500	-
13-Aug-14	8.54	680.57	11.48	915	2.85	-67.6	8.16	7.09	740	-	6.9	0.1 U	116000	-
12-Nov-14	5.97	683.14	11.1	313.7	2.79	-85.1	15.3	6.87	744	-	6.9	0.1 U	89100	-
12-Feb-15	5.50	683.61	9.8	980	0.52	-54.5	1.28	7.04	696	-	4.2	0.1 U	73200	-
4-May-15	5.80	683.31	10.8	994	0.17	143.4	15.4	7.12	701	-	9.3	0.1 U	100000	-
5-Aug-15	10.12	678.99	12.6	881	0.13	-90.4	0.89	7.07	724	-	7.3	0.1 U	70300	-
3-Nov-15	5.30	683.81	12	865	1.23	105.5	5.06	6.97	1020	-	1.7	0.2	195000	-
9-Feb-16	5.14	683.97	9.1	954	0.55	154.6	4.82	7.03	625	-	3.4	0.1 U	92700	-
2-May-16	4.74	684.37	11.3	844	0.19	96.8	2.21	7.16	621	-	10.5	0.04 J	105000	-
23-Aug-16	9.04	680.07	13.2	946	0.03	156.2	3.48	6.97	924	-	8.19	0.09 J	148000	-
1-Nov-16	6.18	682.93	11.9	349	0.15	18.5	2.43	7.11	744	-	2.63	0.1 U	180000	-
1-Feb-17	5.91	683.20	7.5	1114	0.17	-67.4	6.05	7.08	694	-	6.4	0.1 U	100000	-
30-May-17	7.40	681.71	10.4	753	2.2	8.59	3.28	7.12	465	-	9.52	0.1 U	89300	-
17-Aug-17	9.71	679.40	12.4	1101	0.25	-60.2	3.39	7.01	737	-	8.47	0.1 U	72000	-
9-Nov-17	6.06	683.05	9.6	833	0.64	75.3	2.01	7.08	748	-	1.84	0.1 U	191000	-
27-Feb-18	5.16	683.95	7.6	791	0.21	-75.4	9.52	6.64	506	-	2.97	0.1 U	92000	-
1-May-18	5.41	683.70	10	847	0.93	-	5.82	7.36	547	-	3.81	0.1 UJ	120000	-
21-Aug-18	10.81	678.30	14.54	909	2.96	-17.2	1.67	6.92	722	-	6.48	0.1 U	101000	-
7-Nov-18	5.85	683.26	11.2	931	0.66	179	0.87	6.97	828	-	2.03	0.073 J	202000 J+	-
11-Mar-19	5.26	683.85	6.1	477.5	1.25	53.7	2.39	7.34	486	-	1.44	0.1 U	125000	-
9-May-19	5.44	683.67	10.2	678	3.72	-9.4	1.85	7.04	574	-	3.02	0.083 J	143000	-
26-Aug-19	9.30	679.81	13.96	1041	0.6	Note 1	0.02	6.83	843	-	6.15	0.1 U	142000	-
13-Nov-19	5.58	683.53	9.4	803	0.31	12.8	0.02	6.97	724	-	2.2	0.077 J	174000	-
12-Feb-20	5.10	684.01	7.8	349.3	0.37	-62.4	1.4	7.25	287	-	1.86	0.1 U	74200	-
13-Aug-20	9.33	679.78	11.8	884	0.64	-81.6	4.28	6.76	683	-	10.9	0.1 U	119000	-
10-Dec-20	5.08	684.03	8.5	688	3.06	210	0.9	7.29	566	-	2.36	0.159	128000	-



**Table A-2c: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-3A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
4-Mar-21	5.26	683.85	7	364	0.59	47	1.54	7.42	319	-	1.52	0.134	74200	-
9-Jun-21	6.24	682.87	11.4	706	0.96	-50.2	4.12	7.03	540	-	6.48	0.204	124000	-
12-Oct-21	5.34	683.77	12.3	1611	2.92	133.4	5.25	6.63	1070 J-	15.6	3.31	0.4	93200	2.14
6-Jan-22	5.10	684.01	7.5	269.6	2.33	189.1	1.84	7.38	242	8.89	2.04	0.265	53400	2.61
17-Mar-22	4.97	684.14	7.5	269.6	2.33	189.1	1.84	7.38	252	3.39	1.98	0.169	53200	0.88
21-Jun-22	5.21	683.9	11.2	439.4	0.19	181.3	0.66	7.03	368	0.966	3.66	0.075 J	75400	0.39
13-Sep-22	11.25	677.86	15.3	910	4.92	85.7	9.15	6.49	689	0.973	5.42	0.137	91100	0.507
12-Dec-22	5.32	683.79	7.7	817	4.09	205.2	1.29	7.15	475	9.5	1.72	0.115 J+	99800	1.26
15-Mar-23	5.02	684.09	6.1	669.2	1.38	203.9	0.95	7.34	393	5.15	2.42	0.147	91100	1.19
26-Jun-23	7.35	681.76	11.7	802	0.65	-21.3	4.65	6.78	699	5.91	11.7	0.558	144000	1.07
6-Sep-23	13.95	675.16	13.8	1227	2.17	18	3.14	6.89	747 J-	0.717	4.08	0.126	95900	0.483
13-Dec-23	5.14	683.97	9.4	712	4.35	43.8	2.87	6.73	343	4.61	3.7	0.208	82900	0.816
5-Mar-24	5.05	684.06	7.5	620	5.62	93.3	4.58	6.74	356	1.55	4.65	0.336	66200	0.604

Notes:

Top of casing elevation (feet NAVD88): 689.11

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

mg/L Milligrams per liter

feet bmp Feet below measuring point

mV Millivolts

feet NAVD88 Feet NAVD88 Datum

NTU Nephelometric Turbidity Unit

**Table A-2d: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-4A**  
**Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Jul-05	4.60	700.85	12.43	629	-	-	6.07	6.45	490	-	2 U	2 U	-	-
10-Nov-05	3.70	701.75	11.98	441	-	-	7.4	6.22	290	-	1 U	1 U	-	-
19-Jan-06	3.56	701.89	8.29	319	0.42	-	1.46	6.53	290 J	-	1 U	1 U	-	-
15-Feb-06	3.82	701.63	8.32	326	0.62	99.7	3.5	7.39	220 J	-	1 U	1 U	-	-
15-Mar-06	3.79	701.66	7.58	254	0.87	201.9	0.82	6.65	210 J	-	1 U	1 U	-	-
7-Apr-06	3.87	701.58	9.36	295	0.55	157.4	0.24	6.34	220	-	1 U	1 U	-	-
16-May-06	4.92	700.53	10.8	321	0.45	142.1	0.99	6.36	220	-	1 U	1 U	-	-
23-Jun-06	4.41	701.04	12.62	316	0.57	-	2.05	6.25	200	-	1 U	2.64	-	-
20-Jul-06	6.90	698.55	13.43	347	0.23	-20.9	0.32	6.11	120	-	1 U	1 U	-	-
22-Aug-06	8.46	696.99	13.68	406	0.9	153.5	2.2	6.13	280	-	1 U	1 U	-	-
26-Sep-06	6.50	698.95	14.59	417	2.47	-35.2	2.42	6.33	290	-	1 U	1 U	-	-
26-Oct-06	5.98	699.47	12.82	434	3.3	124.1	0.82	6.12	320	-	1 U	1 U	-	-
13-Nov-06	3.02	702.43	11.7	386	5.06	187.8	2.47	6.13	280	-	1 U	1 U	-	-
20-Dec-06	3.60	701.85	9.64	379	4.3	150.5	1.03	6.07	250	-	1 U	1 U	-	-
23-Jan-07	3.68	701.77	8.37	239	3.96	58.9	0.66	6.28	220	-	1 U	1 U	-	-
14-Feb-07	3.74	701.71	8.18	325	2.85	110.8	0.53	6.25	210	-	1 U	1 U	-	-
27-Mar-07	3.32	702.13	8.27	289	2.07	61.5	0.88	6.83	210 J	-	1 U	1 U	-	-
17-Apr-07	3.89	701.56	9.59	306	1.8	102.3	2.31	6.34	190	-	1 U	1 U	-	-
30-May-07	4.70	700.75	11.27	285	1.78	101.7	1.37	6.37	180	-	1 U	1 U	-	-
20-Jun-07	4.69	700.76	12.37	350	1.67	9.3	1.25	6.9	240 J	-	1 U	1 U	-	-
31-Jul-07	6.38	699.07	14.57	402	1.15	5.5	0.6	6.37	250	-	1.29	1 U	-	-
29-Aug-07	7.44	698.01	13.78	353	1.11	128.3	1.87	6.18	280 J	-	1 U	1 U	-	-
27-Sep-07	8.25	697.20	13.6	375	0.96	142.6	0.7	6.7	300	-	1 U	1 U	-	-
26-Oct-07	4.09	701.36	12.16	343	2.27	75.9	3.93	6.1	310 J	-	1 U	1 U	-	-
29-Nov-07	3.93	701.52	10.13	428	3.17	197.3	1.63	6.32	270	-	1 U	1 U	-	-
12-Dec-07	5.82	699.63	9.51	384	3.37	185	0.8	6.06	260	-	1 U	1 U	-	-
24-Jan-08	3.86	701.59	7.74	354	3.09	109	-	6.35	250	-	1 U	1 U	-	-
28-Feb-08	4.04	701.41	-	-	-	-	1.06	-	220	-	1 U	1 U	-	-
19-May-08	4.35	701.10	9.79	329	1.38	209.2	1.2	6.08	200 J	-	1 U	1 U	-	-
26-Aug-08	7.83	697.62	12.66	431	1.38	210.5	0.28	6.19	270	-	1 U	1 U	3000 U	-
18-Nov-08	3.64	701.81	10.43	235	3.95	217.5	0.66	6.03	210	-	1 U	1 U	3000 U	-
11-Feb-09	4.09	701.36	7.24	188	2.13	-	0.12	6.54	180	-	1 U	1 U	3000 U	-
19-May-09	3.79	701.66	8.19	173	1.28	111.9	1.78	7.18	170 J	-	1 U	1 U	3000 U	-
22-Sep-09	9.70	695.75	16.5	440	0.82	383.3	12.5	6.31	370 J	-	2 U	2 U	1200 J	-
17-Dec-09	3.47	701.98	9.2	311	4.37	470	16	6.25	110	-	2 U	2 U	700 J	-
24-Mar-10	3.87	701.58	9.4	410	0.34	204.8	30.7	6.65	240	-	0.81 J	2 U	1300 J	-
16-Jun-10	3.77	701.68	10.3	298	0.99	397.8	1.11	7.4	180	-	3.6	2 U	900 J	-
21-Sep-10	5.82	699.63	13.7	350	1.01	302.5	1.04	6.25	200	-	1.4 J	0.2 J	1200 J	-
7-Dec-10	3.83	701.62	9.6	283	0.72	405.6	0.42	6.16	190	-	2 U	2 U	800 J	-
30-Mar-11	3.91	701.54	8.2	133.3	0.51	248.2	0.29	9.87	140 J	-	0.35 J	2 U	5000	-
22-Jun-11	3.99	701.46	11	219.3	0.16	222.5	0.22	6.13	160	-	5 U	2 U	700 J	-
28-Sep-11	8.54	696.91	14.3	34.5	0.26	333.9	2.45	6.3	270	-	5 U	2 U	2100 J	-
15-Dec-11	4.12	701.33	9.4	217	1.15	414.3	2.74	6.28	200	-	5 U	2 U	1200 J	-
21-Mar-12	3.35	702.10	8.4	346	0.42	438.4	0.48	6.14	220	-	4.8	0.4 U	1300 J	-
19-Jun-12	3.78	701.67	11.3	290.1	0.09	314	0.46	6.28	170 J+	-	1.3	0.4 U	3300 U	-
20-Sep-12	8.53	696.92	14.4	419	0.26	309	1.07	6.39	240	-	1.6	0.4 U	2900 J	-
18-Dec-12	3.49	701.96	9.1	491	2.56	264.4	1.38	6.63	170	-	1 U	0.4 U	1200 J	-
26-Feb-13	3.91	701.54	8.4	324	2.59	404.2	1.01	7.03	140	-	1.1	0.4 U	3400	-
23-May-13	3.76	701.69	10.6	338	1.15	465.9	0.57	6.31	190	-	1 U	0.4 U	3300 U	-
22-Aug-13	8.28	697.17	13.1	284.2	0.33	32.2	0.89	6.34	220	-	0.4	0.1 U	1260	-
19-Nov-13	3.33	702.12	10.3	323	1.7	109.2	0.64	6.27	200	-	0.2	0.1 U	750	-
1-Apr-14	3.69	701.76	8.2	243.6	0.45	180.7	0.28	6.33	173	-	0.18 J	0.1 U	710	-
22-May-14	4.52	700.93	10.8	195	0.65	75	-	7.2	152	-	0.3	0.1	600	-
13-Aug-14	7.56	697.89	12.62	269	0.44	37.7	1.12	5.89	181	-	0.8	0.1 U	890	-
12-Nov-14	3.73	701.72	11.7	230.9	1.29	108.2	1.32	6.17	191	-	0.3	0.1 U	950	-
11-Feb-15	3.50	701.95	9.2	270.4	0.53	-34.2	0.73	6.3	170	-	0.2	0.1 U	680	-
4-May-15	4.69	700.76	10.9	249.5	0.28	378.1	0.57	6.29	341	-	0.2	0.1 U	610	-
5-Aug-15	9.44	696.01	13.9	316	0.72	-38.1	1.16	6.45	262	-	0.3	0.1 U	1230	-
3-Nov-15	4.21	701.24	11.8	192.2	8.59	205.6	5.39	6.34	166	-	0.2 J	0.1 U	790	-
9-Feb-16	3.82	701.63	9.2	291.8	4.61	230.7	0.49	6.45	164	-	0.17 J	0.1 U	790	-
3-May-16	4.61	700.84	10.9	310	2.39	253	1.01	6.34	178	-	0.3	0.01 J	940	-
24-Aug-16	8.76	696.69	13.2	286.7	1.24	490.4	1.01	6.35	177	-	0.2 J	0.1 U	840	-
1-Nov-16	3.34	702.11	12.2	100	3.69	177.2	0.4	6.38	205	-	0.19 J	0.1 U	971	-
2-Feb-17	3.94	701.51	7.8	363	3.11	190	0.1	6.39	223	-	0.17 J	0.1 U	819	-
31-May-17	4.68	700.77	10.3	300	4.5	-	2.48	6.3	182	-	0.203	0.1 U	795	-
18-Aug-17	8.61	696.84	12.7	393	0.51	120.2	0.87	6.44	228	-	0.308	0.1 U	1300	-
10-Nov-17	3.58	701.87	11	264.4	3.88	56.5	0.76	6.01	217	-	0.186 J	0.1 U	669	-
27-Feb-18	3.76	701.69	8.3	302.1	3.19	221.1	0.55	6.29	238	-	0.176 J	0.1 U	875	-
2-May-18	4.02	701.43	10	343	3.02	-	0.59	6.36	215	-	0.15 J	0.1 U	980	-
22-Aug-18	9.35	696.10	12.17	330	1.99	142	2.31	6.27	265	-	0.315	0.1 U	1230	-
7-Nov-18	5.25	700.20	11.7	316.7	5.45	124.4	0.76	6.23	250	-	0.199 J	0.1 U	843	-
11-Mar-19	3.96	701.49	7.6	226.3	3.96	220.8	0.7	6.38	233	-	0.146 J	0.1 U	918	-
9-May-19	4.70	700.75	12.5	282.5	3.6	82.3	1.56	6.14	230	-	0.154 J	0.1 U	816	-
26-Aug-19	8.20	697.25	13.13	374	0.86	Note 1	0.02	6.3	264	-	0.3	0.1 U	928	-
14-Nov-19	4.35	701.10	10.8	309.4	3.19	109.5	0.02	6.15	240	-	0.251	0.1 U	894	-

**Table A-2d: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-4A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
13-Feb-20	3.70	701.75	7.9	283.7	2.98	102.2	0.91	6.18	283	-	0.176 J	0.1 U	859	-
13-Aug-20	7.73	697.72	13.5	334.3	0.62	58.3	0.51	6.19	238	-	0.711	0.1 U	921	-
10-Dec-20	3.45	702.00	9.8	364	6.11	169	1.56	6.51	297	-	0.296	0.1 U	1260	-
4-Mar-21	3.72	701.73	8.3	304	2.83	137	0.49	6.47	255	-	0.192 J	0.1 U	876	-
10-Jun-21	5.32	700.13	11.9	338.7	1.23	108.5	0.73	6.09	220	-	0.228	0.1 U	787	-
15-Oct-21	7.69	697.76	12.6	341.3	6.91	133.9	20.5	6.37	363 J-	0.18 J	0.99	0.151	1480	4.09
7-Jan-22	3.40	702.05	8.7	248.4	4.37	211.1	3.08	6.29	270	0.2 U	0.383	0.1 U	774 J	1.73
18-Mar-22	3.52	701.93	9.1	340.6	3.26	123.8	1.85	6.63	320	0.2 U	0.279	0.1 U	1140	1.53
22-Jun-22	3.83	701.62	10.1	327.8	1.36	114.5	0.46	6.36	263	0.2 U	0.201	0.1 U	666	1.16
14-Sep-22	8.9	696.55	13.4	389.4	2.46	87.6	2.53	6.02	330	0.2 U	0.385	0.1 U	1080	1.19
14-Dec-22	3.88	701.57	9.1	278	7.03	135.4	0.44	6.35	224	0.2 U	0.188 J	0.1 U	583	1.42
16-Mar-23	3.39	702.06	7.9	468.9	4.44	111.7	2.92	6.3	264	0.2 U	0.159 J	0.1 U	616	1.13
27-Jun-23	6.27	699.18	11.4	308.1	3.02	74.9	1.06	6.2	246	0.2 U	0.19 J	0.5 U	745	1.24
8-Sep-23	9.88	695.57	12.8	560.7	1.14	57.3	9.67	6.45	329 J-	0.101 U	0.317	0.0513 U	1170	1.14
14-Dec-23	3.78	701.67	9.7	497	6.6	227.1	1.2	6.37	255	0.202 U	0.218 J	0.257 U	527	1.25
7-Mar-24	3.72	701.73	8.7	576	4.82	171.9	0.66	6.37	320	0.202 U	0.4 U	0.103 U	708	1.18

Notes:

Top of casing elevation (feet NAVD88): 705.45

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-2e: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-5A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140	
15-Jul-05	33.33	577.90	12.02	956	-	-	496	7.34	600	-	2.01	2 U	-	-	
10-Nov-05	29.62	581.61	11.24	1212	-	-	27.6	7.32	800	-	8.4	1 U	-	-	
15-Feb-06	21.70	589.53	6.45	665	2.59	280.3	11.1	7.86	520 J	-	22.3	1 U	-	-	
17-May-06	29.80	581.43	7.74	831	0.88	101.9	8.67	7.79	580	-	11	1 U	-	-	
23-Aug-06	33.25	577.98	15.19	737	1.76	33.5	19.6	7.32	660	-	2.53	1 U	-	-	
14-Nov-06	17.79	593.44	10.86	699	4.5	76.3	38.7	7.55	490	-	3.15	1 U	-	-	
16-Feb-07	27.08	584.15	8.08	630	6.07	2.3	57.6	8.26	500	-	14.4	1 U	-	-	
30-May-07	30.75	580.48	9.6	894	2.59	13.3	13.4	7.76	540	-	8.43	1 U	-	-	
29-Aug-07	33.60	577.63	9.56	684	7.64	67	-	7.1	670 J	-	1.97	1 U	-	-	
29-Nov-07	30.60	580.63	11	1075	3.53	151.5	23.5	8.37	560	-	5.17	1 U	-	-	
27-Feb-08	25.68	585.55	-	-	-	-	29.9	-	400	-	10.7	1 U	-	-	
20-May-08	29.73	581.50	7.93	768	4.27	180.7	77.8	7.39	480 J	-	5.67	1 U	-	-	
27-Aug-08	33.97	577.26	10.17	862	4.07	81.2	-	7.43	540 J	-	1.17	1 U	87500	-	
26-Sep-08	Test Trench Drain Line Installed														
16-Oct-08	33.55	577.68	8.89	845	5.39	86.3	852	7.53	440 J	-	1.03	1 U	90700	-	
20-Nov-08	23.48	587.75	9.34	577	5.27	234.3	9.48	7.5	470	-	6.24	2 U	138000	-	
30-Dec-08	20.88	590.35	8.39	510	8.89	99	44.8	8.02	430 J	-	14.2	1.11	138000	-	
15-Jan-09	18.50	592.73	4.97	347	8.9	154.8	17.2	8.47	380	-	24.4	1 U	104000	-	
12-Feb-09	27.90	583.33	8.47	-	10.21	-	22	7.6	420 J	-	6.11	1 U	99000	-	
12-Mar-09	29.19	582.04	7.47	521	6.15	171.7	26.8	7.39	480	-	8.97	1 U	124000	-	
16-Apr-09	21.70	589.53	6.99	456	7.6	151.6	72.7	8.66	470	-	28.2	1.01	126000	-	
19-May-09	28.37	582.86	8.08	509	6.38	64.4	31.3	8.07	450 J	-	9.19	1 U	105000	-	
23-Jun-09	31.95	579.28	8.84	551	5.97	69.1	74.3	8.28	500	-	4.3	2 U	71000	-	
25-Aug-09	35.08	576.15	-	-	-	-	-	-	-	-	-	-	-	-	
24-Sep-09	35.29	575.94	11.7	714	2.28	371.9	258	7.26	550 J	-	0.76 J	0.17 J	88000	-	
15-Dec-09	26.11	585.12	8.6	928	2.89	544	89	7.14	450	-	1.1 J	2 U	110000	-	
24-Mar-10	27.86	583.37	8.3	697	3.52	505.1	18.1	7.47	450	-	23	0.46 J	110000	-	
16-Jun-10	21.35	589.88	10.7	783	2.07	379	41.4	7.73	340	-	53	0.0021	150000	-	
22-Sep-10	33.88	577.35	10.4	938	4.3	467.1	7.93	7.1	620	-	5	2 U	100000	-	
7-Dec-10	25.22	586.01	10.2	781	3.86	353.7	11.1	7.39	500	-	12	0.53 J	130000	-	
29-Mar-11	23.59	587.64	7	354	3.47	708	22.22	9.52	440 J	-	63	1.4 J	140000	-	
21-Jun-11	28.33	582.90	11.6	1000	2.22	285.3	10.6	9.06	1100 J	-	43	1.2 J	180000	-	
27-Sep-11	34.70	576.53	12.7	641	1.46	307.2	12.8	7.3	680	-	5 U	0.23 J	100000	-	
14-Dec-11	29.46	581.77	9.5	691	1.95	757.1	9.69	7.35	690	-	6.9	0.18 J	180000	-	
20-Mar-12	19.50	591.73	6.2	841	3.98	320.2	8.52	8.25	350	-	26	1 J	140000	-	
19-Jun-12	27.91	583.32	10.2	800	3.22	365.9	2.76	7.66	510	-	8.7	0.4 U	120000	-	
20-Sep-12	34.53	576.70	11	859	0.73	387	46.8	7.64	530	-	2.6	0.4 U	100000	-	
19-Dec-12	21.26	589.97	8.9	983	1.73	279	778	7.71	530	-	11	0.62	180000	-	
25-Feb-13	27.19	584.04	7.5	682	7.61	330.5	4.36	7.85	380	-	13	0.15 J	74000	-	
22-May-13	29.09	582.14	8.8	828	3.88	411.4	8.11	8.29	350	-	25	0.53	100000	-	
21-Aug-13	35.15	576.08	17.1	1248	3.41	114.2	144	7.78	1060	-	1.5	0.05 J	95000	-	
20-Nov-13	27.45	583.78	10	1032	4.13	196.5	31.7	7.18	699	-	14.5	1.4	202000	-	
1-Apr-14	21.08	590.15	8.4	567	3.04	168.2	15.7	10.24	413	-	62.7	1.5	150000	-	
21-May-14	26.11	585.12	10.3	670	0.49	198.4	-	7.45	565	-	95	1.6	166000	-	
12-Aug-14	34.56	576.67	14.07	812	3.64	87.7	1519	7.51	560	-	3	0.1 U	107000	-	
13-Nov-14	29.48	581.75	12.9	1135	3.5	241.7	10.46	7.69	956	-	20.8	0.1	295000	-	
11-Feb-15	20.81	590.42	7.7	619	6.17	81.4	18	9.63	430	-	39.2	1.3	126000	-	
4-May-15	29.80	581.43	10.5	924	2.54	361.3	8.7	9.74	623	-	42.3	0.5	192000	-	
6-Aug-15	36.08	575.15	12.8	781	2.4	129.6	261	7.24	DRY	-	DRY	DRY	DRY	-	
4-Nov-15	30.80	580.43	10.7	1234	4.98	205.6	11.8	7.13	1130	-	6.6	0.3	318000	-	
10-Feb-16	23.56	587.67	6.4	602	1.62	197.7	11.9	10.19	451	-	132	1.4	148000	-	
2-May-16	30.19	581.04	11.5	1008	0.8	110.6	9.76	10.14	751	-	171	2.7 J	232000	-	
23-Aug-16	35.79	575.44	13.1	729	2	436.2	51.4	7.2	1010	-	4.01	0.1 U	137000	-	
2-Nov-16	29.06	582.17	10.9	570	4.98	103.1	32.1	7.55	1180	-	11.2	0.56	372000	-	
1-Feb-17	26.86	584.37	8.1	992	2.21	99.7	7.19	9.73	632	-	109	0.971	194000	-	
30-May-17	26.86	584.37	10.5	814	6.12	5.83	5.74	9.73	487	-	42.5	0.36 J+	168000	-	
17-Aug-17	34.23	577.00	11.7	1054	5.43	125.1	5.68	7.65	731	-	6.52	0.1 U	156000	-	
10-Nov-17	29.96	581.27	10	1077	4.65	85.2	10.5	7.18	953	-	5.82	0.338	308000	-	
27-Feb-18	23.02	588.21	7.7	584	1.91	120.4	12.6	9.96	530	-	86.3	0.642	174000	-	
1-May-18	24.85	586.38	9.1	1082	2.16	-	11.8	10.34	682	-	113	0.775 J+	196000	-	
21-Aug-18	35.17	576.06	14.83	1095	4.02	131	123	7.4	936	-	3.65	0.1 U	214000	-	
6-Nov-18	32.00	579.23	10.3	1192	5.93	198.1	2.35	7.49	1200	-	4.87	0.077 J	63000 J+	-	
13-Mar-19	25.12	586.11	7.4	695	2.19	189.7	15.8	9.48	632	-	44.1	0.633	200000	-	
8-May-19	27.89	583.34	10.7	844	4.95	60.5	5.19	9.3	697	-	41.9	0.677	182000	-	
26-Aug-19	35.02	576.21	11.89	1111	1.52	Note 1	22.9	7.26	995	-	2.46	0.1 U	177000	-	
13-Nov-19	33.00	578.23	9.8	932	5.27	66.1	0.02	7.18	776	-	3.89	0.1 U	211000	-	
12-Feb-20	18.23	593.00	7	533	7.58	140.4	10.6	8.32	463	-	6.31	0.145	183000	-	
12-Aug-20	34.50	576.73	11.2	1381	4	125	2.75	7.52	1250	-	5.37	0.1 U	333000	-	
9-Dec-20	29.90	581.33	9.8	1105	4.51	222	8.32	7.29	897	-	3.12	0.295	263000	-	
3-Mar-21	24.81	586.42	9.2	899	3.04	225	3.09	7.6	792	-	3.74	0.132	247000	-	



**Table A-2e: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-5A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
9-Jun-21	33.20	578.03	9.3	875	5.23	184	1.26	7.27	700	-	2.62	0.063 J	205000	-
13-Oct-21	31.70	579.53	9.5	1934	5.97	194	9.56	7.22	DRY	DRY	DRY	DRY	DRY	DRY
5-Jan-22	23.00	588.23	9.2	972	4.7	271.1	1.4	7.18	829	6.42	3.38	0.085 J	252000	1.8
16-Mar-22	21.48	589.75	7.8	724	7.0	187	2.65	6.6	711	6.01	4.02	0.11	223000	1.52
23-Jun-22	25.74	585.49	9.6	969	3.5	173.1	1.13	7.38	881	5.49	3.29	0.093 J	251000	1.82
23-Sep-22	35	576.23	11.5	1640	3.45	223.6	1.35	7.42	1720	4.57	3.21	0.156 J	455000	1.58
13-Dec-22	30.22	581.01	10.4	928	7.08	109.2	2.27	7.04	634	3.54	1.89	0.105 J+	173000	1.25
13-Mar-23	27.15	584.08	8.1	1685	5.49	172.5	1.43	7.47	1090	5.83	3.39	0.068 J	318000	1.64
26-Jun-23	32.57	578.66	11.1	1559	4.28	74.7	1.29	7.49	1510	6.99	4.55	0.2 U	475000	2.17
5-Sep-23	35.67	575.56	Insufficient depth of water to sample											
12-Dec-23	19.96	591.27	9.7	1260	6.44	152.6	2.92	7.07	847	4.62	2.69	0.103 U	225000	1.71
4-Mar-24	24.62	586.61	8.4	1191	6.08	237	0.63	7.35	984 J	6.37	4.28	0.103 U	294000	1.62

Notes:

Top of casing elevation (feet NAVD88): 611.23

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- Dry Well went dry during sampling. Unable to collect sample.
- a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- Note 1 ORP measurements not available due to faulty sensor.
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit





**Table A-2f: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-6A Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Jul-05	30.89	578.06	15.26	735	-	-	303	7.6	612	-	2 U	2 U	-	-
10-Nov-05	27.25	581.70	11.79	700	-	-	13.7	7.51	460	-	2.16	1 U	-	-
15-Feb-06	19.42	589.53	6.17	759	2	162.9	9.42	8.27	550 J	-	7.54	1 U	-	-
17-May-06	27.55	581.40	11.99	835	1.31	248.3	4.16	7.46	550	-	11	1 U	-	-
23-Aug-06	30.99	577.96	15.92	862	1.6	-26.4	15.5	7.4	810	-	1.34	1 U	-	-
14-Nov-06	15.30	593.65	10.56	712	4.59	84.1	14.5	7.32	500	-	1.71	1 U	-	-
16-Feb-07	24.22	584.73	8.49	581	3.64	38.6	139	7.21	420	-	1.6	1 U	-	-
30-May-07	28.50	580.45	13.93	1092	2.72	180.7	210	7.4	740	-	16.2	1 U	-	-
29-Aug-07	31.34	577.61	10.15	701	4.48	84.8	662	7.8	620 J	-	1.41	1 U	-	-
29-Nov-07	28.32	580.63	11.3	731	6.23	154	-	6.26	420	-	1.78	1 U	-	-
27-Feb-08	23.42	585.53	-	-	-	-	-	-	410	-	1.47	1 U	-	-
20-May-08	27.49	581.46	8.14	791	3.93	176.5	-	7.64	540 J	-	8.18	1 U	-	-
27-Aug-08	31.72	577.23	9.33	776	4.83	142	-	7.32	660 J	-	1.86	1 U	109000	-
26-Sep-08	<i>Test Trench Drain Line Installed</i>													
16-Oct-08	31.29	577.66	9.17	923	4.6	115.4	-	7.13	590 J	-	1.85	1 U	106000	-
20-Nov-08	21.18	587.77	9.7	578	5.22	249.4	11.7	7.4	460	-	4.42	2 U	110000	-
30-Dec-08	18.64	590.31	8.45	448	9.27	137.9	75.8	7.89	370 J	-	11.9	1.14	106000	-
15-Jan-09	16.23	592.72	6.84	344	9.25	181.9	2.77	7.47	320	-	4.88	1 U	72900	-
12-Feb-09	25.64	583.31	7.89	-	10.82	-	71.7	7.7	420	-	11	1 U	103000	-
12-Mar-09	26.92	582.03	7.27	524	8.31	166.7	116	7.76	500	-	23.5	1 U	125000	-
16-Apr-09	19.46	589.49	7.33	406	7.57	182.8	91.8	8.33	430	-	24.1	1.09	101000	-
19-May-09	26.10	582.85	9.07	554	6.39	65.6	161	8.32	550 J	-	13.4	1 U	115000	-
23-Jun-09	29.67	579.28	9.51	522	6.05	71.4	-	8.17	540	-	3.1	2 U	74000	-
25-Aug-09	32.72	576.23	14.8	795	3.25	282.7	22	7.28	630 J	-	0.75 J	2 U	100000	-
24-Sep-09	32.93	576.02	10.6	745	4.02	361.3	29.8	7.27	560 J	-	0.28 J	2 U	100000	-
15-Dec-09	23.87	585.08	9.5	815	4.2	556	20	7.15	450	-	2 U	2 U	120000	-
24-Mar-10	25.61	583.34	8.5	704	4.93	205.6	20.5	8.53	490	-	47	0.9 J	140000	-
16-Jun-10	19.11	589.84	10.4	553	4.79	399.8	13.4	7.22	310	-	16	2 U	90000	-
22-Sep-10	31.61	577.34	11.3	1019	3.89	413.8	20.3	7.1	770	-	6.2	0.24 J	130000	-
8-Dec-10	23.10	585.85	87.9	751	6.24	437.1	9.55	8.77	520	-	43	1.3 J	130000	-
29-Mar-11	21.32	587.63	7.1	303	4.76	809.4	13.4	9.35	350 J	-	43	0.55 J	110000	-
21-Jun-11	26.04	582.91	11.2	840	3.24	300.2	8.5	8.4	790	-	18	0.58 J	110000	-
28-Sep-11	32.43	576.52	10.9	66.6	3.92	415.6	8.32	7.3	590	-	5 U	0.19 J	110000	-
14-Dec-11	27.19	581.76	9	605	1.56	329.9	21.9	7.89	570	-	11	0.79 J	150000	-
20-Mar-12	17.23	591.72	6.7	639	5.03	362.5	59.9	7.79	200	-	17	2 U	79000	-
19-Jun-12	25.63	583.32	9.6	681	5.24	373.2	5.94	7.43	430	-	7.4	0.4 U	76000	-
19-Sep-12	32.12	576.83	11.7	786	3.49	290	7.36	7.38	460	-	5.7	0.4 U	81000	-
19-Dec-12	19.00	589.95	8.9	977	4.55	308	26.9	7.98	440	-	20	1.3	150000	-
25-Feb-13	24.93	584.02	7.1	766	7.59	306.9	6.18	8.2	450	-	34	0.73	120000	-
22-May-13	26.84	582.11	9.1	705	3.94	412.9	5.97	9.33	430	-	43	0.52	140000	-
21-Aug-13	32.84	576.11	11.2	879	4.54	110.2	8.28	8.28	548	-	9.5	0.1 U	106000	-
20-Nov-13	25.21	583.74	11.1	1264	4.69	201.4	30.8	7.55	640	-	24.9	1.9	163000	-
1-Apr-14	18.81	590.14	8.4	448	3.5	194.9	14.7	8.87	342	-	14.8	0.3	78400	-
21-May-14	23.84	585.11	10.6	122	1.32	199.3	-	8.46	352	-	18	0.2	80400	-
13-Aug-14	32.25	576.70	12.46	796	5.77	54	8.01	8.68	628	-	16.1	0.1 U	165000	-
13-Nov-14	27.21	581.74	13.3	837	4.02	234.3	11.4	8.63	711	-	44.1	0.4	203000	-
11-Feb-15	18.54	590.41	8.4	609	1.75	16	87.4	9.71	435	-	36.2	1	117000	-
4-May-15	27.52	581.43	9.9	974	3.27	356.5	12.3	10.14	654	-	41.6	0.5	199000	-
6-Aug-15	33.98	574.97	11.7	822	1.77	113.7	4.02	8.83	670	-	19.1	0.1 U	210000	-
4-Nov-15	28.51	580.44	11.7	1207	4.85	206.3	21.2	7.48	1090	-	7.7	1	370000	-
10-Feb-16	20.96	587.99	6.9	712	2.3	145.8	20.1	10.82	575	-	121	1.1	173000	-
2-May-16	28.91	580.04	10.6	1856	0.19	111.2	15.6	11.53	1010	-	199	2.5 J-	347000	-
23-Aug-16	33.58	575.37	11.4	1241	0.43	462	8.89	9.51	1150	-	38.9	0.341	349000	-
2-Nov-16	26.92	582.03	11.6	409	5.05	14.4	40.6	9.15	911	-	25.6	1.49	297000	-
1-Feb-17	24.61	584.34	6.2	1757	2.34	72.1	11.7	11.97	880	-	141	0.336	283000	-
30-May-17	24.56	584.39	10.8	1026	2.45	5.69	16.9	10.5	629	-	72.8	0.52 J+	210000	-
17-Aug-17	32.04	576.91	13.1	1019	3.94	87.3	42.7	9.36	726	-	20.3	0.15	219000	-
10-Nov-17	27.72	581.23	11.6	1090	4.17	109.6	38.2	9.12	931	-	24.3	2.77	356000	-
27-Feb-18	20.78	588.17	7	823	3.99	59.3	12	11.29	635	-	99.3	0.561	203000	-
1-May-18	22.58	586.37	8.9	1442	3.52	-	17.7	11.49	817	-	119	0.831 J+	250000	-
21-Aug-18	33.09	575.86	13.18	1153	1.01	139.8	9.68	10.06	989	-	53.6	0.345	334000	-
6-Nov-18	29.74	579.21	11.1	1719	3.85	218.4	6.49	8.13	1860	-	3.04	0.367	701000 J+	-
13-Mar-19	22.90	586.05	5.8	748	5.04	145.7	32	10.55	737	-	39.1	0.455	246000	-
8-May-19	25.63	583.32	9.1	936	5.95	75.9	7.6	10.38	747	-	54.7	1.27	246000	-
26-Aug-19	32.90	576.05	11.18	1622	0.88	Note 1	6.57	8.97	1510	-	18.8	0.507	478000	-
13-Nov-19	30.92	578.03	10.2	1320	1.45	172.7	5.1	8.33	1140	-	6.31	0.1 U	422000	-
12-Feb-20	15.95	593.00	7.7	437.7	1.4	150.6	19.7	8.13	379	-	2.12	0.1 U	122000	-
12-Aug-20	32.30	576.65	11	2360	2.25	162.9	13.4	8.16	2060	-	6.28	0.088 J	709000	-
9-Dec-20	27.60	581.35	10.8	1750	1.95	209	22	8.22	1500	-	3.14	0.984	539000	-
3-Mar-21	22.58	586.37	7.1	760	1.74	208	5.6	8.04	722	-	3.09	0.307	243000	-

**Table A-2f: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-6A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
9-Jun-21	31.07	577.88	9.8	2077	4.83	197.3	1.81	8.08	1900	-	5.03	0.094 J	707000	-
13-Oct-21	29.39	579.56	11.2	2509	4.77	188.6	13.1	7.64	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	20.72	588.23	7.3	1136	8.21	229.4	2.04	7.98	1040	7.89	2.41	0.115	333000	0.912
16-Mar-22	19.23	589.72	7.3	828	7.3	176.4	3.63	7.57	808	7.90	2.85	0.155	255000	0.935
23-Jun-22	23.49	585.46	11.2	916	3.74	163.1	0.76	7.66	836	7.00	2.09	0.073 J	265000	0.977
23-Sep-22	32.92	576.03	14.8	2281	3.73	199.3	2.05	8.05	2150	7.64	4.97	0.2 U	646000	2.52
13-Dec-22	27.98	580.97	12.4	1915	6.1	80.4	3.77	7.98	1350	12.4	5.64	0.865 J+	495000	1.26
14-Mar-23	24.91	584.04	6.8	2029	8.44	212.6	0.76	7.71	1190	6.7	1.87	0.1 U	387000	0.801
28-Jun-23	30.50	578.45	11	1640	2.57	222.4	1.22	7.78	1310	7.07	3.92	0.052 J	446000	1.73
5-Sep-23	Below Pump	-	11.6	2869	4.79	184.9	4.83	7.9	1930 J-	7.37	4.56	0.1	566000	2.33
12-Dec-23	17.75	591.2	9.4	1170	7.75	137.3	4.99	7.33	766	6.48	2.09	0.254	266000	1
4-Mar-24	22.36	586.59	7.3	1215	7.46	232.5	0.84	7.59	1070 J	7.92	2.83	0.103 U	359000	0.928

Notes:

Top of casing elevation (feet NAVD88): 608.95

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-2g: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-7A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (ReI mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
13-Oct-21	13.61	579.08	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
10-Jan-22	4.73	587.96	7.00	467	5.45	197.0	2.99	7.34	419	3.89	2.07	0.1 U	98000	1.04
21-Mar-22	3.21	589.48	7.3	691	6.38	66.2	1.52	7.46	632	6.23	2.88	0.071 J	179000	1.34
22-Jun-22	7.45	585.24	12	541	1.88	107.5	0.47	7.21	387	2.91	1.78	0.1 U	65500	1.19
14-Sep-22	16.9	575.79	13.6	548	4.46	141	0.5	6.31	444	1.63	1.49	0.1 U	54000	1.16
14-Dec-22	12	580.69	8	514	5.35	170.1	0.41	7.07	335	1.64	1.18	0.1 U	42700	0.798
17-Mar-23	8.90	583.79	5.3	755	2.7	205.3	0.85	7.16	412	1.51	1.45	0.1 U	55300	0.774
28-Jun-23	14.57	578.12	13	561	0.46	119.6	0.42	6.83	364	0.785	1.24	0.407	26200	1.02
7-Sep-23	17.51	575.18	12	868	4.05	44	0.47	6.87	493 J-	1.3	1.43	0.0513 U	35100	1.07
15-Dec-23	2.53	590.16	9.2	1163	6.27	354.3	4.79	7.22	577	4.03	1.95	0.103 U	113000	1.25
6-Mar-24	6.52	586.17	6.4	850	7.35	254.1	0.66	7.24	588	3.01	2.14	0.103 U	111000	0.97

Notes:

Top of casing elevation (feet NAVD88): 592.69

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-2h: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-8A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (ReI mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
13-Oct-21	23.91	577.58	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	13.55	587.94	9.5	670	3.99	239.1	4.50	7.05	595	5.21	6.64	0.1 U	169000	3.87
21-Mar-22	12.11	589.38	8.0	587	7.13	45	3.32	7.71	536	4.76	7.48	0.1 U	163000	3.84
22-Jun-22	16.4	585.09	9.4	773	2.99	96	0.94	7.22	699	5.17	8.13	0.1 U	197000	4.73
12-Sep-22	26	575.49	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13-Dec-22	21.16	580.33	10.4	1011	6.13	122.1	1.22	7.07	721	4.53	5.37	0.1 U	205000	3.61
17-Mar-23	17.86	583.63	9.2	1216	4.6	214.5	0.8	7.19	714	4.71	7.2	0.1 U	218000	4.22
28-Jun-23	24.08	577.41	10.2	845	1.85	176.3	0.58	7.19	656	4.03	5.91	0.1 U	189000	3.62
7-Sep-23	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
15-Dec-23	11.34	590.15	9.8	1434	5.3	348.7	6.22	6.89	760	4.1	5.52	0.148 J	220000	3.64
6-Mar-24	15.41	586.08	8.3	926	8.1	304.5	0.74	7.06	622	4.93	6.67	0.103 U	159000	3.44

Notes:

Top of casing elevation (feet NAVD88): 601.49

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-2i: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-9A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (ReI mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Oct-21	4.38	692.91	12.20	956	1.45	-93.2	2.70	7.11	981 J-	0.659	4.79	0.139	16000	1.2
7-Jan-22	2.45	694.84	8.50	381	4.86	189.9	1.43	6.95	404	0.181 J	1.02	0.056 J	2910	1.03
18-Mar-22	2.38	694.91	8.50	423	5.19	138.3	1.17	7.16	403	0.154 J	0.788	0.1 U	2470	0.776
22-Jun-22	2.38	694.91	10.5	485.8	4.42	72.8	0.85	6.89	399	0.244	0.656	0.052 J	2130	0.916
14-Sep-22	8.7	688.59	13.5	509	3.84	130.2	1.09	6.44	441	0.154 J	1.05	0.1 U	2780	1.13
14-Dec-22	2.5	694.79	8	413.5	7.42	135.6	0.53	6.91	328	0.132 J	0.599	0.1 U	1630	0.867
16-Mar-23	2.39	694.9	6.6	556.2	5.25	120.9	1.6	6.85	337	0.119 J	0.508	0.1 U	1660	0.812
27-Jun-23	5.19	692.1	11.1	468.4	2.6	44.3	7.31	6.72	379	0.123 J	0.832	0.5 U	2120	1.3
8-Sep-23	11.47	685.82	Insufficient depth of water to sample											
13-Dec-23	2.48	694.81	9.1	623	6.85	127.8	3.2	6.4	297	0.202 U	0.47	0.103 U	1420	0.846
7-Mar-24	2.58	694.71	7.6	610	6.61	186.2	1.46	6.89	360	0.202 U	0.436	0.103 U	1790	0.64 J

Notes:

Top of casing elevation (feet NAVD88): 697.29

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit



**Table A-2j: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-10A  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (ReI mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Oct-21	19.04	678.98	10.7	390	4.24	-115.0	27.80	7.93	383 J-	0.705	4.04	0.383	9700	2.87
6-Jan-22	5.55	692.47	9.3	168	7.06	94.6	6.90	7.50	141	0.151 J	1.13	0.109	2660	1.03
17-Mar-22	5.39	692.63	9.4	151	7.12	95.1	6.21	6.50	139	0.2 U	0.91	0.061 J	1880	0.807
21-Jun-22	5.89	692.13	11.5	114.9	7.92	191.1	4.48	6.80	116	0.2 U	0.764	0.081 J	1150	1.02
13-Sep-22	14.24	683.78	12	221.3	6.64	189.1	3.74	6.78	195	0.201	1.54	0.082 J	2350	1.56
13-Dec-22	14.93	683.09	9.8	395.9	4.71	179.4	5.19	7.34	200	0.173 J	1.3	0.1 U	2060	1.1
15-Mar-23	5.64	692.38	8.4	179.4	8.78	145.7	2.07	6.85	108	0.2 U	0.541	0.1 U	892	0.727
26-Jun-23	9.63	688.39	11.1	102.6	9.22	143.6	4.69	6.19	108	0.2 U	0.579	0.168 J	823	1
6-Sep-23	17.39	680.63	10.6	335	2.5	-26.6	4.58	7.51	205 J-	0.224	1.45	0.12	2310	1.4
13-Dec-23	6.01	692.01	10.3	247.7	9.01	154.4	4.23	6.3	111	0.202 U	0.596	0.103 U	977	0.746
5-Mar-24	5.33	692.69	8.9	180.6	9.04	162.6	5.3	6.31	106	0.202 U	0.44	0.103 U	777	0.556 U

Notes:

Top of casing elevation (feet NAVD88): 698.02

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

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a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-2k: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well P-16  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (ReI mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Oct-21	2.41	700.46	12.30	2622	0.71	-261.2	56.2	12.11	2640 J-	9.16	232	41.1	826000	445
6-Jan-22	2.35	700.52	8.10	2804	1.06	-409.7	1.1	12.75	2420	9.63	109	14.6	809000	292
17-Mar-22	2.73	700.14	8.4	2600	1.16	-421.2	23.5	13.71	2570	8.14	124	10.5	771000	255
22-Jun-22	2.71	700.16	11.6	2757	0.04	-105.8	27.4	12.19	2200	9.62	124	17.1	713000	285
13-Sep-22	4.33	698.54	14.9	2609	1.26	-427.3	31.8	11.63	2160	5.92	103	42.7	756000	431
13-Dec-22	2.86	700.01	8.2	4004	3.49	-393.6	21	11.01	2390	6.52	55.2	12	820000	213
15-Mar-23	2.49	700.38	7.1	4819	0.04	-332.2	52.2	12	2520	9.34	166	11.1	829000	317
26-Jun-23	3.72	699.15	12.5	2388	-0.03	-514.9	49.8	11.68	2130	6.04	80.4	8.79	726000	211
6-Sep-23	4.07	698.8	14	3763	1.38	258.9	30.7	12.14	2250 J-	7.04	119	12.3	697000	258
13-Dec-23	2.68	700.19	9.5	6284	4.08	-804.2	36.4	11.68	3600	0.322 J	81.7	0.675	937000	223
5-Mar-24	2.95	699.92	7.6	4529	3.9	-244.4	34.7	11.99	2350	8.51	139	9.09	818000	288

Notes:

Top of casing elevation (feet NAVD88): 702.87

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-21: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well P-17  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (ReI mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Oct-21	4.89	715.43	14.00	464	0.98	-97.5	38.1	6.49	444 J-	1 U	16.4	13.1	9700	105
7-Jan-22	3.65	716.67	6.90	389	1.13	-60.4	4.1	6.46	388	1.26	2.81	0.1 U	8030	1.8
18-Mar-22	4.12	716.2	8.4	404.4	1.46	23.7	5.41	7.33	362	1.38	1.34	0.1 U	13300	1.08
22-Jun-22	6.87	713.45	11.7	586	0.26	-57.6	2.87	6.44	398	0.68	6.73	0.2 U	3560	2.99
14-Sep-22	13.31	707.01	14.3	706	1.91	-63.2	2.12	6.1	489	1 U	7.67	0.5 U	3570	2.99
14-Dec-22	5.47	714.85	9.7	469.3	3.17	-85.9	3.75	6.51	377	1	2.69	0.1 U	7820	1.6
16-Mar-23	5.05	715.27	7.6	630	0.22	-42.4	7.01	6.5	293	0.816	3.46	0.1 U	7590	1.54
27-Jun-23	10.06	710.26	11.4	578	0.32	-59.6	8.02	6.35	377	0.658	4.51	0.5 U	6140	2.29
7-Sep-23	13.26	707.06	Insufficient depth of water to sample											
13-Dec-23	4.28	716.04	9.7	711	3.78	-60.2	9.25	6.13	337	1.17	3.02	0.103 U	11700	1.32
7-Mar-24	4.80	715.52	8.5	761	3.46	-38.2	6.54	6.5	315	1.33	3.92	0.103 U	7730	1.38

Notes:

Top of casing elevation (feet NAVD88): 720.32

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit



**APPENDIX A-3**

**Summary of Lower Disposal Area –  
Bedrock Groundwater Sampling  
Results**

Table A-3A Well MWB-1LDA  
Table A-3B Well MWB-2LDA  
Table A-3C Well MWB-3LDA

**Table A-3a: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results**  
**- Well MWB-1LDA Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
19-Dec-06	26.51	678.17	10.96	546	0.43	-115.4	1.05	7.70	310	151	1 U	-
14-Feb-07	26.08	678.60	10.62	397	1.02	-90.8	3.07	7.53	240	160	1 U	-
31-May-07	25.96	678.72	10.83	386	0.36	-172.8	4.20	8.20	220	122	1 U	-
27-Aug-07	25.66	679.02	10.97	372	0.76	-128.2	1.08	7.51	240	89.9	1 U	-
28-Nov-07	26.81	677.87	10.56	371	0.42	-121.2	1.29	8.03	220	88.3	1 U	-
27-Feb-08	25.80	678.88	10.62	371	2.01	-	1.07	-	230	80.9	1 U	3000 U
20-May-08	25.62	679.06	10.61	391	0.36	-53.0	1.11	7.28	230	64.3	1 U	-
27-Aug-08	26.14	678.54	10.58	394	0.50	-63.9	1.02	7.35	230 J	64	1 U	3000 U
19-Nov-08	25.16	679.52	10.33	269	0.45	-88.6	0.48	7.51	230	59.6	1 U	3000 U
11-Feb-09	25.08	679.60	10.04	268	0.48	-	0.97	7.89	230	56	1 U	3000 U
18-May-09	24.83	679.85	10.10	271	0.42	-50.5	1.81	8.05	230 J	46.6	1 U	3000 U
24-Sep-09	26.32	678.36	11.80	323	0.24	202.0	3.59	7.57	260	27	2 U	1100 J
17-Dec-09	25.06	679.62	10.10	370	0.94	179.0	4.16	7.77	<40	34	2 U	1200 J
23-Mar-10	24.83	679.85	10.90	344	0.21	397.4	3.17	7.57	240	25	2 U	1300 J
15-Jun-10	24.38	680.30	10.50	355	0.08	195.5	0.42	7.66	150	27	2 U	1100 J
20-Sep-10	25.74	678.94	10.50	354	0.06	192.9	0.20	7.65	200	22	2 U	1100 J
6-Dec-10	24.59	680.09	10.00	347	0.09	99.3	0.17	7.86	230	22	2 U	1000 J
28-Mar-11	24.01	680.67	10.00	173	0.16	90.6	0.88	7.58	200	22	2 U	1000 J
20-Jun-11	24.11	680.57	10.30	330	0.07	121.5	0.17	7.65	250	22	2 U	900 J
26-Sep-11	25.39	679.29	10.40	2906	0.06	123.6	0.43	7.65	280	15	2 U	1100 J
14-Dec-11	24.61	680.07	9.90	245	0.10	193.8	1.76	7.57	230	21	2 U	1200 J
21-Mar-12	23.70	680.98	10.10	392	0.07	392.0	0.22	7.47	240	23	2 U	1100 J
18-Jun-12	23.90	680.78	10.50	383	0.02	342.8	0.30	7.67	230	20	0.4 U	3300 U
19-Sep-12	25.38	679.30	10.30	402	0.01	151.0	0.44	7.63	220	19	0.4 U	1000 J
18-Dec-12	23.59	681.09	10.10	492	0.00	-45.7	0.16	7.70	92	17	0.4 U	1200 J
25-Feb-13	23.73	680.95	9.90	377	0.00	177.1	0.37	7.53	270 J	19	0.4 U	1000 J
22-May-13	23.85	680.83	9.90	398	0.00	430.4	0.44	7.73	290	17	0.4 U	3300 U
21-Aug-13	25.34	679.34	10.40	467	0.01	-31.7	0.55	7.68	238	16.8	0.08 J	1060
19-Nov-13	24.25	680.43	10.10	361	0.00	70.3	0.32	7.30	232	15.7	0.1 U	1040
31-Mar-14	22.36	682.32	10.70	286	0.01	107.4	0.21	7.79	211	13.8	0.1 U	1020
21-May-14	23.29	681.39	8.54	271	1.35	54.3	-	7.14	198	13.1	0.1 U	1000
12-Aug-14	24.87	679.81	14.79	335	0.41	-16.0	2.02	7.05	216	11.9	0.1 U	1010
11-Nov-14	24.96	679.72	10.10	262	0.79	11.1	1.51	7.49	221	13.6	0.1 U	1090
10-Feb-15	23.23	681.45	10.40	319	0.25	-114.0	0.36	7.70	240	13.3	0.1 U	960
4-May-15	23.62	681.06	10.20	370	0.05	175.1	0.16	7.70	224	11.7	0.1 U	960
4-Aug-15	25.30	679.38	11.00	279	0.06	-30.5	0.72	7.72	234	14.4	0.1 U	990
4-Nov-15	25.35	679.33	10.60	263	0.00	51.2	0.46	7.46	233	11	0.1 U	1150
8-Feb-16	23.03	681.65	10.20	319	0.03	206.5	0.20	7.77	210	12.1	0.1 U	1050
2-May-16	23.49	681.19	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
22-Aug-16	25.00	679.68	11.10	323	0.02	-55.2	1.10	7.64	Monitored Annually <sup>1</sup>			
1-Nov-16	24.29	680.39	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
31-Jan-17	23.06	681.62	10.20	391	0.05	169.3	0.13	7.66	223	11.9	0.1 U	1030
30-May-17	22.45	682.23	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
16-Aug-17	24.27	680.41	10.70	385	0.15	123.4	0.40	7.64	Monitored Annually <sup>1</sup>			
9-Nov-17	34.60	680.27	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
28-Feb-18	22.04	682.64	10.10	276	0.20	-96.4	0.25	7.44	221	10.8	0.1 U	951
1-May-18	22.11	682.57	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
22-Aug-18	24.42	680.26	11.37	277	5.25	-59.6	0.18	7.61	Monitored Annually <sup>1</sup>			
6-Nov-18	24.57	680.11	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
11-Mar-19	22.61	682.07	10.10	248	0.60	-70.8	0.68	7.60	224	8.74	0.1 U	1070
8-May-19	22.68	682.00	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
27-Aug-19	24.54	680.14	11.45	282	0.58	Note 1	0.04	7.30	Monitored Annually <sup>1</sup>			
13-Nov-19	24.15	680.53	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
13-Feb-20	22.04	682.64	10.10	280	0.34	-133.4	0.57	7.51	207	8.82	0.1 U	1050
13-Aug-20	23.92	680.76	11.00	284	0.60	-113.5	0.44	7.55	Monitored Annually <sup>1</sup>			
9-Dec-20	23.35	681.33	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
5-Mar-21	22.01	682.67	10.20	266	0.04	-50.0	0.42	7.64	214	10.5	0.1 U	1120



**Table A-3a: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results  
- Well MWB-1LDA Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)			
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium	
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-	
10-Jun-21	23.17	681.51	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
13-Oct-21	24.41	680.27	10.90	327.2	0.91	-76.1	0.33	7.48	Monitored Annually <sup>1</sup>				
5-Jan-22	22.00	682.68	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
17-Mar-22	21.89	682.79	10.7	259.6	1.24	-60.4	0.22	6.52	220	8.2	0.1 U	925	
21-Jun-22	21.58	683.1	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
12-Sep-22	23.51	681.17	11.3	263.3	2.86	-7.4	0.37	6.76	Monitored Annually <sup>1</sup>				
12-Dec-22	23.51	681.17	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
15-Mar-23	22.00	682.68	10.3	372.2	0.17	-86.5	0.13	7.66	221	8.35	0.1 U	864	
27-Jun-23	22.85	681.83	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
6-Sep-23	24.14	680.54	11.6	385.5	2.01	-50.9	1.44	7.73	Monitored Annually <sup>1</sup>				
15-Dec-23	22.74	681.94	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
4-Mar-24	21.68	683	10.2	320.6	3.65	-29.8	0.3	7.38	243 J	9.13	0.103 U	857	

Note:

Top of casing elevation (feet NAVD88): 704.68

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

- Not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-3b: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results  
- Well MWB-2LDA Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium	
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-	
19-Dec-06	36.82	704.84	12.15	394	0.57	114.6	1.84	7.58	230	8.49	1 U	-	
14-Feb-07	36.30	705.36	11.69	339	1.40	-85.7	2.72	7.39	200	6.09	1 U	-	
31-May-07	36.93	704.73	12.13	346	0.20	-223.7	3.04	8.28	210	6.95	1 U	-	
27-Aug-07	37.99	703.67	12.18	336	0.49	-169.7	0.84	7.54	210	7.49	1 U	-	
28-Nov-07	37.89	703.77	11.82	338	0.28	-146.6	1.32	7.93	250	6.91	1 U	-	
27-Feb-08	37.24	704.42	11.87	340	0.23	-	0.87	7.41	210	7.46	1 U	3000 U	
20-May-08	37.31	704.35	11.91	359	0.23	-86.6	0.67	7.27	200	6.31	1 U	-	
27-Aug-08	38.37	703.29	11.84	362	0.35	-77.6	0.70	7.21	210 J	6.36	1 U	3000 U	
19-Nov-08	37.50	704.16	11.53	254	0.44	-105.9	2.08	7.45	200	5.86	1 U	3000 U	
11-Feb-09	37.10	704.56	11.25	254	0.48	-	0.63	7.91	220	5.61	1 U	3000 U	
18-May-09	37.00	704.66	11.42	258	0.42	-71.9	1.11	8.00	210 J	5.17	1 U	3000 U	
25-Sep-09	38.88	702.78	13.10	297	0.14	140.7	3.09	7.54	230	6.5	2 U	1200 J	
17-Dec-09	37.19	704.47	10.80	341	0.51	129.0	4.85	7.71	74	4.3	2 U	1100 J	
23-Mar-10	36.60	705.06	12.60	323	0.27	355.0	5.28	7.54	110	7.6	2 U	1200 J	
15-Jun-10	36.25	705.41	11.40	326	0.08	171.1	-	7.62	98	8.8	2 U	1100 J	
20-Sep-10	37.85	703.81	11.60	324	0.08	144.0	0.16	7.61	160	6.5	2 U	1200 J	
6-Dec-10	36.60	705.06	11.00	319	0.21	78.3	0.20	7.81	210	2.9	2 U	900 J	
29-Mar-11	35.98	705.68	11.20	156	0.15	215.0	0.75	7.48	200	5.6	2 U	1500 J	
21-Jun-11	36.34	705.32	11.80	352	0.06	101.5	0.24	7.59	220	5 U	2 U	1000 J	
27-Sep-11	38.14	703.52	11.50	2484	0.06	114.4	0.45	7.60	220	5 U	2 U	1000 J	
14-Dec-11	36.91	704.75	11.00	228	0.05	127.2	4.04	7.54	190	6.7	2 U	1200 J	
21-Mar-12	35.68	705.98	11.00	359	0.05	93.9	0.30	7.43	210	6.9	2 U	1100 J	
18-Jun-12	36.06	705.60	11.70	350	0.02	211.9	0.23	7.62	220	6.2	0.4 U	3300 U	
19-Sep-12	38.07	703.59	11.60	367	0.00	102.0	0.34	7.59	200	6.5	0.4 U	1000 J	
18-Dec-12	34.88	706.78	10.90	463	0.00	-97.8	0.17	7.81	68	6	0.4 U	1200 J	
25-Feb-13	35.70	705.96	10.90	347	0.09	112.6	0.27	7.56	190	6.6	0.4 U	1100 J	
22-May-13	36.24	705.42	11.00	412	0.00	412.5	0.43	7.71	190	6	0.4 U	3300 U	
20-Aug-13	38.13	703.53	12.20	406	0.02	-41.5	0.64	7.48	211	5.5	0.1 U	1030	
19-Nov-13	36.56	705.10	11.10	344	0.01	43.6	0.32	7.35	206	5.2	0.1 U	1090	
31-Mar-14	35.36	706.30	11.50	285	0.00	93.1	0.31	7.71	207	5.1	0.1 U	1100	
22-May-14	35.80	705.86	10.05	260	0.24	17.5	-	7.22	186	5	0.1 U	1000	
13-Aug-14	37.50	704.16	13.10	294	0.57	-37.5	3.28	7.19	190	5.4	0.1 U	1110	
11-Nov-14	37.06	704.60	10.10	241	0.68	-39.7	2.10	7.48	206	5.4	0.1 U	1090	
10-Feb-15	35.70	705.96	11.40	295	0.11	-123.2	2.11	7.69	206	5.1	0.1 U	1020	
4-May-15	36.34	705.32	11.70	336	0.05	340.2	0.72	7.73	204	4.8	0.1 U	1040	
4-Aug-15	38.42	703.24	12.70	263	0.04	-81.8	0.77	7.72	204	5.8	0.1 U	1040	
4-Nov-15	37.81	703.85	11.60	244	0.04	26.9	2.13	7.45	201	4.7	0.1 U	1070	
8-Feb-16	35.68	705.98	11.60	307	0.00	208.4	0.74	7.68	186	5.5	0.1 U	1110	
2-May-16	36.03	705.63	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
22-Aug-16	37.92	703.74	12.20	306	0.02	-137.6	1.58	7.67	Monitored Annually <sup>1</sup>				
1-Nov-16	37.07	704.59	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
31-Jan-17	36.00	705.66	10.90	348	0.10	120.5	0.86	7.67	195	5.66	0.1 U	1110	
30-May-17	35.44	706.22	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
16-Aug-17	37.69	703.97	12.30	356	0.14	-77.2	3.27	7.67	Monitored Annually <sup>1</sup>				
9-Nov-17	37.11	704.55	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
28-Feb-18	34.95	706.71	10.90	261	0.21	-115.5	0.80	7.48	205	5.69	0.1 U	992	
1-May-18	35.11	706.55	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
22-Aug-18	37.90	703.76	12.31	262	1.64	-80.3	0.92	7.56	Monitored Annually <sup>1</sup>				
6-Nov-18	37.66	704.00	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
12-Mar-19	35.68	705.98	10.70	239	0.58	-75.1	0.59	7.48	188	5.5	0.1 U	1080	
8-May-19	35.86	705.80	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
27-Aug-19	37.85	703.81	12.30	265	0.43	Note 1	0.02	7.46	Monitored Annually <sup>1</sup>				
13-Nov-19	37.22	704.44	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
13-Feb-20	35.10	706.56	10.80	261	0.39	-135.9	0.96	7.50	185	5.45	0.1 U	1150	
13-Aug-20	37.21	704.45	11.60	266	0.54	-118.2	1.35	7.50	Monitored Annually <sup>1</sup>				
9-Dec-20	36.55	705.11	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>				
5-Mar-21	35.02	706.64	11.10	255	0.04	-80.0	2.29	7.65	176	5.52	0.1 U	1090	

**Table A-3b: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results  
- Well MWB-2LDA Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
10-Jun-21	36.29	705.37	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
13-Oct-21	37.76	703.90	11.70	308	3.66	-44.7	0.32	7.43	Monitored Annually <sup>1</sup>			
5-Jan-22	35.31	706.35	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
17-Mar-22	34.52	707.14	11.6	244.3	2.84	-60.6	3.21	6.56	201	5.53	0.071 J	1060
21-Jun-22	34.7	706.96	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
23-Sep-22	37	704.66	12.1	243.1	3.88	-17.8	0.54	7.47	Monitored Annually <sup>1</sup>			
12-Dec-22	36.41	705.25	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
14-Mar-23	35.09	706.57	10.8	350.4	3.17	50.5	0.2	7.37	199	5.25	0.1 U	894
27-Jun-23	36.04	705.62	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
6-Sep-23	37.74	703.92	12.9	354.5	1.99	-35.7	0.51	7.67	Monitored Annually <sup>1</sup>			
14-Dec-23	35.46	706.2	Monitored Semi-Annually <sup>1</sup>							Monitored Annually <sup>1</sup>		
6-Mar-24	34.60	707.06	10.8	320.7	5.8	84.9	0.52	7.39	218	5.24	0.103 U	952

Note:

Top of casing elevation (feet NAVD88): 741.66

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021.

Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

- Not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

Table A-3c: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results  
- Well MWB-3LDA Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)			
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium	
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-	
19-Dec-06	7.08	737.11	11.37	670	0.42	-171.2	1.20	9.23	500	25.7	1 U	-	
23-Jan-07	5.62	738.57	13.07	383	0.51	-275.0	1.53	8.63	270	18.4	1 U	-	
14-Feb-07	5.81	738.38	12.57	328	1.09	-158.2	115.00	7.86	310	15.1	1 U	-	
29-Mar-07	4.78	739.41	12.44	458	0.57	-140.8	4.25	7.78	260 J	37.9	1 U	-	
17-Apr-07	4.86	739.33	12.79	389	0.27	-102.4	1.22	7.46	240	23	1 U	-	
31-May-07	6.39	737.80	12.98	394	0.29	-223.8	3.32	8.14	240	21.2	1 U	-	
20-Jun-07	6.86	737.33	13.41	412	6.10	-128.5	1.35	8.02	230 J	23.8	1 U	-	
31-Jul-07	7.96	736.23	13.47	417	0.77	-174.1	0.92	7.64	250	18.9	1 U	-	
27-Aug-07	8.50	735.69	12.84	395	0.46	-132.4	1.97	7.43	250	17.6	1 U	-	
27-Sep-07	9.58	734.61	12.68	294	0.51	-133.8	0.53	7.87	250	19.3	1 U	-	
26-Oct-07	9.65	734.54	12.49	288	0.84	-111.9	9.83	7.60	240 J	11	1 U	-	
28-Nov-07	10.23	733.96	11.95	362	0.64	-86.1	1.58	7.87	200	17.8	1 U	-	
12-Dec-07	9.66	734.53	11.83	334	0.26	-93.2	0.63	7.63	280 J	17.4	1 U	-	
24-Jan-08	8.20	735.99	11.09	335	0.44	-108.3	-	7.46	220	19.2	1 U	-	
26-Feb-08	7.61	736.58	12.26	337	0.48	-	2.40	7.45	210	22	1 U	3000 U	
25-Mar-08	7.22	736.97	11.94	337	1.01	-48.6	2.80	7.51	210	17.8	1 U	-	
29-Apr-08	6.75	737.44	12.53	332	0.77	-50.3	1.95	7.41	200 J	18.2	1 U	-	
19-May-08	7.17	737.02	12.37	336	0.57	-57.2	2.19	7.34	200 J	18.7	1 U	-	
18-Jun-08	7.26	736.93	12.11	323	0.48	-64.1	0.83	7.13	190 J	19.5	1 U	-	
26-Aug-08	8.78	735.41	12.31	329	1.16	-36.5	2.89	7.30	200 J	17.7	1 U	3000 U	
19-Nov-08	9.03	735.16	11.91	243	0.52	-93.1	1.69	7.40	190	18.2	1 U	3000 U	
11-Feb-09	7.07	737.12	11.74	227	0.65	-	1.03	7.76	180	17.7	1 U	3000 U	
18-May-09	6.50	737.69	12.11	225	0.67	-63.9	1.51	7.83	190 J	12.9	1 U	3000 U	
25-Sep-09	10.47	733.72	13.50	260.1	0.36	215.3	4.14	7.61	220	17	0.94 J	12000	
17-Dec-09	8.39	735.80	11.50	301.0	0.44	110.0	3.10	7.71	270	23	2 U	1300 J	
23-Mar-10	6.46	737.73	12.20	294.8	0.43	332.5	3.52	7.57	150 J	27	2 U	1300 J	
16-Jun-10	5.34	738.85	11.10	281.7	0.05	117.0	-	7.71	160	27	2 U	1300 J	
21-Sep-10	7.72	736.47	11.80	276.3	0.06	169.5	0.36	7.54	140	23	2 U	1300 J	
7-Dec-10	6.48	737.71	11.00	263.0	0.15	77.2	0.38	7.58	180	20	2 U	1200 J	
28-Mar-11	4.42	739.77	10.80	134.0	0.44	75.6	1.06	7.46	160 J	21	2 U	1700 J	
20-Jun-11	4.76	739.43	12.10	252.7	0.07	68.4	0.13	7.48	200 J	16	2 U	1000 J	
27-Sep-11	7.86	736.33	11.90	2064.0	0.04	102.6	0.37	7.48	170	18	2 U	1100 J	
14-Dec-11	7.17	737.02	11.00	188.2	0.03	140.8	1.87	7.50	770	22	2 U	1300 J	
21-Mar-12	4.68	739.51	10.70	297.8	0.07	130.6	0.41	7.39	170	21	2 U	1100 J	
18-Jun-12	4.75	739.44	11.60	289.0	0.16	271.3	0.55	7.54	150 J+	19	0.4 U	3300 U	
19-Sep-12	7.65	736.54	12.60	299.9	0.10	121.0	0.42	7.50	160	18	0.4 U	1100 J	
18-Dec-12	5.58	738.61	10.90	384.0	0.03	15.6	1.39	7.50	200	19	0.4 U	1300 J	
25-Feb-13	4.80	739.39	10.60	284.2	0.03	140.4	0.30	7.53	150	22	0.4 U	1200 J	
22-May-13	4.81	739.38	11.00	294.9	0.14	387.7	0.52	7.61	160	18	0.4 U	3300 U	
20-Aug-13	7.63	736.56	12.60	383.0	0.81	-8.4	0.80	7.26	164	16.7	0.1 U	1060	
19-Nov-13	7.11	737.08	11.30	218.1	0.14	54.3	0.73	7.20	169	16.6	0.1 U	1130	
1-Apr-14	4.08	740.11	10.70	222.6	0.15	158.5	1.12	7.50	168	13.3	0.1 U	1070	
22-May-14	4.21	739.98	9.98	206.0	1.59	27.1	-	7.17	158	11.2	0.1 U	1000	
13-Aug-14	6.95	737.24	13.50	237.0	1.14	9.8	4.70	6.92	154	10.5	0.1 U	990	
12-Nov-14	6.04	738.15	8.40	185.1	0.28	-10.1	3.42	7.36	162	16.1	0.1 U	1050	
11-Feb-15	4.62	739.57	11.50	205.1	1.20	68.1	1.32	7.41	169	9	0.1 U	1100	
4-May-15	4.93	739.26	12.20	262.0	1.64	190.2	0.84	7.43	168	10.9	0.1 U	1010	
4-Aug-15	7.44	736.75	13.20	211.3	1.62	81.9	2.02	7.39	173	6.8	0.1 U	1020	
5-Nov-15	8.14	736.05	12.50	186.0	1.49	166.9	1.87	7.10	162	3.5	0.1 U	1040	
8-Feb-16	3.20	740.99	11.70	240.5	2.13	196.9	0.88	7.23	150	11.2	0.1 U	980	
2-May-16	3.77	740.42	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
22-Aug-16	6.81	737.38	13.10	238.0	2.40	168.5	2.39	7.41	Monitored Annually <sup>1</sup>				
1-Nov-16	6.59	737.60	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
31-Jan-17	4.02	740.17	11.30	265.8	2.79	218.2	1.39	7.34	154	3.23	0.1 U	953	
30-May-17	2.32	741.87	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
16-Aug-17	5.48	738.71	13.20	258.4	3.54	92.2	2.50	7.41	Monitored Annually <sup>1</sup>				
9-Nov-17	6.00	738.19	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
28-Feb-18	1.13	743.06	10.80	186.9	4.11	142.0	1.83	7.18	159	2.53	0.1 U	848	
1-May-18	1.60	742.59	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
22-Aug-18	5.93	738.26	13.55	194	7.63	16.9	0.77	7.11	Monitored Annually <sup>1</sup>				
6-Nov-18	6.78	737.41	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
12-Mar-19	2.32	741.87	10.50	166	4.32	167.7	1.34	7.14	149	1.87	0.1 U	953	
8-May-19	2.57	741.62	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		
27-Aug-19	5.76	738.43	13.62	192	3.94	Note 1	0.02	7.09	Monitored Annually <sup>1</sup>				
13-Nov-19	6.00	738.19	Monitored Semi-Annually <sup>1</sup>								Monitored Annually <sup>1</sup>		



**Table A-3c: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results  
- Well MWB-3LDA Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
13-Feb-20	1.69	742.50	10.70	180	3.20	88.5	1.21	7.11	140	1.69	0.1 U	915
13-Aug-20	4.59	739.60	13.60	188.7	4.26	50.3	1.60	7.19	Monitored Annually <sup>1</sup>			
9-Dec-20	4.22	739.97	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>			
5-Mar-21	1.06	743.13	10.90	172.0	3.43	132	0.69	7.26	136	1.84	0.1 U	877
10-Jun-21	3.46	740.73	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>			
13-Oct-21	6.17	738.02	12.90	215.1	4.10	148.3	0.96	7.05	Monitored Annually <sup>1</sup>			
5-Jan-22	0.80	743.39	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>			
17-Mar-22	0.2	743.99	11.4	166.1	5.44	58.3	0.79	7.54	151	1.58	0.1 U	1200
21-Jun-22	0.54	743.65	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>			
23-Sep-22	4	740.19	13.8	178.6	5.66	172	5.55	6.63	Monitored Annually <sup>1</sup>			
12-Dec-22	4.48	739.71	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>			
14-Mar-23	1.11	743.08	11	254.9	0.8	-29.8	0.29	7.51	146	7.37	0.1 U	786
27-Jun-23	2.73	741.46	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>			
6-Sep-23	5.21	738.98	15.1	240.1	2.85	0.7	1.57	7.22	Monitored Annually <sup>1</sup>			
15-Dec-23	2.74	741.45	Monitored Semi-Annually <sup>1</sup>						Monitored Annually <sup>1</sup>			
7-Mar-24	0.19	744	10.8	272.7	3.09	-27.9	1.15	6.93	138	6.36	0.174 J	796

Note:

Top of casing elevation (feet NAVD88): 744.19

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

- Not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**APPENDIX A-4**

**Summary of Dale Strip Pit –  
Bedrock Groundwater Sampling  
Results**

Table A-4A Well MWB-1SDSP  
Table A-4B Well MWB-1DDSP  
Table A-4C Well MWB-5DSP  
Table A-4D Well MWB-6DSP  
Table A-4E Portal  
Table A-4F Well MWB-2DSP  
Table A-4G Well MWB-4SDSP



**Table A-4a: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1SDSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)			
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium		
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-		
2-Dec-02	69.87	866.42	9.5	1690	-	-	-	7.29	910	46.6	2.68	-		
3-Mar-03	36.83	899.46	11.5	1260	-	-	24.10	7.15	860	9.73	-	-		
3-May-03	34.88	901.41	12.8	1520	-	-	38.00	7.09	950	-	-	-		
3-Aug-03	52.02	884.27	19.19	1460	-	-	11.40	7.01	990	-	-	-		
1-Nov-03	53.61	882.68	11.60	915	-	-	8.97	7.19	1010	8.58	0.695	-		
1-Feb-04	32.75	903.54	11.52	1033	-	-	7.36	6.78	1060	-	-	-		
1-May-04	42.50	893.79	14.87	1126	-	-	7.53	7.23	1020	-	-	-		
1-Aug-04	49.26	887.03	13.72	1234	-	-	8.07	6.98	981	-	-	-		
1-Nov-04	42.81	893.48	11.88	1429	-	-	9.06	6.92	1060	10	1 U	-		
1-Feb-05	33.62	902.67	13.06	1615	-	-	7.11	7.01	1020	-	-	-		
1-May-05	34.88	901.41	12.91	1459	-	-	6.54	6.85	1000	-	-	-		
1-Aug-05	43.80	892.49	10.40	1472	-	-	10.40	6.80	1090	-	-	-		
1-Nov-05	52.80	883.49	10.40	1458	-	-	6.02	6.64	1100	10.3	1 U	-		
1-Feb-06	42.70	893.59	10.40	1343	1.10	48.3	11.10	7.08	1100 J	-	-	-		
1-May-06	37.81	898.48	11.52	1686	1.64	49.2	10.50	6.83	1100	-	-	-		
1-Aug-06	46.11	890.18	14.10	1357	2.33	43.0	10.70	7.11	1100	-	-	-		
1-Nov-06	46.47	889.82	-	-	-	-	-	-	-	-	-	-		
28-Dec-06	33.20	903.09	-	-	-	-	-	-	-	-	-	-		
7-Feb-07	34.50	901.79	-	-	-	-	-	-	-	-	-	-		
7-May-07	36.48	899.81	15.19	1484	0.52	-83.4	6.78	7.60	1100	-	-	-		
7-Aug-07	47.57	888.72	11.21	1488	8.80	107.4	9.53	6.51	1200	-	-	-		
27-Nov-07	51.25	885.04	13.60	1483	1.82	-129.5	434.00	7.11	1000 J	5.72	1 U	-		
8-Feb-08	35.12	901.17	14.71	1489	3.11	-	10.20	6.97	1100	-	-	-		
8-May-08	37.60	898.69	14.50	1594	3.99	112.5	4.71	6.90	1200 J	-	-	-		
8-Aug-08	46.98	889.31	13.27	1617	2.49	105.3	5.32	6.96	1200 J	7.82	1 U	5570		
1-Nov-08	43.35	892.94	11.17	1096	7.29	127.1	47.30	7.70	1100	9.8	1 U	5610		
11-Feb-09	37.00	899.29	10.28	1112	4.15	-	7.68	7.25	1100	7.52	1 U	5560		
9-May-09	36.53	899.76	13.87	1209	2.93	89.0	5.45	7.41	990 J	7.57	1 U	5580		
24-Sep-09	53.61	882.68	12.10	1328	1.98	331.0	3.26	6.92	1200	7.9	2 U	5700		
14-Dec-09	33.72	902.57	10.20	1519	0.55	393.0	2.82	6.99	1100	3.4	2 U	5700		
22-Mar-10	35.11	901.18	10.90	1463	-	508.0	3.95	6.94	1200	10	2 U	5600		
15-Jun-10	33.26	903.03	11.00	1485	0.20	210.3	1.50	7.02	1100	11	2 U	5900		
20-Sep-10	45.81	890.48	11.30	1484	0.06	159.7	0.91	6.98	1100	9.1	0.48 J	6000		
6-Dec-10	36.20	900.09	10.70	1494	0.08	35.4	0.24	7.21	1200	6.8	0.48 J	5200		
28-Mar-11	35.07	901.22	10.70	749	0.08	136.8	0.16	6.88	1100	6.8	2 U	5500		
20-Jun-11	38.53	897.76	11.40	1439	0.08	-19.2	0.21	6.99	1400	4.6 J	2 U	5500		
26-Sep-11	50.43	885.86	11.20	1249	0.07	38.5	0.41	7.01	1200	4.5 J	2 U	5700		
13-Dec-11	51.30	884.99	10.40	1308	0.06	50.3	2.03	7.07	530	7.6	2 U	6100		
22-Mar-12	43.75	892.54	10.60	1695	0.08	125.1	0.28	6.99	1200	12	2 U	5700		
18-Jun-12	44.86	891.43	Monitored Semiannually <sup>1</sup>											
18-Sep-12	55.74	880.55	12.90	1506	0.05	99.5	0.36	7.08	1300	10	0.4 U	5800		
18-Dec-12	41.94	894.35	Monitored Semiannually <sup>1</sup>											
21-Feb-13	37.86	898.43	10.40	1730	0.02	131.5	0.41	7.27	1200	13	0.4 U	6300		
22-May-13	39.34	896.95	Monitored Semiannually <sup>1</sup>											
20-Aug-13	49.40	886.89	11.90	1707	0.05	-37.6	0.69	7.00	1240	10.2	0.1 U	6000		
19-Nov-13	44.94	891.35	Monitored Semiannually <sup>1</sup>											
31-Mar-14	33.31	902.98	11.20	1256	0.01	103.5	0.27	7.00	1200	13.1	0.1 U	6580		
21-May-14	33.37	902.92	Monitored Semiannually <sup>1</sup>											
15-Aug-14	45.31	890.98	13.43	1467	0.71	-1.1	2.32	6.79	1150	13.4	0.1 U	6100		
14-Nov-14	44.83	891.46	Monitored Semiannually <sup>1</sup>											
10-Feb-15	35.97	900.32	11.00	1423	0.04	-109.4	2.16	7.00	1200	13	0.1 U	6260		
4-May-15	38.67	897.62	Monitored Semiannually <sup>1</sup>											
4-Aug-15	49.21	887.08	12.50	1253	0.04	-100.7	0.26	7.07	1230	13.9	0.1 U	6070		
5-Nov-15	56.85	879.44	11.20	1159	0.02	57.4	0.91	6.75	1190	14.9	0.1 U	6990		
8-Feb-16	33.02	903.27	11.60	1429	0.00	167.6	0.10	7.05	1190	19.4	0.1 U	6730		
2-May-16	37.48	898.81	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
22-Aug-16	49.78	886.51	12.10	1232	0.06	-143.8	0.77	7.00	Monitored Annually <sup>2</sup>					
1-Nov-16	47.49	888.80	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
31-Jan-17	35.57	900.72	11.10	1620	0.05	-241.6	0.24	6.99	1260	21.8	0.1 U	6690		
30-May-17	34.70	901.59	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
16-Aug-17	44.32	891.97	11.90	1621	0.12	-144.5	0.47	6.97	Monitored Annually <sup>2</sup>					
9-Nov-17	44.71	891.58	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
28-Feb-18	32.04	904.25	10.70	1278	0.16	-58.5	0.11	6.82	1244	22.4	0.1 U	6530		
1-May-18	33.99	902.30	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
22-Aug-18	47.95	888.34	11.97	1246	1.17	4.10	0.17	6.88	Monitored Annually <sup>2</sup>					



**Table A-4a: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1SDSP Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Arsenic	Lead
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
6-Nov-18	52.94	883.35	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
12-Mar-19	33.09	903.20	10.40	1157	0.55	-23.0	0.62	6.81	1200	20.7	0.1 U	951
8-May-19	34.37	901.92	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
27-Aug-19	47.88	888.41	12.51	1314	0.15	Note 1	0.39	6.80	Monitored Annually <sup>2</sup>			
13-Nov-19	47.03	889.26	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
14-Feb-20	31.08	905.21	10.60	1249	0.38	-82.2	0.10	6.61	1230	18.3	0.1 U	6360
13-Aug-20	43.99	892.30	11.70	1176	0.56	-67.7	0.18	6.78	Monitored Annually <sup>2</sup>			
9-Dec-20	39.67	896.62	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
5-Mar-21	34.96	901.33	11.00	1257	0.26	-38	0.24	6.95	1200	19.5	0.1 U	6150
10-Jun-21	42.65	893.64	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
18-Oct-21	55.97	880.32	11.7	858	0.86	-92.3	0.48	6.84	Monitored Annually <sup>2</sup>			
5-Jan-22	33.64	902.65	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
18-Mar-22	38.2	898.09	11.5	1096	1.17	-40.8	0.31	7.18	1260	16.6	0.1 U	6400
21-Jun-22	35.46	900.83	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
13-Sep-22	44.37	891.92	11.8	1122	2.97	6.4	4.73	6.42	Monitored Annually <sup>2</sup>			
12-Dec-22	42.96	893.33	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
16-Mar-23	34.48	901.81	11.5	1633	0.21	-28.9	0.42	6.88	1200	16.5	0.1 U	5580
26-Jun-23	39.87	896.42	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
5-Sep-23	47.77	888.52	11.9	1673	3.02	-1.4	3.03	6.99	Monitored Annually <sup>2</sup>			
12-Dec-23	37.23	899.06	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
8-Mar-24	33.71	902.58	11	1032	4.94	4.9	2.34	6.81	1270	16.5	0.103 U	5590

Notes:

Top of casing elevation (feet NAVD88): 936.29

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012

2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-4b: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1DDSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium		
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-		
2-Dec-02	87.28	848.09	11.1	557	-	-	-	7.72	540	32.7	0.5 U	-		
3-Mar-03	48.63	886.74	12.0	623	-	-	24.00	7.48	370	7.08	-	-		
3-May-03	47.12	888.25	12.1	548	-	-	264.00	7.54	440	-	-	-		
3-Aug-03	64.60	870.77	23.23	675	-	-	195.00	7.36	450	-	-	-		
1-Nov-03	66.14	869.23	11.0	400	-	-	15.50	8.10	437	6.03	0.5 U	-		
1-Feb-04	46.55	888.82	10.68	455	-	-	8.70	7.15	440	-	-	-		
1-May-04	55.82	879.55	13.61	508	-	-	12.40	7.58	429	-	-	-		
1-Aug-04	61.89	873.48	13.15	585	-	-	15.70	7.47	399	-	-	-		
1-Nov-04	56.83	878.54	10.94	655	-	-	9.40	7.22	477	3.08	1 U	-		
1-Feb-05	47.31	888.06	12.80	778	-	-	8.39	7.35	451	-	-	-		
1-May-05	48.60	886.77	12.86	743	-	-	4.22	7.25	432	-	-	-		
1-Aug-05	56.80	878.57	14.17	746	-	-	3.10	6.99	518	-	-	-		
1-Nov-05	66.85	868.52	10.20	702	-	-	5.36	7.11	470	3.6	1 U	-		
1-Feb-06	47.88	887.49	10.11	648	0.71	109.4	2.72	7.53	450 J	-	-	-		
1-May-06	52.23	883.14	12.22	686	1.82	43.7	3.68	7.43	450	-	-	-		
1-Aug-06	59.41	875.96	12.28	665	1.06	-74.0	14.20	7.36	480	-	-	-		
1-Nov-06	61.84	873.53	-	-	-	-	-	-	-	-	-	-		
28-Dec-06	48.26	887.11	-	-	-	-	-	-	-	-	-	-		
7-Feb-07	49.64	885.73	-	-	-	-	-	-	-	-	-	-		
7-May-07	53.24	882.13	12.44	722	0.74	-150.8	6.06	7.94	470	-	-	-		
7-Aug-07	60.45	874.92	13.76	712	0.79	-50.0	4.53	7.28	500	-	-	-		
27-Nov-07	63.40	871.97	14.41	711	0.45	-194.4	7.07	7.34	470 J	2.89	1 U	-		
8-Feb-08	49.23	886.14	14.07	737	0.62	-	6.28	7.46	500	-	-	-		
8-May-08	51.31	884.06	13.52	793	0.55	27.9	4.42	7.40	520 J	-	-	-		
8-Aug-08	59.69	875.68	13.73	812	0.67	-24.7	9.33	7.37	560 J	2.26	1 U	3000 U		
1-Nov-08	57.38	877.99	14.75	619	0.89	-42.5	4.40	7.45	480	2.22	1 U	3000 U		
10-Feb-09	50.92	884.45	6.50	618	10.51	-	655.00	7.69 J	530	2.19	1 U	3010		
9-May-09	51.25	884.12	13.95	637	2.21	39.3	5.87	7.74	540 J	2.42	1 U	3000 U		
25-Sep-09	65.46	869.91	13.20	678	2.25	331.8	2.29	7.15	570	1.8 J	2 U	3300		
17-Dec-09	49.40	885.97	10.60	794	0.99	224.0	3.97	7.58	440	0.7 J	2 U	3200 J		
22-Mar-10	49.18	886.19	10.40	762	-	245.0	0.74	7.39	580	4.5	2 U	3200 J		
15-Jun-10	46.88	888.49	12.10	762	0.05	142.1	0.47	7.50	420	5.5	2 U	3300		
20-Sep-10	58.97	876.40	11.40	765	0.07	89.6	0.47	7.47	520	4.7	0.27 J	3400		
6-Dec-10	50.66	884.71	10.20	763	0.19	58.9	0.32	7.72	550	1.3 J	2 U	3200 J		
28-Mar-11	48.89	886.48	10.50	376	0.55	165.0	0.73	7.53	470	3.7	2 U	3000 J		
20-Jun-11	52.13	883.24	13.40	718	0.45	-65.1	0.75	7.53	600 J	5 U	2 U	3500		
26-Sep-11	63.02	872.35	11.80	633	1.73	-6.0	1.72	7.61	560	5 U	2 U	3500		
13-Dec-11	63.88	871.49	8.60	678	0.69	-24.7	1.95	7.56	530	5.7	2 U	4100		
22-Mar-12	56.96	878.41	5.60	877	1.89	-26.6	0.84	7.69	540	3.4	0.4 U	3000 J		
18-Jun-12	58.01	877.36	Monitored Semiannually <sup>1</sup>									-	-	-
18-Sep-12	67.78	867.59	26.30	838	3.62	12.4	1.27	7.70	540	3.1	0.4 U	3100 J		
18-Dec-12	56.10	879.27	Monitored Semiannually <sup>1</sup>									-	-	-
21-Feb-13	51.62	883.75	4.30	895	7.54	31.3	0.83	8.04	510	3.6	0.4 U	3600		
22-May-13	53.14	882.23	Monitored Semiannually <sup>1</sup>									-	-	-
20-Aug-13	62.35	873.02	12.30	526	0.08	-60.4	2.91	7.47	585	3.2	0.1 U	3200		
19-Nov-13	58.70	876.67	Monitored Semiannually <sup>1</sup>									-	-	-
31-Mar-14	46.60	888.77	11.10	622	0.04	48.4	0.45	7.52	561	1.8	0.1 U	3340		
21-May-14	46.96	888.41	Monitored Semiannually <sup>1</sup>									-	-	-
15-Aug-14	58.62	876.75	12.48	732	0.90	-62.4	2.04	7.16	564	2	0.2	3140		
14-Nov-14	59.59	875.78	Monitored Semiannually <sup>1</sup>									-	-	-
10-Feb-15	49.61	885.76	10.90	717	0.03	-114.4	1.82	7.48	551	2.9	0.1 U	3270		
4-May-15	52.25	883.12	Monitored Semiannually <sup>1</sup>									-	-	-
4-Aug-15	61.71	873.66	12.00	618	0.04	-115.0	0.35	7.56	552	3	0.1 U	3360		
5-Nov-15	68.72	866.65	11.10	625	0.05	27.5	1.26	7.21	603	1.6	0.1 U	3590		
8-Feb-16	46.93	888.44	11.40	794	0.00	155.1	0.17	7.57	599	2.1	0.1 U	3800		
2-May-16	50.77	884.60	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
22-Aug-16	62.11	873.26	11.60	770	0.04	-251.0	0.86	7.50	Monitored Annually <sup>2</sup>			-		
1-Nov-16	61.71	873.66	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
31-Jan-17	49.02	886.35	10.60	916	0.13	-310.4	0.35	7.47	676	1.87	0.1 U	3410		
30-May-17	48.11	887.26	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
16-Aug-17	57.17	878.20	11.80	898	0.12	-210.9	0.22	7.42	Monitored Annually <sup>2</sup>			-		
9-Nov-17	58.71	876.66	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
28-Feb-18	45.21	890.16	10.20	758	0.19	-166.6	0.20	7.26	694	2.87	0.1 U	3340		
1-May-18	47.40	887.97	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>					
22-Aug-18	60.25	875.12	11.58	705	2.22	-153.0	0.14	7.37	Monitored Annually <sup>2</sup>			-		



**Table A-4b: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-1DDSP Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)			
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium	
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-	
6-Nov-18	65.30	870.07	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
12-Mar-19	46.35	889.02	9.80	707	0.58	-119.9	0.16	7.24	668	4.96	0.1 U	4210	
8-May-19	47.20	888.17	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
27-Aug-19	59.87	875.50	11.95	762	0.39	Note 1	0.02	7.20	Monitored Annually <sup>2</sup>				
13-Nov-19	60.20	875.17	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
14-Feb-20	44.28	891.09	10.30	760	0.30	-169.3	1.09	7.11	717	4.56	0.1 U	4070	
13-Aug-20	57.57	877.80	11.10	739	0.91	-145.8	0.31	7.17	Monitored Annually <sup>2</sup>				
9-Dec-20	54.25	881.12	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
5-Mar-21	48.74	886.63	10.70	724	0.27	-222	0.61	7.36	592	4.06	0.1 U	3880	
10-Jun-21	59.90	875.47	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
18-Oct-21	67.32	868.05	11.60	561	0.83	-149	0.33	7.23	Monitored Annually <sup>2</sup>				
5-Jan-22	47.77	887.60	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
18-Mar-22	48.37	887	11.3	741	1.2	-93.4	0.39	7.52	781	4.64	0.1 U	4240	
21-Jun-22	49.68	885.69	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
13-Sep-22	57.47	877.9	11.9	778	2.5	-91	0.45	6.84	Monitored Annually <sup>2</sup>				
12-Dec-22	57.68	877.69	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
16-Mar-23	48.34	887.03	11.7	1110	0.29	-89.5	0.38	7.19	783	5.45	0.1 U	3870	
26-Jun-23	53.28	882.09	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
5-Sep-23	60.34	875.03	11.7	1136	2.65	-49.8	1.99	7.38	Monitored Annually <sup>2</sup>				
12-Dec-23	52.09	883.28	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
8-Mar-24	47.77	887.6	11	746	4.16	-99.6	1.62	7.19	767	4.74	0.132 J	3990	

Notes:

Top of casing elevation (feet NAVD88): 935.37

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012

2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-4c: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-5DSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)			
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-	
18-Dec-06	20.56	914.49	11.30	1054	0.59	-10.5	6.76	7.01	630	4.46	1 U	-	
7-Jan-07	18.48	916.57	12.53	700	0.61	-70.6	33.50	7.11	540	5.19	1 U	-	
7-Feb-07	21.53	913.52	11.59	557	0.57	-59.1	33.50	6.88	530	5.19	1 U	-	
7-Mar-07	15.34	919.71	11.71	817	0.45	-2.4	91.20	6.52	550 J	4.91	1 U	-	
7-Apr-07	17.97	917.08	11.96	909	0.25	0.2	121.00	6.91	560	4.75	1 U	-	
1-May-07	26.92	908.13	12.55	880	4.20	-14.3	63.70	7.13	540	4.9	1 U	-	
7-Jun-07	29.94	905.11	13.12	1016	3.20	-5.6	3.58	7.52	600 J	4.37	1 U	-	
7-Jul-07	35.27	899.78	13.00	910	1.74	-27.4	9.97	7.24	550	4.91	1 U	-	
7-Aug-07	39.55	895.50	12.40	1065	0.92	-14.6	4.62	6.99	590	4.46	1 U	-	
7-Sep-07	44.69	890.36	12.36	696	0.68	-33.3	3.22	7.29	590	4.92	1 U	-	
26-Oct-07	38.90	896.15	11.46	667	0.56	-18.3	22.60	6.98	620 J	4.43	1 U	-	
27-Nov-07	38.79	896.26	11.71	914	0.56	-46.7	3.32	6.91	560 J	4.9	1 U	-	
12-Dec-07	35.33	899.72	12.61	909	0.53	-27.3	4.28	6.87	820	4.09	1 U	-	
24-Jan-08	28.97	906.08	10.72	872	0.78	-49.1	-	7.14	550	4.72	1 U	-	
8-Feb-08	26.00	909.05	11.25	888	0.44	-	4.18	6.85	550	4.5	1 U	-	
8-Mar-08	26.03	909.02	10.94	915	0.59	-95.6	3.19	6.89	550	5.21	1 U	-	
8-Apr-08	25.03	910.02	11.27	931	0.61	-20.1	3.44	6.89	550 J	4.88	1 U	-	
8-May-08	27.33	907.72	11.68	949	0.68	-6.7	5.37	6.62	580 J	5.34	1 U	-	
8-Jun-08	28.38	906.67	11.40	948	0.75	-50.4	1.59	6.68	580 J	4.45	1 U	-	
8-Aug-08	39.80	895.25	11.80	970	0.68	-78.6	1.72	6.84	610 J	4.64	1 U	3000 U	
1-Nov-08	33.96	901.09	11.20	682	0.63	-115.4	0.95	6.82	540	4.8	1 U	3000 U	
10-Feb-09	25.56	909.49	10.54	671	0.71	-71.7	0.98	7.05	610	4.73	1 U	3000 U	
9-May-09	25.79	909.26	11.23	682	0.55	-5.8	0.86	7.68	560 J	3.4	1 U	3000 U	
22-Sep-09	46.68	888.37	18.70	737	0.64	214.5	0.99	6.91	580 J	3.9	2 U	2700 J	
14-Dec-09	30.45	904.60	9.80	901	0.18	200.0	0.70	6.96	450	1.7 J	2 U	2500 J	
23-Mar-10	19.92	915.13	11.30	773	0.25	148.0	4.40	6.86	510	5.6	2 U	2600 J	
15-Jun-10	16.74	918.31	11.00	838	0.10	202.3	2.89	7.01	860 J	8.2	2 U	2800 J	
20-Sep-10	33.31	901.74	11.20	852	0.09	174.7	0.60	6.97	540	6.2	2 U	2700 J	
6-Dec-10	19.81	915.24	10.80	838	0.10	30.5	0.47	7.17	530	3.8	2 U	2300 J	
28-Mar-11	17.16	917.89	10.80	403	0.15	48.4	1.13	6.89	500 J	2.3	2 U	2300 J	
20-Jun-11	18.95	916.10	11.10	775	0.05	-29.1	0.37	7.01	610 J	5 U	2 U	2400 J	
26-Sep-11	33.71	901.34	11.20	690	0.03	-8.7	0.54	7	560	4.1 J	2 U	2800 J	
13-Dec-11	24.48	910.57	10.50	730	0.05	93.6	1.92	7.07	520	6.1	2 U	2800 J	
21-Mar-12	15.54	919.51	10.70	883	0.06	106.9	0.34	6.9	500	6.5	2 U	2400 J	
19-Jun-12	17.01	918.04	Monitored Semiannually <sup>1</sup>										
19-Sep-12	29.82	905.23	11.90	877	0.00	122.0	0.47	7.08	490	6.9	0.4 U	2600 J	
18-Dec-12	17.39	917.66	Monitored Semiannually <sup>1</sup>										
21-Feb-13	18.84	916.21	10.60	875	0.05	103.3	0.40	7.32	510	5.9	0.4 U	2600 J	
22-May-13	20.25	914.80	Monitored Semiannually <sup>1</sup>										
20-Aug-13	30.15	904.90	12.10	530	0.06	-50.3	0.75	6.98	510	5.6	0.1 U	2500	
19-Nov-13	22.73	912.32	Monitored Semiannually <sup>1</sup>										
31-Mar-14	15.50	919.55	11.30	574	0.06	95.7	0.53	7.15	447	5.6	0.1 U	2720	
21-May-14	14.83	920.22	Monitored Semiannually <sup>1</sup>										
15-Aug-14	25.16	909.89	14.49	741	0.48	-24.0	2.92	6.87	477	5.9	0.1 U	2550	
14-Nov-14	22.25	912.80	Monitored Semiannually <sup>1</sup>										
10-Feb-15	15.98	919.07	11.40	693	0.04	-117.5	0.80	7.13	503	5.9	0.1 U	2560	
4-May-15	20.05	915.00	Monitored Semiannually <sup>1</sup>										
4-Aug-15	31.90	903.15	11.90	620	0.16	-71.1	0.47	7.13	517	6.4	0.1 U	2670	
5-Nov-15	32.00	903.05	11.40	605	0.00	37.5	1.16	6.84	511	5.3	0.1 U	3060	
8-Feb-16	17.13	917.92	11.80	720	0.00	160.4	0.08	7.34	480	6	0.1 U	3020	
2-May-16	23.31	911.74	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
22-Aug-16	34.07	900.98	12.50	571	0.00	-	0.66	7.11	Monitored Annually <sup>2</sup>				
1-Nov-16	26.04	909.01	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
31-Jan-17	19.36	915.69	12.20	808	0.07	-219.2	0.30	7.21	509	6.76	0.1 U	2840	
30-May-17	17.31	917.74	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
16-Aug-17	28.13	906.92	12.40	826	0.12	-71.9	0.66	7.10	Monitored Annually <sup>2</sup>				
9-Nov-17	27.17	907.88	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
28-Feb-18	16.55	918.50	10.90	657	0.15	-97.6	0.35	7.02	528	5.39	0.1 U	2550	
1-May-18	17.69	917.36	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
22-Aug-18	32.63	902.42	12.46	655	0.81	-46.4	0.26	7.01	Monitored Annually <sup>2</sup>				
6-Nov-18	32.44	902.61	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
12-Mar-19	18.84	916.21	10.90	597	0.56	-28.1	0.86	6.96	512	4.51	0.1 U	2890	
8-May-19	19.75	915.30	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
27-Aug-19	33.26	901.79	13.08	688	0.26	Note 1	0.02	6.89	Monitored Annually <sup>2</sup>				



**Table A-4c: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-5DSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
13-Nov-19	33.03	902.02	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
14-Feb-20	16.70	918.35	10.90	626	0.34	-99.8	0.33	6.88	524	4.31	0.1 U	2650
13-Aug-20	27.37	907.68	11.80	619	0.55	-70.6	0.40	6.89	Monitored Annually <sup>2</sup>			
9-Dec-20	24.68	910.37	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
5-Mar-21	16.91	918.14	11.30	641	0.19	-77.0	0.45	7.09	473	4.84	0.1 U	2450
10-Jun-21	24.68	910.37	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
18-Oct-21	29.11	905.94	11.9	440.1	0.87	-86.2	0.35	6.96	Monitored Annually <sup>2</sup>			
5-Jan-22	16.88	918.17	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
21-Mar-22	17.14	917.91	11.3	601	1.28	-42.9	0.82	6.26	513	4.79	0.1 U	2560
21-Jun-22	17.25	917.8	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
13-Sep-22	27.19	907.86	12.3	606	2.54	-3.7	1.49	6.74	Monitored Annually <sup>2</sup>			
12-Dec-22	24.31	910.74	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
16-Mar-23	18.62	916.43	11.7	846	0.21	-19.7	0.41	7.03	497	4.56	0.1 U	2570
26-Jun-23	22.23	912.82	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
7-Sep-23	28.89	906.16	13.7	904	1.36	-54.9	0.76	7.03	Monitored Annually <sup>2</sup>			
12-Dec-23	20.99	914.06	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
8-Mar-24	17.79	917.26	11.1	711	4.7	10.8	0.35	6.97	500	4.95	0.103 U	2400

Notes:

Top of casing elevation (feet NAVD88): 935.05

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012

2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-4d: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-6DSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)			
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium	
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-	
18-Dec-06	8.13	897.82	9.93	525	0.54	-54.5	0.61	7.78	300	5.37	1 U	-	
7-Feb-07	9.40	896.55	11.79	479	1.19	-30.0	7.40	7.41	330	6.01	1 U	-	
7-May-07	10.73	895.22	12.26	729	2.83	-103.6	16.40	7.63	480	10.1	1 U	-	
7-Aug-07	15.14	890.81	11.42	882	0.75	-11.5	1.82	7.10	470	3.25	1 U	-	
27-Nov-07	16.16	889.79	10.98	748	0.37	-47.9	0.83	6.99	440 J	2.82	1 U	-	
8-Feb-08	9.66	896.29	11.01	645	0.31	-	0.90	7.05	380	2.68	1 U	-	
8-May-08	10.34	895.61	11.27	665	0.64	13.4	1.52	6.93	380 J	2.40	1 U	-	
8-Aug-08	14.17	891.78	11.23	683	0.72	-8.2	2.49	7.05	390 J	2.18	1 U	3000 U	
1-Nov-08	12.98	892.97	10.61	488	0.60	-45.6	1.35	6.80	380	2.04	1 U	3000 U	
10-Feb-09	9.64	896.31	10.32	398	0.52	-57.0	1.20	7.31	350	2.00	1 U	3000 U	
9-May-09	9.91	896.04	10.50	405	0.73	-4.0	1.26	7.77	320 J	1.69	1 U	3000 U	
23-Sep-09	17.16	888.79	12.50	541	0.25	216.2	5.38	7.14	400 J	0.91 J	2 U	1300 J	
14-Dec-09	12.73	893.22	9.10	580	0.47	231.0	2.70	7.23	270	2 U	2 U	1300 J	
22-Mar-10	9.62	896.33	10.90	504	-	321.7	3.50	7.22	320	2.00	2 U	1200 J	
15-Jun-10	8.30	897.65	11.00	495	0.11	205.1	1.41	7.29	320	4.20	2 U	1300 J	
20-Sep-10	14.90	891.05	10.90	560	0.10	187.2	0.28	7.29	270	3.00	2 U	1400 J	
6-Dec-10	10.47	895.48	10.50	515	0.12	87.8	0.14	7.47	300	2 U	2 U	1100 J	
28-Mar-11	8.71	897.24	10.30	241	0.19	58.9	1.86	7.19	300	2 U	2 U	1100 J	
20-Jun-11	9.87	896.08	10.80	477	0.06	141.2	0.20	7.27	340	5 U	2 U	1100 J	
26-Sep-11	14.82	891.13	10.80	467	0.05	114.8	0.92	7.26	380	5 U	2 U	1500 J	
13-Dec-11	13.02	892.93	10.20	491	0.06	131.3	1.69	7.29	340	5 U	2 U	1600 J	
21-Mar-12	8.13	897.82	10.20	550	0.09	160.0	0.07	7.14	310	2.50	0.4 U	1200 J	
18-Jun-12	-	-	Monitored Semiannually <sup>1</sup>										
18-Sep-12	14.76	891.19	12.50	587	0.00	122.0	0.35	7.31	370	2.80	0.4 U	1300 J	
18-Dec-12	8.16	897.79	Monitored Semiannually <sup>1</sup>										
21-Feb-13	8.45	897.50	10.10	594	0.02	152.7	0.28	7.49	300	1.90	0.4 U	1300 J	
22-May-13	9.36	896.59	Monitored Semiannually <sup>1</sup>										
20-Aug-13	13.28	892.67	11.70	478	0.01	-43.8	0.54	7.22	349 J	1.60	0.1 U	1300	
19-Nov-13	9.71	896.24	Monitored Semiannually <sup>1</sup>										
31-Mar-14	8.42	897.53	10.70	455	0.06	166.1	0.27	7.35	315	1.40	0.1 U	1290	
21-May-14	5.99	899.96	Monitored Semiannually <sup>1</sup>										
14-Aug-14	12.03	893.92	13.45	512	0.56	-21.4	1.99	6.95	317	1.70	0.1 U	1270	
14-Nov-14	10.68	895.27	Monitored Semiannually <sup>1</sup>										
10-Feb-15	7.39	898.56	10.90	482	0.03	-86.2	0.59	7.32	337	1.40	0.1 U	1230	
4-May-15	9.17	896.78	Monitored Semiannually <sup>1</sup>										
4-Aug-15	13.64	892.31	12.40	449	0.18	-81.7	0.27	7.33	385	1.70	0.1 U	1280	
5-Nov-15	13.98	891.97	11.50	435	2.23	85.2	1.09	7.04	354	1.30	0.1 U	1470	
8-Feb-16	6.74	899.21	11.50	495	0.03	187.2	0.25	7.39	297	1.40	0.1 U	1350	
2-May-16	8.64	897.31	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
22-Aug-16	13.27	892.68	12.20	559	0.03	-52.7	0.80	7.28	Monitored Annually <sup>2</sup>				
1-Nov-16	11.36	894.59	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
31-Jan-17	7.91	898.04	10.90	539	0.08	124.4	0.18	7.31	321	1.48	0.1 U	1300	
30-May-17	2.65	903.30	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
16-Aug-17	12.08	893.87	12.10	573	0.12	-46.9	1.39	7.26	Monitored Annually <sup>2</sup>				
9-Nov-17	11.70	894.25	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
28-Feb-18	6.50	899.45	11.00	423	0.19	-61.0	0.18	7.12	138	1.56	0.1 U	1200	
1-May-18	6.80	899.15	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
22-Aug-18	13.47	892.48	11.61	441	7.44	26.6	0.21	7.11	Monitored Annually <sup>2</sup>				
6-Nov-18	13.96	891.99	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
12-Mar-19	7.30	898.65	10.30	363	0.56	-25.1	0.27	7.16	294	1.47	0.1 U	1340	
8-May-19	7.77	898.18	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
27-Aug-19	13.16	892.79	12.19	454	0.45	Note 1	0.02	7.05	Monitored Annually <sup>2</sup>				
13-Nov-19	26.35	894.30	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
13-Feb-20	20.79	899.86	10.60	387	0.39	-76.5	1.05	7.13	313	1.40	0.1 U	1330	
13-Aug-20	25.94	894.71	11.70	403	0.65	-64.3	0.60	7.07	Monitored Annually <sup>2</sup>				
9-Dec-20	24.06	896.59	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>		
4-Mar-21	21.56	899.09	10.80	363	0.16	-9.0	1.29	7.30	280	1.10	0.1 U	1240	

**Table A-4d: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-6DSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
10-Jun-21	24.55	896.10	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
18-Oct-21	28.08	892.57	11.6	273.8	0.96	-73.8	1.38	7.15	Monitored Annually <sup>2</sup>			
5-Jan-22	21.36	899.29	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
21-Mar-22	20.7	899.95	10.9	348.2	1.41	102.1	1.4	6.42	297	1.06	0.1 U	1090
21-Jun-22	21.51	899.14	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
13-Sep-22	Well Damaged - Unable to Sample <sup>3</sup>											
12-Dec-22	Well Damaged - Unable to Sample <sup>3</sup>											
15-Mar-23	15.98	905.92	10.9	444.1	1.06	16.4	1.17	7.11	251	1.05	0.1 U	1110
26-Jun-23	21.56	900.24	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
5-Sep-23	24.52	897.097	11.6	479	2.98	25.8	0.7	7.37	Monitored Annually <sup>2</sup>			
12-Dec-23	19.65	902.467	Monitored Semiannually <sup>2</sup>						Monitored Annually <sup>2</sup>			
8-Mar-24	18.03	902.467	11	370.3	4.37	40	0.34	7.24	264	0.966	0.103 U	1070

Notes:

- Top of casing elevation (feet NAVD88) prior to raising casing: 905.95
- Top of casing elevation (feet NAVD88) after raising casing (post-Q3 2019): 920.65
- Top of casing elevation (feet NAVD88) repair (post-Q1 2023): 918.67

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available
- Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.
- 1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
- 2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
- 3 MWB-6DSP was found damaged in July 2022. The well was repaired by late December 2022.
- a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
- U Data validation code; not detected at the Reporting Limit (RL)
- J Data validation code; estimated value
- J+ Data validation code; estimated value with positive bias
- °C Degrees Celsius
- Note 1 ORP measurements not available due to faulty sensor.
- µmhos/cm Micromhos per centimeter
- feet bmp Feet below measuring point
- feet NAVD88 Feet NAVD88 Datum
- mg/L Milligrams per liter
- mV Millivolts
- NTU Nephelometric Turbidity Unit



**Table A-4e: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Portal Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
1-Mar-02	-	-	-	653	-	-	-	7.29	586	-	-	-
1-Jun-02	-	-	12	920	-	-	-	7.20	583	-	-	-
1-Sep-02	-	-	11	920	-	-	-	7.10	651	-	-	-
2-Dec-02	-	-	9.1	900	-	-	-	7.03	570	4.44	0.5 U	-
3-Mar-03	-	-	10.1	873	-	-	-	7.09	530	-	-	-
3-May-03	-	-	11.2	981	-	-	10.00	6.94	590	-	-	-
3-Aug-03	-	-	12.78	1030	-	-	13.00	7.17	630	-	-	-
1-Nov-03	-	-	10.2	569	-	-	4.65	7.53	592	3.33	0.5 U	-
1-Feb-04	-	-	9.31	568	-	-	5.41	6.85	560	-	-	-
1-May-04	-	-	10.93	952	-	-	5.98	7.12	615	-	-	-
1-Aug-04	-	-	12.10	835	-	-	6.29	7.11	601	-	-	-
1-Nov-04	-	-	10.20	941	-	-	6.58	6.94	656	3.41	1 U	-
1-Feb-05	-	-	10.52	889	-	-	8.72	7.41	541	-	-	-
1-May-05	-	-	13.08	953	-	-	8.15	7.31	548	-	-	-
1-Aug-05	-	-	11.08	988	-	-	7.40	7.23	644	-	-	-
1-Nov-05	-	-	9.53	958	-	-	8.58	7.61	640	3.15	1 U	-
1-Feb-06	-	-	9.23	669	7.88	*	7.93	6.78	450 J	-	-	-
1-May-06	-	-	11.49	947	7.60	38.5	10.40	7.01	570	-	-	-
1-Aug-06	-	-	10.52	835	8.82	-39.8	14.10	7.26	640	-	-	-
1-Nov-06	-	-	9.41	740	9.57	-32.2	12.50	7.23	510	2.45	1 U	-
7-Feb-07	-	-	9.90	815	10.99	-6.2	27.80	7.74	510	-	-	-
7-May-07	-	-	18.39	810	11.05	-6.2	11.80	7.61	510	-	-	-
7-Aug-07	-	-	10.42	870	8.72	-44.9	25.20	7.42	560	-	-	-
30-Nov-07	-	-	9.41	783	9.56	-18.7	48.30	-	520	3.17	1 U	-
8-Feb-08	-	-	10.02	708	10.04	-	50.00	7.20	420	-	-	-
8-May-08	-	-	10.83	815	12.13	0.1	7.28	7.29	480 J	-	-	-
8-Aug-08	-	-	10.63	906	11.05	-5.6	11.00	7.05	560 J	3.69	1 U	41600
1-Nov-08	-	-	9.79	553	10.70	-21.1	16.90	7.40	460	3.2	1 U	35500
11-Feb-09	-	-	9.16	488	6.99	-	15.40	7.52	430	2.97	1 U	34200
9-May-09	-	-	9.64	522	10.56	13.4	9.77	7.39	440 J	2.01	1 U	32400
23-Sep-09	-	-	10.70	745	8.95	271.7	14.70	6.88	570	2 U	2 U	40000
15-Dec-09	-	-	8.60	713	5.20	279.0	12.50	6.67	350	2 U	2 U	30000
24-Mar-10	-	-	9.90	681	6.14	370.7	-	6.57	470	4.2	2 U	39000
17-Jun-10	-	-	10.00	623	9.58	-	26.30	7.50	380	5.9	2 U	28000
22-Sep-10	-	-	10.00	783	9.02	225.9	17.40	7.00	510	5.2	2 U	42000
7-Dec-10	-	-	9.90	662	9.15	186.0	13.60	6.95	450	2 U	2 U	32000
29-Mar-11	-	-	9.90	292	5.90	370.8	4.44	6.73	360 J	4.1	2 U	25000
20-Jun-11	-	-	10.50	591	6.42	219.1	4.44	7.01	420	5 U	2 U	26000
26-Sep-11	-	-	10.70	623	5.76	240.5	11.90	6.83	520	5 U	2 U	39000
15-Dec-11	-	-	8.80	472	4.92	310.4	7.32	6.78	430	4.7 J	2 U	32000
21-Mar-12	-	-	8.90	611	5.24	313.3	9.16	6.49	330	4.8	0.4 U	20000
18-Jun-12	Monitored Semiannually <sup>1</sup>											
18-Sep-12	-	-	14.20	652	9.70	148.0	20.80	7.48	450	5	0.4 U	29000
18-Dec-12	Monitored Semiannually <sup>1</sup>											
25-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	5	0.4 U	25000
25-Feb-13	Monitored Semiannually <sup>1</sup>											
21-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	5	0.4 U	25000
22-May-13	Monitored Semiannually <sup>1</sup>											
20-Aug-13	-	-	10.80	635	9.31	170.1	8.46	7.11	458	3.9	0.1 U	32300
19-Nov-13	Monitored Semiannually <sup>1</sup>											
31-Mar-14	-	-	10.60	448	9.29	213.5	87.20	7.30	321	3.7	0.18 J	21100
21-May-14	Monitored Semiannually <sup>1</sup>											
15-Aug-14	-	-	10.01	595	10.01	-35.2	6.43	6.99	427	3.5	0.1 U	31500
14-Nov-14	Monitored Semiannually <sup>1</sup>											
10-Feb-15	-	-	10.60	515	9.88	183.5	6.84	7.26	363	2.8	0.07 J	27200
4-May-15	Monitored Semiannually <sup>1</sup>											
4-Aug-15	-	-	10.90	554	9.98	95.8	8.68	7.48	438	2.6	0.1 U	34700
5-Nov-15	-	-	10.30	503	10.24	177.6	13.40	7.46	449	2.8	0.1 U	31800
8-Feb-16	-	-	9.30	541	11.30	215.0	5.12	7.30	293	3.2	0.1 U	23100

**Table A-4e: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Portal Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
-	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
24-Aug-16	-	-	13.40	585	9.32	410.0	8.50	7.23	Monitored Annually <sup>2</sup>			
1-Nov-16	-	-	10.90	242	9.13	51.4	7.57	7.41	Monitored Annually <sup>2</sup>			
31-Jan-17	-	-	8.90	663	10.87	-57.4	6.23	7.50	3390	3.97	0.1 U	29200
-	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
17-Aug-17	-	-	11.40	712	9.67	-12.4	9.87	7.30	Monitored Annually <sup>2</sup>			
9-Nov-17	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
27-Feb-18	-	-	9.50	427	9.94	-46.4	16.70	7.72	354	4.11	0.1 U	20400
1-May-18	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
21-Aug-18	-	-	13.13	582	12.46	-23.0	23.10	7.24	Monitored Annually <sup>2</sup>			
6-Nov-18	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
12-Mar-19	-	-	8.00	406	11.35	-2.8	10.70	7.97	388	1.56	0.1 U	24700
8-May-19	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
27-Aug-19	-	-	10.55	576	11.80	Note 1	154.00	6.78	Monitored Annually <sup>2</sup>			
13-Nov-19	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
13-Feb-20	-	-	9.20	382	9.19	-1.3	13.40	6.93	259	3.65	0.1 U	16700
13-Aug-20	-	-	10.10	569	10.01	-27.0	12.20	7.12	Monitored Annually <sup>2</sup>			
9-Dec-20	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
4-Mar-21	-	-	9.30	416	5.80	33.0	17.1	6.89	364	4.14	0.1 U	20000
10-Jun-21	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
18-Oct-21	-	-	10.9	386.7	5.11	-28.4	86.1	6.45	Monitored Annually <sup>2</sup>			
5-Jan-22	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
16-Mar-22	-	-	12	402.9	6.78	70.7	19.8	5.81	348	5.32	0.1 U	18800
21-Jun-22	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
14-Sep-22	-	-	12	521	7.29	39.1	93.8	6.7	Monitored Annually <sup>2</sup>			
14-Dec-22	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
16-Mar-23	-	-	10.8	667.5	6.16	76.1	8.99	6.86	383	5.08	0.1 U	27100
26-Jun-23	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
7-Sep-23	-	-	10.5	769	7.66	-33.9	6.94	6.79	Monitored Annually <sup>2</sup>			
15-Dec-23	Monitored Semiannually <sup>2</sup>								Monitored Annually <sup>2</sup>			
8-Mar-24	-	-	10.5	470.6	8.59	84	7.64	6.83	359	5.51	0.103 U	22800

Notes:

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

\* Measurement invalid and not shown

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012

2 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-4f: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-2DSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
1-Mar-02	-	-	-	542	-	-	-	7.22	467	-	-	-
1-Jun-02	197.34	735.48	12.00	750	-	-	-	7.10	459	-	-	-
1-Sep-02	199.29	733.53	14.00	660	-	-	-	6.90	499	-	-	-
2-Dec-02	200.09	732.73	10.80	675	-	-	-	6.89	440	1 U	0.5 U	-
3-Mar-03	190.21	742.61	11.90	763	-	-	-	6.98	450	-	-	-
3-May-03	191.78	741.04	12.30	730	-	-	233.00	6.98	550	-	-	-
3-Aug-03	199.82	733.00	16.50	848	-	-	17.00	6.92	520	-	-	-
1-Nov-03	199.97	732.85	11.60	559	-	-	9.20	7.04	522	0.98	0.5 U	-
1-Feb-04	188.78	744.04	11.96	608	-	-	4.86	6.68	560	-	-	-
1-May-04	198.45	734.37	13.69	614	-	-	6.17	6.80	478	-	-	-
1-Aug-04	199.17	733.65	14.38	731	-	-	5.48	6.71	460	-	-	-
1-Nov-04	197.92	734.90	11.62	785	-	-	12.30	6.75	512	1 U	1 U	-
1-Feb-05	186.36	746.46	11.64	806	-	-	1.47	6.94	487	-	-	-
1-May-05	-	-	12.87	790	-	-	15.80	6.89	338	-	-	-
1-Aug-05	196.10	736.72	15.01	603	-	-	45.70	6.44	388	-	-	-
1-Nov-05	196.78	736.04	9.91	549	-	-	13.30	6.66	350	1 U	1 U	-
1-Feb-06	193.93	738.89	8.10	641	2.11	269.2	35.70	6.82	400 J	-	-	-
1-May-06	197.90	734.92	10.88	798	1.67	27.3	5.38	6.50	380	-	-	-
1-Aug-06	198.80	734.02	11.44	534	2.52	205.7	8.74	6.67	360	-	-	-
1-Nov-06	187.36	745.46	10.77	680	2.12	-19.9	18.90	7.06	430	1 U	1 U	-
28-Dec-06	192.37	740.45	-	-	-	-	-	-	-	-	-	-
7-Feb-07	197.46	735.36	10.24	621	0.64	-16.7	27.80	6.89	420	-	-	-
7-May-07	198.49	734.33	-	-	-	-	-	-	-	-	-	-
1-Aug-07	198.45	734.37	-	-	-	-	-	-	-	-	-	-
27-Nov-07	196.48	736.34	-	-	-	-	-	-	-	-	-	-
8-Feb-08	191.30	741.52	-	-	-	-	-	-	-	-	-	-
8-May-08	193.95	738.87	-	-	-	-	-	-	-	-	-	-
27-Sep-11	197.32	735.50	-	-	-	-	-	-	-	-	-	-
13-Dec-11	192.15	740.67	9.6	421	2.10	313.0	16.10	7.49	-	-	-	-
22-Mar-12	183.35	751.47	8.9	546	12.83	166.3	0.56	7.47	-	-	-	-
18-Jun-12	192.54	742.28	-	-	-	-	-	-	-	-	-	-
18-Sep-12	199.51	735.31	16.2	508	2.21	120.0	1.27	7.58	-	-	-	-
18-Dec-12	184.52	750.30	-	-	-	-	-	-	-	-	-	-
21-Feb-13	190.65	744.17	7.6	678	5.33	342.6	6.61	8.02	-	-	-	-
22-May-13	198.05	736.77	-	-	-	-	-	-	-	-	-	-
20-Aug-13	200.47	734.35	13.0	488	3.26	90.2	8.47	7.42	-	-	-	-
19-Nov-13	196.59	738.23	-	-	-	-	-	-	-	-	-	-
31-Mar-14	186.78	748.04	11.4	421	7.28	195.1	1.70	7.47	-	-	-	-
21-May-14	192.27	742.55	-	-	-	-	-	-	-	-	-	-
15-Aug-14	199.97	734.85	18.9	492	0.97	1.4	52.50	7.01	-	-	-	-
14-Nov-14	196.60	738.22	-	-	-	-	-	-	-	-	-	-
10-Feb-15	183.97	750.85	10.2	450	7.65	121.4	1.02	7.34	-	-	-	-
4-May-15	194.19	740.63	-	-	-	-	-	-	-	-	-	-
4-Aug-15	198.35	736.47	13.6	432	3.07	18.6	0.27	7.47	-	-	-	-
3-Nov-15	198.25	736.57	10.3	405	2.57	106.2	7.07	7.35	-	-	-	-
8-Feb-16	188.43	746.39	12.5	536	2.77	189.8	0.25	7.78	-	-	-	-
2-May-16	195.72	739.10	Monitored Semiannually <sup>1</sup>					-	-	-	-	-
22-Aug-16	197.89	736.93	14.0	418	1.27	-123.1	4.36	7.32	-	-	-	-
1-Nov-16	195.49	739.33	Monitored Semiannually <sup>1</sup>					-	-	-	-	
31-Jan-17	186.94	747.88	9.2	506	5.26	-45.4	0.38	7.45	-	-	-	-
30-May-17	190.62	744.20	Monitored Semiannually <sup>1</sup>					-	-	-	-	
16-Aug-17	197.55	737.27	13.3	540	2.31	37.3	3.42	7.37	-	-	-	-
9-Nov-17	197.11	737.71	Monitored Semiannually <sup>1</sup>					-	-	-	-	
28-Feb-18	185.96	748.86	10.1	390	5.95	204.7	1.62	7.15	-	-	-	-
1-May-18	184.95	749.87	Monitored Semiannually <sup>1</sup>					-	-	-	-	
22-Aug-18	197.40	737.42	13.7	412	3.10	85.5	1.66	7.27	-	-	-	-
6-Nov-18	197.94	736.88	Monitored Semiannually <sup>1</sup>					-	-	-	-	
12-Mar-19	182.84	751.98	8.7	332	6.25	148.4	1.93	7.28	-	-	-	-
8-May-19	185.36	749.46	Monitored Semiannually <sup>1</sup>					-	-	-	-	
27-Aug-19	196.56	738.26	11.92	411	8.82	Note 1	0.02	7.28	-	-	-	-
13-Nov-19	196.74	738.08	Monitored Semiannually <sup>1</sup>					-	-	-	-	
13-Feb-20	177.10	757.72	9.3	453	3.03	91.0	2.31	7.56	-	-	-	-
13-Aug-20	200.97	733.85	12.2	422	3.04	35.0	0.96	7.42	-	-	-	-
9-Dec-20	197.86	736.96	Monitored Semiannually <sup>1</sup>					-	-	-	-	



**Table A-4f: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-2DSP  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
5-Mar-21	197.42	737.40	10.0	398	3.79	112.0	1.17	7.37	-	-	-	-
10-Jun-21	199.94	734.88	Monitored Semiannually <sup>1</sup>						-	-	-	-
18-Oct-21	200.24	734.58	12.6	307.7	6.06	161.4	12.3	7.35	-	-	-	-
5-Jan-22	192.66	742.16	Monitored Semiannually <sup>1</sup>						-	-	-	-
21-Mar-22	193.68	741.14	9.6	369	7.04	125.6	5.95	6.63	-	-	-	-
21-Jun-22	191.33	743.49	Monitored Semiannually <sup>1</sup>						-	-	-	-
13-Sep-22	200.03	734.79	12.6	404.7	8.66	252.7	10.5	6.91	-	-	-	-
12-Dec-22	197.99	736.83	Monitored Semiannually <sup>1</sup>						-	-	-	-
15-Mar-23	192.63	742.19	11.4	591.7	2.44	41.8	5.56	7.53	-	-	-	-
26-Jun-23	198.92	735.9	Monitored Semiannually <sup>1</sup>						-	-	-	-
5-Sep-23	200.21	734.61	12.1	571.3	3.59	8.3	10.5	7.36	-	-	-	-
13-Dec-23	183.09	751.73	Monitored Semiannually <sup>1</sup>						-	-	-	-
6-Mar-24	192.55	742.27	9.1	577	8.66	35.4	4.3	7.75	-	-	-	-

Notes:

Top of casing elevation (feet NAVD88) prior to raising casing: 932.82  
 Top of casing elevation (feet NAVD88) after raising casing (December 14, 2011): 934.82

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

**Table A-4g: Summary of Dale Strip Pit - Bedrock Groundwater Sampling Results - Well MWB-4SDSP Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Arsenic	Lead	Potassium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	8	2.5	-
26-Sep-11	25.77	906.64	11.40	553	0.86	197.2	-	7.21	-	-	-	-
13-Dec-11	24.94	907.47	9.70	625	1.73	658.0	22.70	7.68	-	-	-	-
22-Mar-12	23.80	908.61	9.60	785	3.71	242.6	8.14	7.30	-	-	-	-
19-Jun-12	24.09	908.32	-	-	-	-	-	-	-	-	-	-
18-Sep-12	25.68	906.73	16.50	664	2.37	150.0	19.20	7.34	-	-	-	-
18-Dec-12	23.02	909.39	-	-	-	-	-	-	-	-	-	-
21-Feb-13	23.50	908.91	10.00	840	6.55	352.4	3.42	7.42	-	-	-	-
22-May-13	23.84	908.57	-	-	-	-	-	-	-	-	-	-
20-Aug-13	25.08	907.33	13.50	539	2.91	45.1	1.87	7.22	-	-	-	-
19-Nov-13	22.76	909.65	-	-	-	-	-	-	-	-	-	-
31-Mar-14	21.39	911.02	12.20	511	6.31	197.3	1.38	7.58	-	-	-	-
21-May-14	19.82	912.59	-	-	-	-	-	-	-	-	-	-
15-Aug-14	24.00	908.41	12.81	647	0.82	7.5	5.42	6.62	-	-	-	-
14-Nov-14	22.28	910.13	-	-	-	-	-	-	-	-	-	-
10-Feb-15	21.10	911.31	12.30	636	2.56	-71.9	1.11	7.11	-	-	-	-
4-May-15	22.65	909.76	-	-	-	-	-	-	-	-	-	-
5-Aug-15	24.65	907.76	13.50	563	3.21	116.4	55.20	7.42	-	-	-	-
3-Nov-15	23.87	908.54	12.20	493	4.65	114.4	5.78	7.52	-	-	-	-
8-Feb-16	19.39	913.02	15.80	670	3.92	163.5	5.06	7.59	-	-	-	-
2-May-16	20.99	911.42	Monitored Semiannually <sup>1</sup>						-	-	-	-
22-Aug-16	24.42	907.99	17.60	527	5.01	106.0	1.39	7.44	-	-	-	-
1-Nov-16	21.31	911.10	Monitored Semiannually <sup>1</sup>						-	-	-	-
31-Jan-17	21.11	911.30	12.10	680	2.75	-146.1	1.48	7.35	-	-	-	-
30-May-17	18.49	913.92	Monitored Semiannually <sup>1</sup>						-	-	-	-
17-Aug-17	22.58	909.83	12.60	673	5.22	177.8	1.97	7.15	-	-	-	-
9-Nov-17	20.72	911.69	Monitored Semiannually <sup>1</sup>						-	-	-	-
28-Feb-18	17.09	915.32	11.10	509	8.34	29.0	0.72	7.37	-	-	-	-
1-May-18	17.76	914.65	Monitored Semiannually <sup>1</sup>						-	-	-	-
22-Aug-18	Could not be safely accessed due to wasp nests.								-	-	-	-
6-Nov-18	21.70	910.71	Monitored Semiannually <sup>1</sup>						-	-	-	-
12-Mar-19	18.30	914.11	10.10	215	9.65	18.9	0.39	7.86	-	-	-	-
8-May-19	19.09	913.32	Monitored Semiannually <sup>1</sup>						-	-	-	-
27-Aug-19	22.85	909.56	14.79	562	8.59	Note 1	3.60	7.80	-	-	-	-
13-Nov-19	21.95	910.46	Monitored Semiannually <sup>1</sup>						-	-	-	-
13-Feb-20	16.60	915.81	10.80	458	8.74	68.0	1.98	7.83	-	-	-	-
13-Aug-20	21.96	910.45	12.60	503	8.74	-39.8	1.89	7.83	-	-	-	-
9-Dec-20	20.58	911.83	Monitored Semiannually <sup>1</sup>						-	-	-	-
5-Mar-21	17.69	914.72	11.30	497	6.84	90.0	1.46	7.91	-	-	-	-
10-Jun-21	21.47	910.94	Monitored Semiannually <sup>1</sup>						-	-	-	-
18-Oct-21	23.22	909.19	13.5	368.9	8.47	130.8	1.36	7.63	-	-	-	-
5-Jan-22	17.66	914.75	Monitored Semiannually <sup>1</sup>						-	-	-	-
21-Mar-22	16.7	915.71	10.7	456.3	9.94	115.5	2.79	7.05	-	-	-	-
21-Jun-22	17.95	914.46	Monitored Semiannually <sup>1</sup>						-	-	-	-
13-Sep-22	21.6	910.81	15.3	531	7.87	90.3	1.45	7.53	-	-	-	-
12-Dec-22	19.02	913.39	Monitored Semiannually <sup>1</sup>						-	-	-	-
15-Mar-23	17.46	914.95	12.3	668	8.07	57.4	2.67	7.85	-	-	-	-
26-Jun-23	19.98	912.43	Monitored Semiannually <sup>1</sup>						-	-	-	-
5-Sep-23	Could not be safely accessed due to wasp nests.								-	-	-	-
13-Dec-23	16.91	915.5	Monitored Semiannually <sup>1</sup>						-	-	-	-
8-Mar-24	15.77	916.64	10.9	558	8.79	90.8	0.74	7.82	-	-	-	-

Notes:

Top of casing elevation (feet NAVD88) prior to DSP Cover Upgrade: 939.42  
 Top of casing elevation (feet NAVD88) after DSP Cover Upgrade (completed July 2011): 932.41  
 Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1 Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016, extended October 10, 2019. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

mg/L Milligrams per liter

feet bmp Feet below measuring point

mV Millivolts

feet NAVD88 Feet NAVD88 Datum

NTU Nephelometric Turbidity Unit



**APPENDIX A-5**

**Summary of Lower Disposal Area –  
Disposal Area Groundwater  
Sampling Results**

Table A-5A Well P-14  
Table A-5B Well P-15

**Table A-5a: Summary of Lower Disposal Area - Disposal Area Groundwater Sampling Results - Well P-14 Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
11-Dec-20	32.53	740.79	11.6	18697	0.12	-61.2	17.9	13.30	6560	-	263	19.6	2540000	-
3-Mar-21	29.44	743.88	12.0	12836	0.05	-87.0	1.54	13.09	4060	-	84.1	9.64	1490000	-
10-Jun-21	33.57	739.75	12.9	18706	0.67	-175.2	1.88	13.06	6400	-	242	3.44	2460000	-
13-Oct-21	33.57	739.75	12.7	23225	0.77	-139.7	0.75	13.18	7240 J-	131	292	2.47	2560000	24.2
7-Jan-22	27.73	745.59	11.9	9778	0.96	-112.9	1.86	13.30	4850	51.8	76.3	9.19	1480000	6.77
21-Mar-22	27.5	745.82	12.5	11725	1.27	-25.3	2.18	14.52	4110	46.1	74.8	41.3	1430000	6.68
23-Jun-22	28.65	744.67	13.5	18219	0.05	-88.6	2.04	12.93	6160	130	238	6.56	2250000	21.9
14-Sep-22	34.22	739.1	13.2	17395	1.72	-127.9	1.7	13.21	6510	130	235	6.3	2570000	20.5
14-Dec-22	32.59	740.73	12.1	19267	3.3	-448.9	0.88	13.06	6730	130	255	11.1	2710000	23
14-Mar-23	30.30	743.02	12.4	24035	0.08	-187.5	0.31	13.12	6280	134	232	2.22	2390000	20.5
27-Jun-23	33.06	740.26	13.5	18550	0.05	-591.7	1.19	13.07	6300	139	242	2.9	2200000	21.4
7-Sep-23	35.51	737.81	12.6	23287	0.73	-177.6	1.37	13.14	6020 J-	127	229	6.81	2360000	18.7
14-Dec-23	28.05	745.27	12	27153	3.49	-407.7	0.64	13.1	6190	116	216	6.93	2220000	17.2
7-Mar-24	27.82	745.5	12.1	23887	3.5	-177.6	0.38	13.19	5660	120	188	4.54	2010000	11.7

Notes:

Top of casing elevation (feet NAVD88): 773.32

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

mg/L Milligrams per liter

feet bmp Feet below measuring point

mV Millivolts

feet NAVD88 Feet NAVD88 Datum

NTU Nephelometric Turbidity Unit

**Table A-5b: Summary of Lower Disposal Area - Disposal Area Groundwater Sampling Results - Well P-15  
Ravensdale Site, Ravensdale, Washington**

Date Sampled	Field Parameters								Gen. Chem. Total Dissolved Solids (mg/L)	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (ReI mV)	Turbidity (NTU)	pH (standard units)		Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level <sup>a</sup>	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	140
15-Oct-21	30.03	726.52	13.00	15815	1.72	-147.5	5.08	13.17	7180 J-	2 U	6.57	94	2390000	3.65
7-Jan-22	15.32	741.23	10.20	7227	1.03	-116.3	1.84	13.28	3420	5.17	6.34	101	884000	0.515 J
17-Mar-22	14.44	742.11	11.8	9351	1.11	-70	1.88	14.60	3060	3.08	5.63	109	970000	0.406
22-Jun-22	18.39	738.16	13	10563	0.14	-71	2.19	12.95	3300	2.22	5.37	100	924000	1.14
14-Sep-22	28.82	727.73	13.8	14297	6.41	-17.7	4.71	12.99	5340	4 U	3.68 J	269	1790000	0.624
14-Dec-22	21.29	735.26	11	10770	2.85	-322.9	2.33	13.05	3460	1.72	5.07	173	1070000	1.19
14-Mar-23	21.53	735.02	11.5	14124	0.15	70.5	0.41	12.98	3360	2.47	5.82	93.8	945000	0.288 J
27-Jun-23	24.90	731.65	14.4	13549	0.56	-360.4	0.89	12.87	4290	1.15	5.77	119	1450000	0.635 J
7-Sep-23	29.41	727.14	12.6	19870	7.79	-94.6	6.49	13.13	4970 J-	2.37	5.35	274	1720000	0.72 J
14-Dec-23	15.43	741.12	11.5	15982	3.43	-370.7	1.92	12.99	3600	3.68	6.7	111	1010000	0.48 J
6-Mar-24	16.76	739.79	11.2	11127	4.27	-115.3	0.8	12.88	3520	3.54	5.83	106	965000	0.464

Notes:

Top of casing elevation (feet NAVD88): 756.55

Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

- Not measured or not available

Orange shaded values indicate parameter results above the Preliminary Cleanup Level (PCUL), except for pH, which could be above or below the PCUL.

a Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022

U Data validation code; not detected at the Reporting Limit (RL)

J Data validation code; estimated value

J+ Data validation code; estimated value with positive bias

°C Degrees Celsius

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

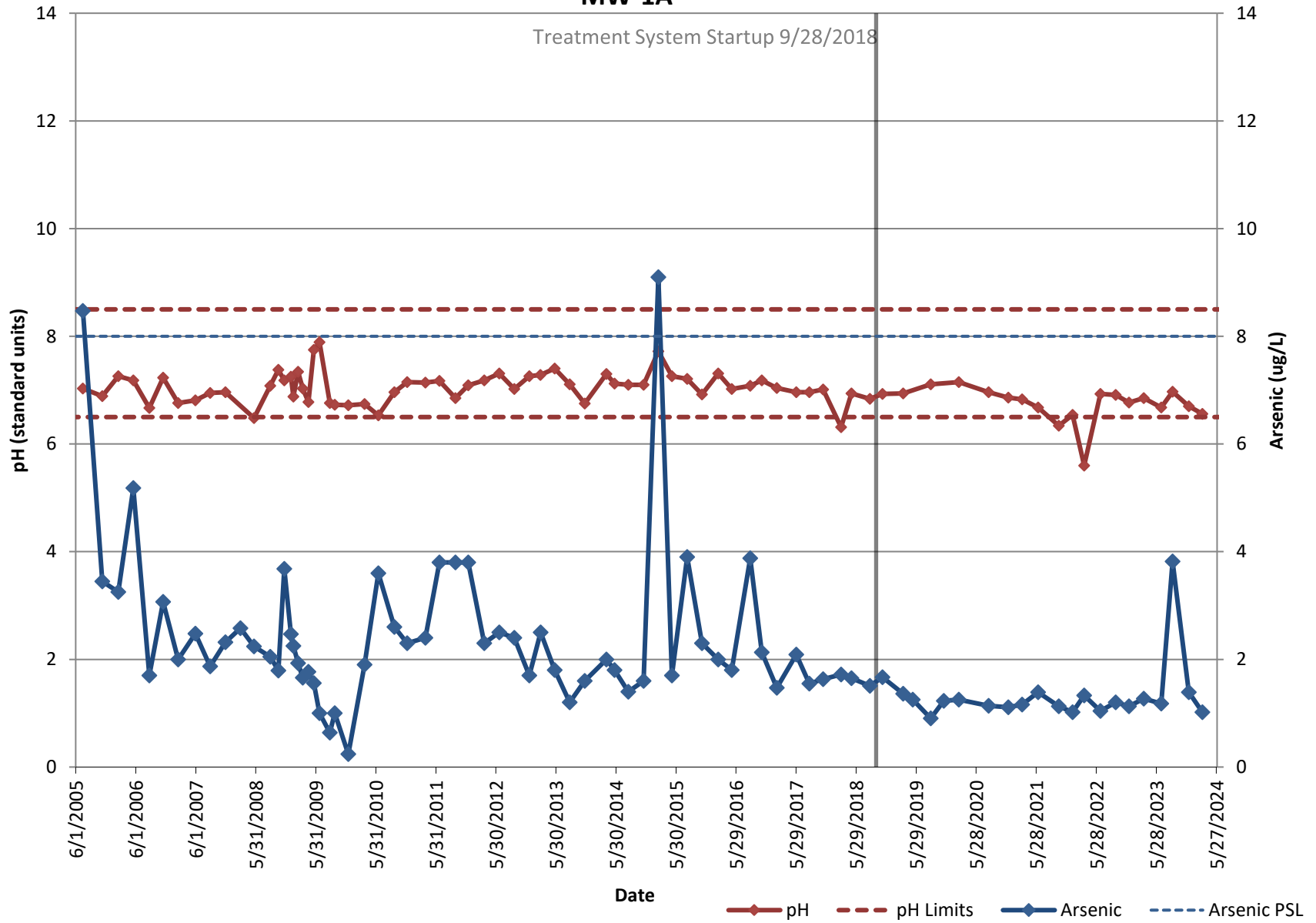
NTU Nephelometric Turbidity Unit



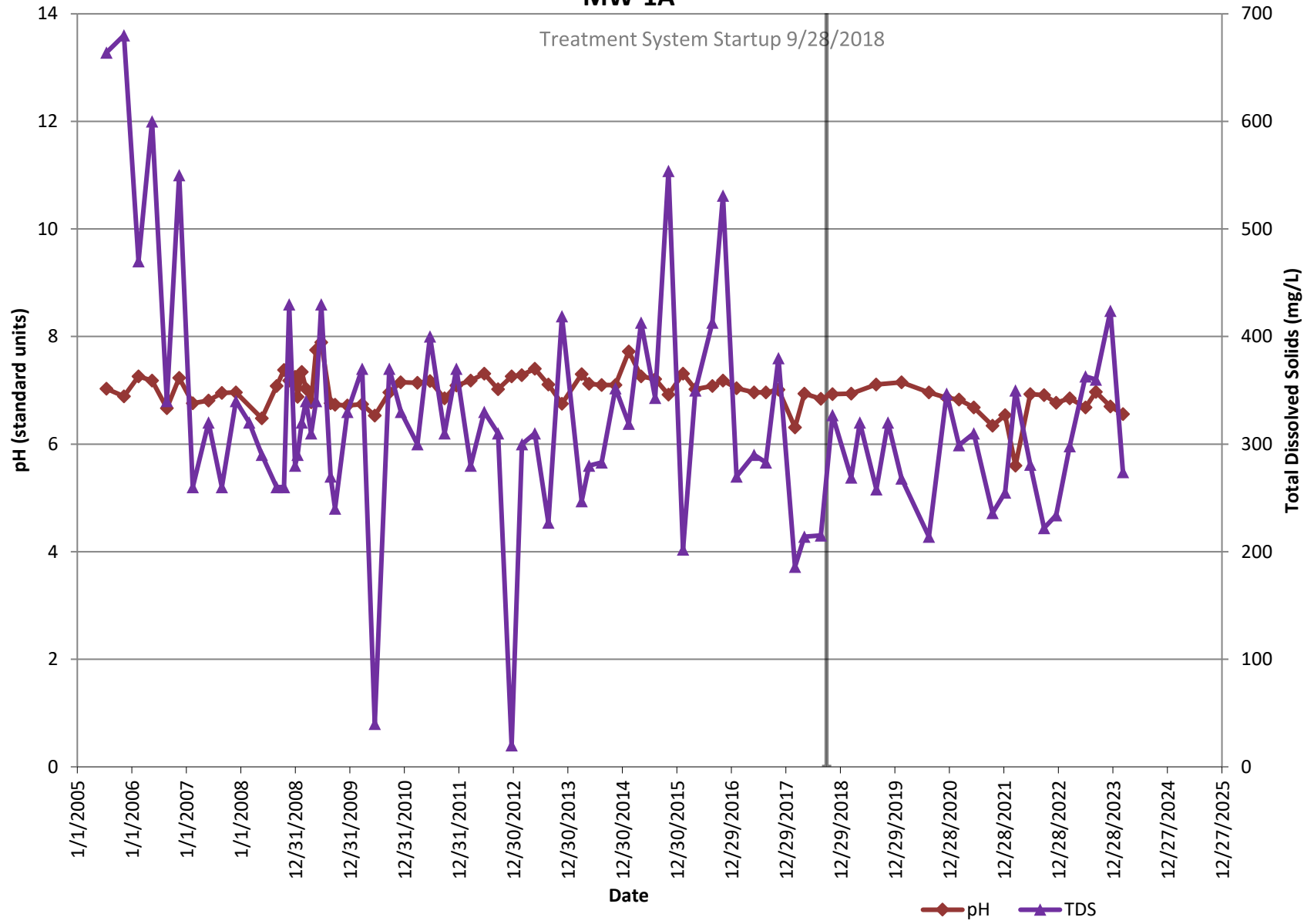
**APPENDIX B**

**LDA Shallow/Alluvial Monitoring  
Wells Data Graphs**

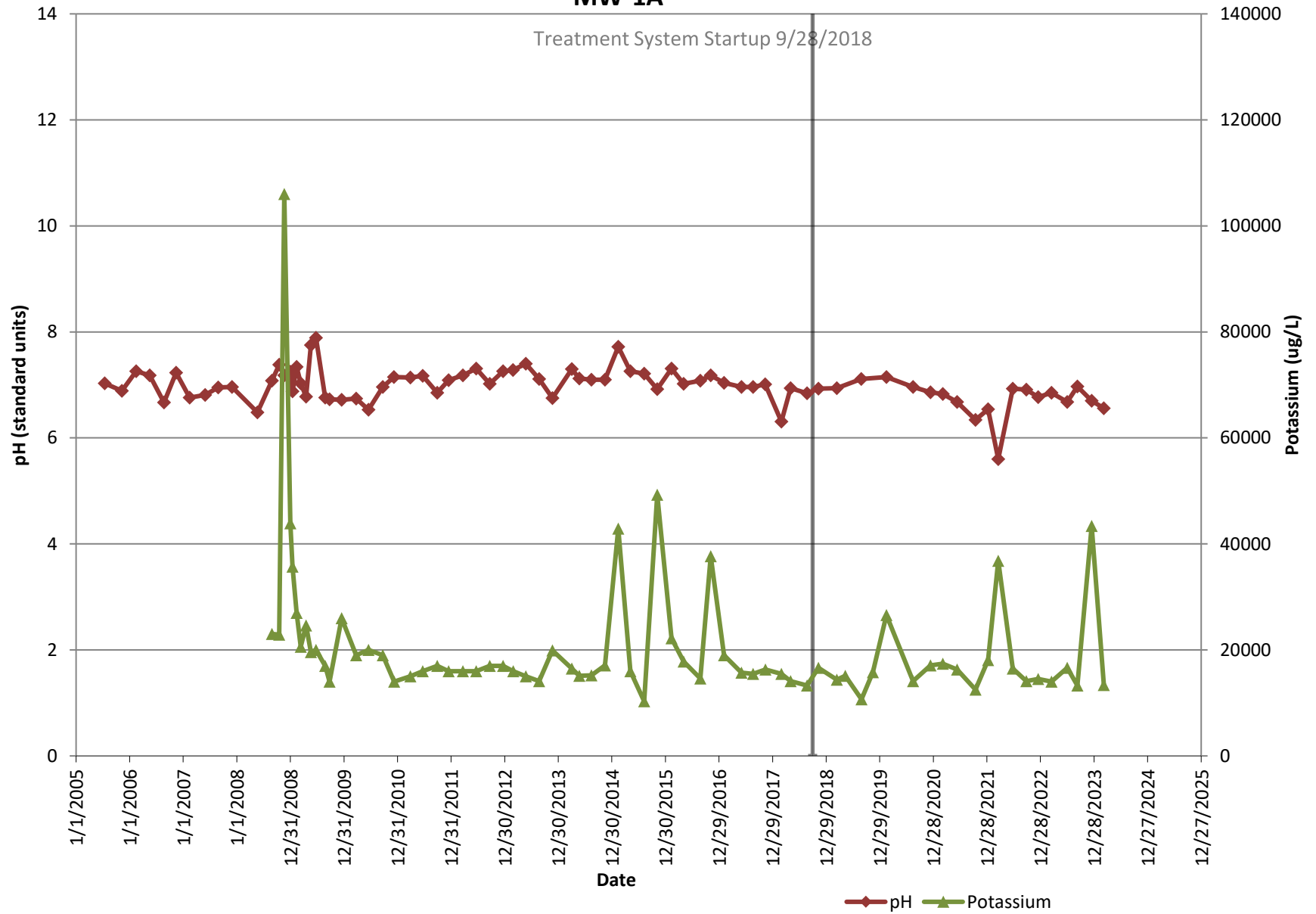
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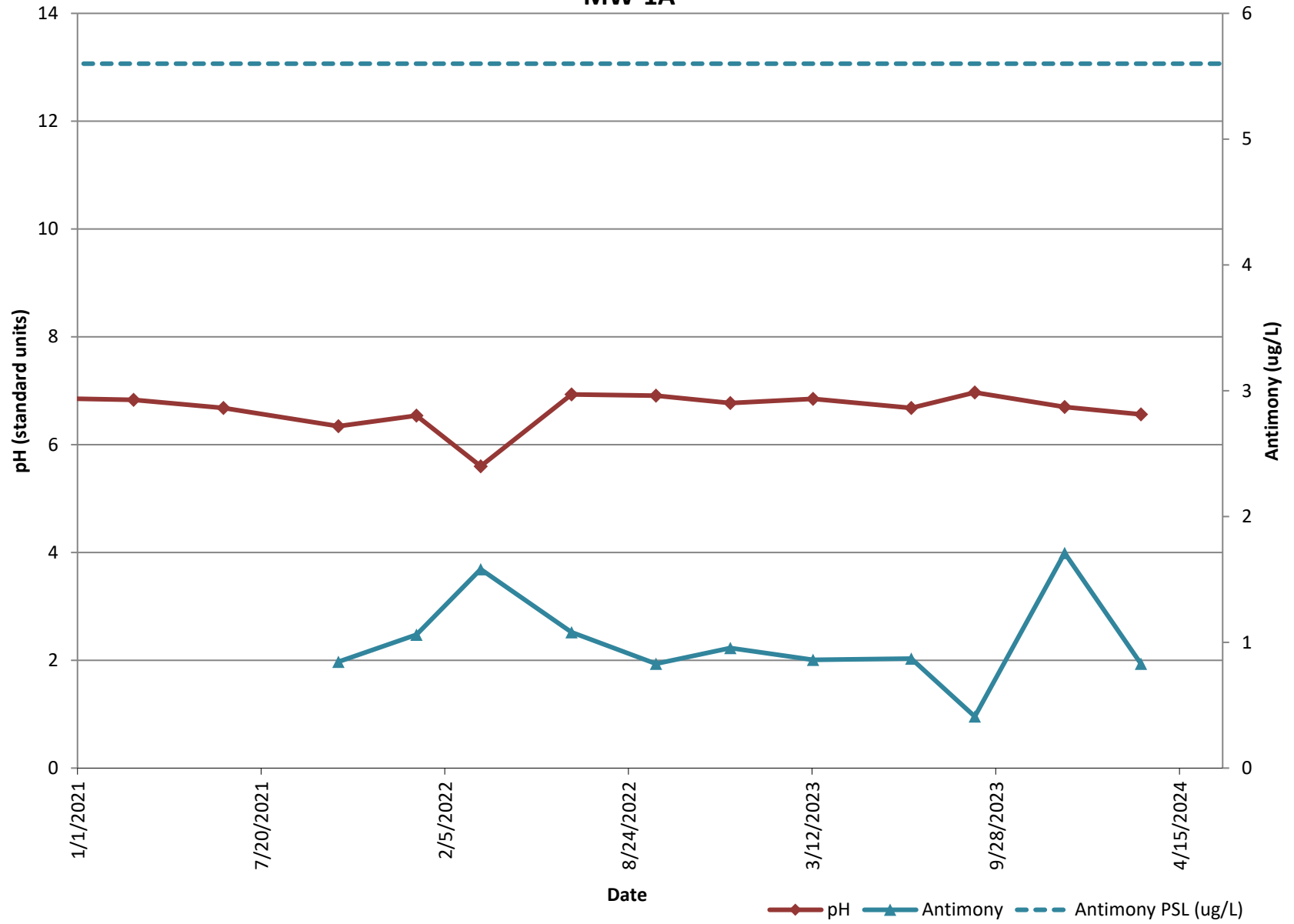
# LDA Shallow/Alluvial Monitoring Wells MW-1A



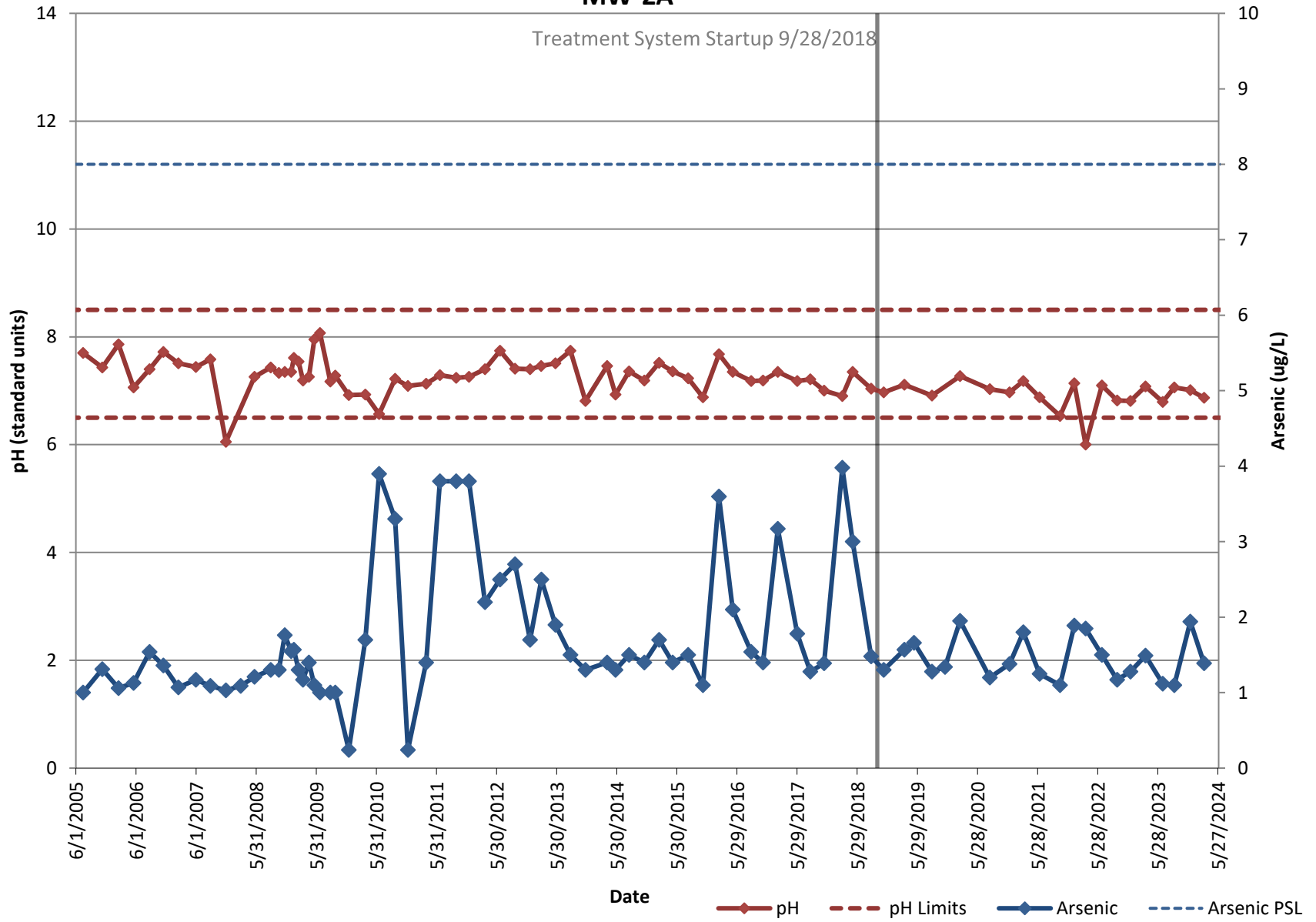
# LDA Shallow/Alluvial Monitoring Wells MW-1A



# LDA Shallow/Alluvial Monitoring Wells MW-1A

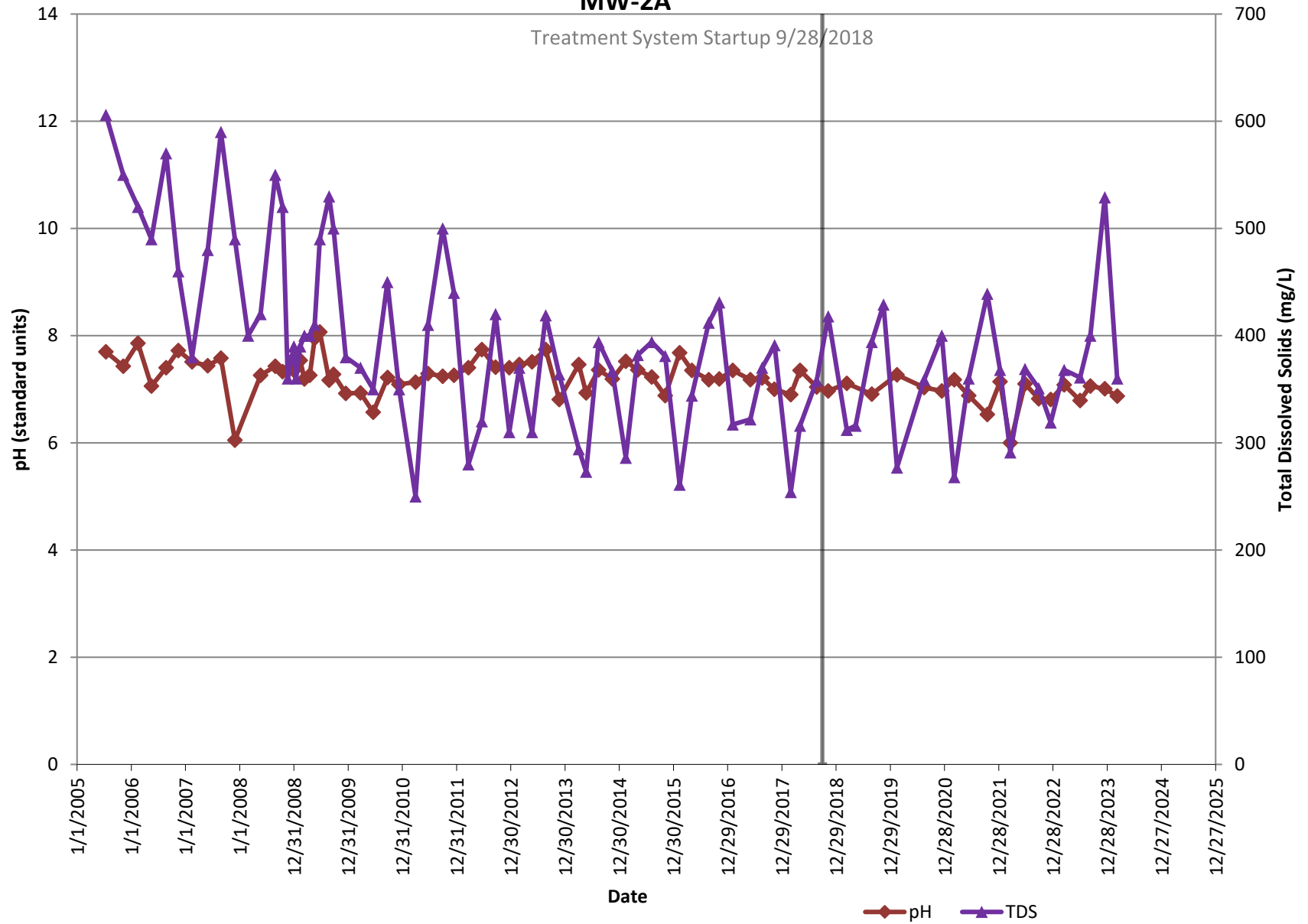


## LDA Shallow/Alluvial Monitoring Wells MW-2A

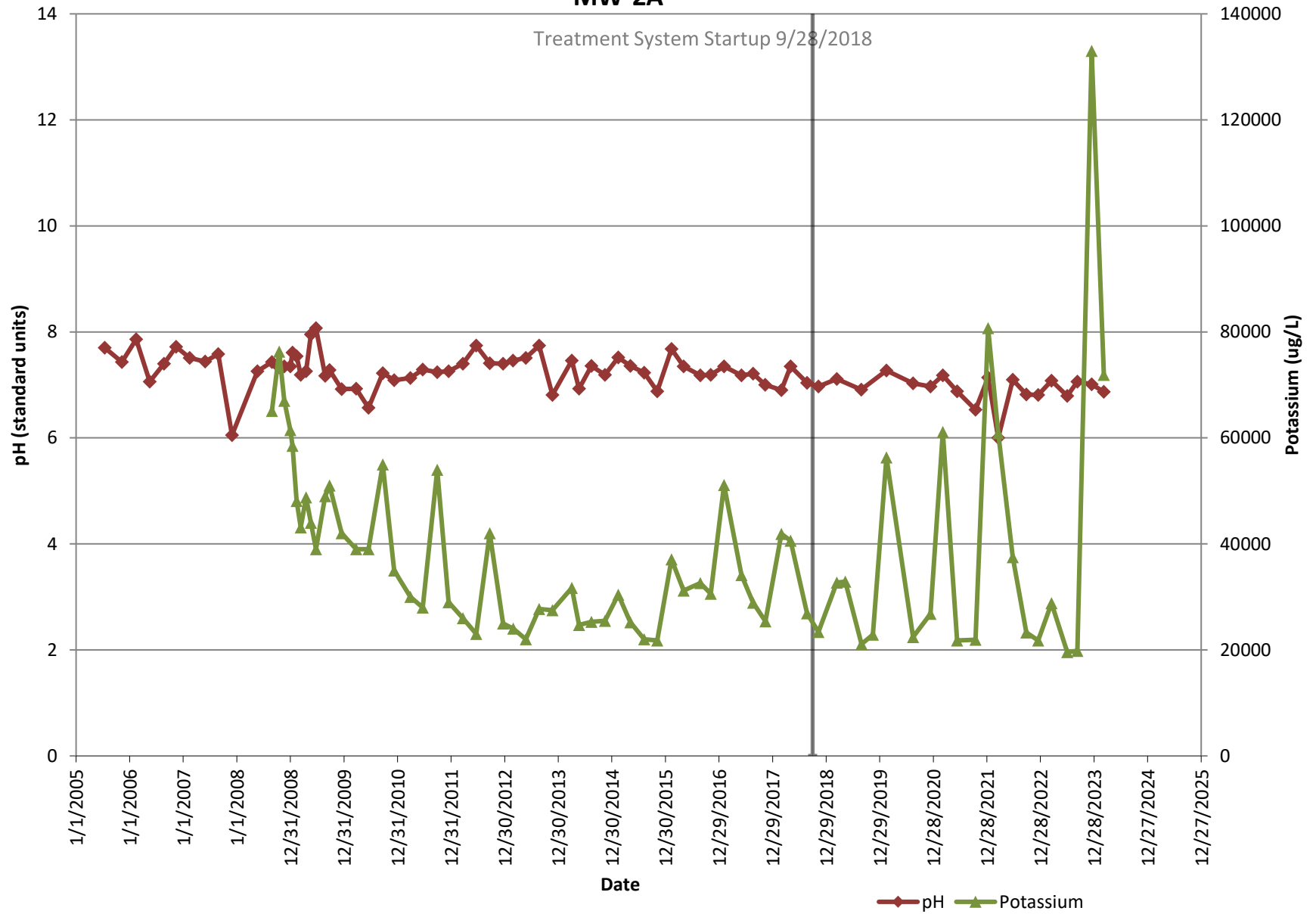


# LDA Shallow/Alluvial Monitoring Wells

## MW-2A

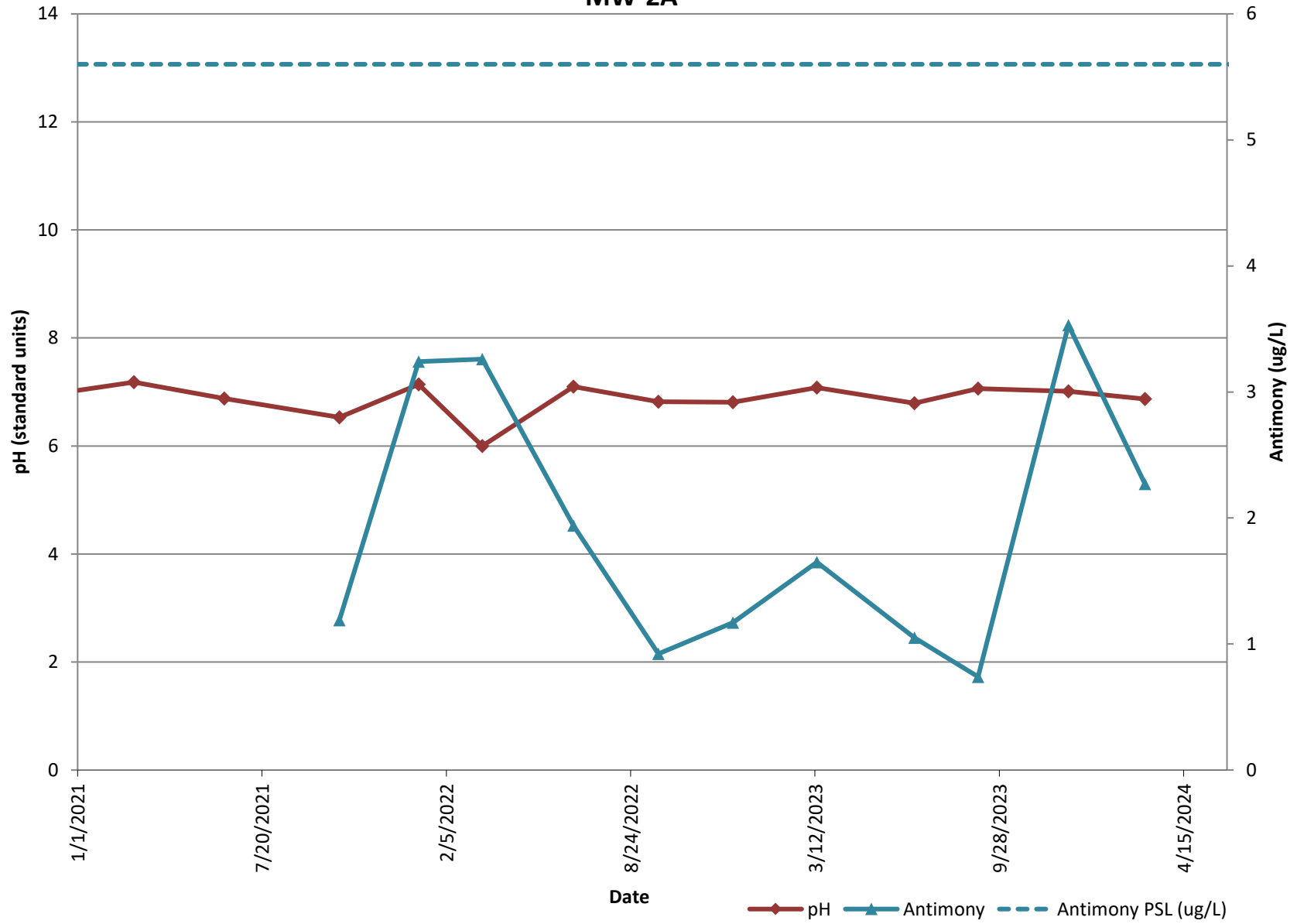


# LDA Shallow/Alluvial Monitoring Wells MW-2A

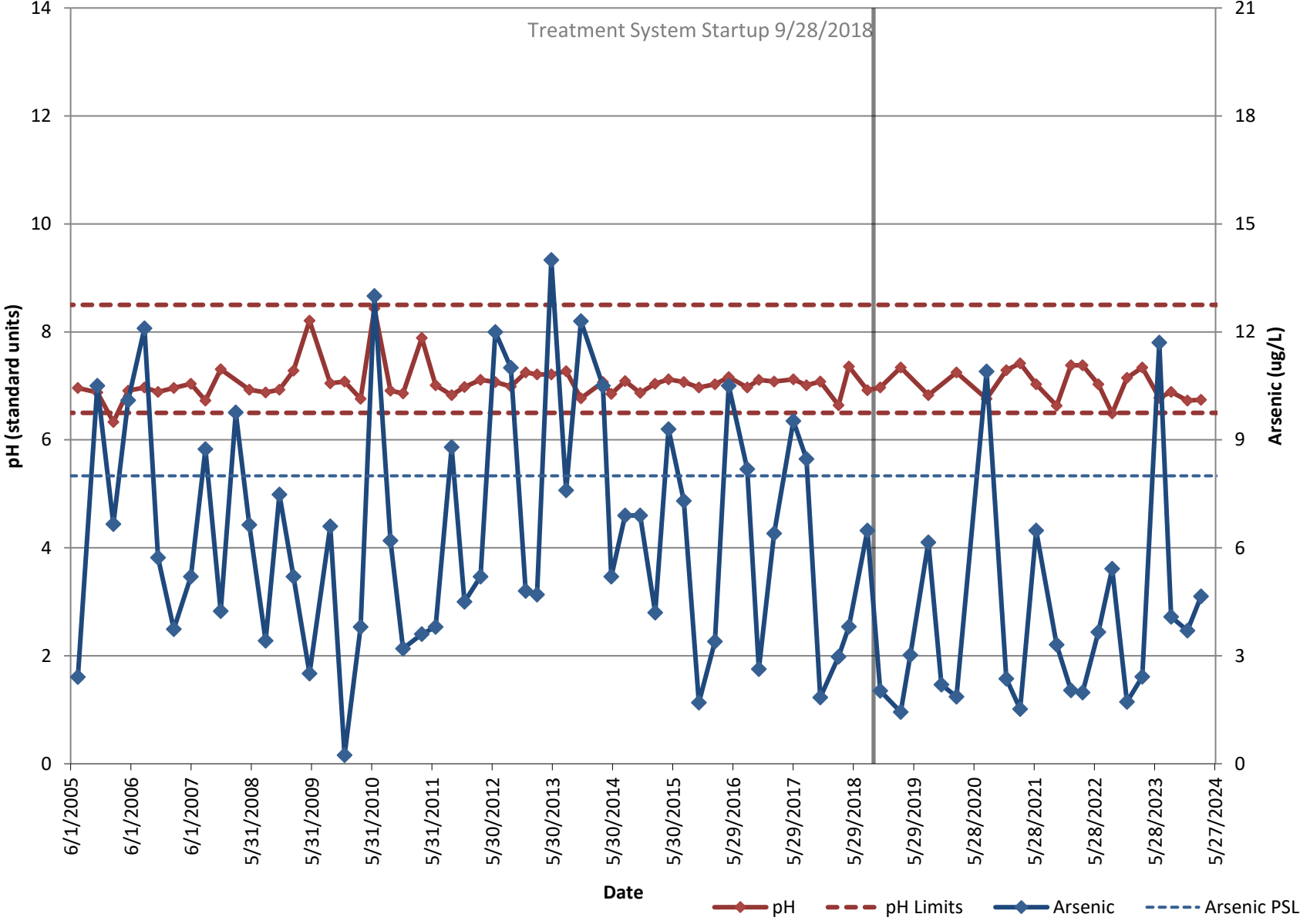




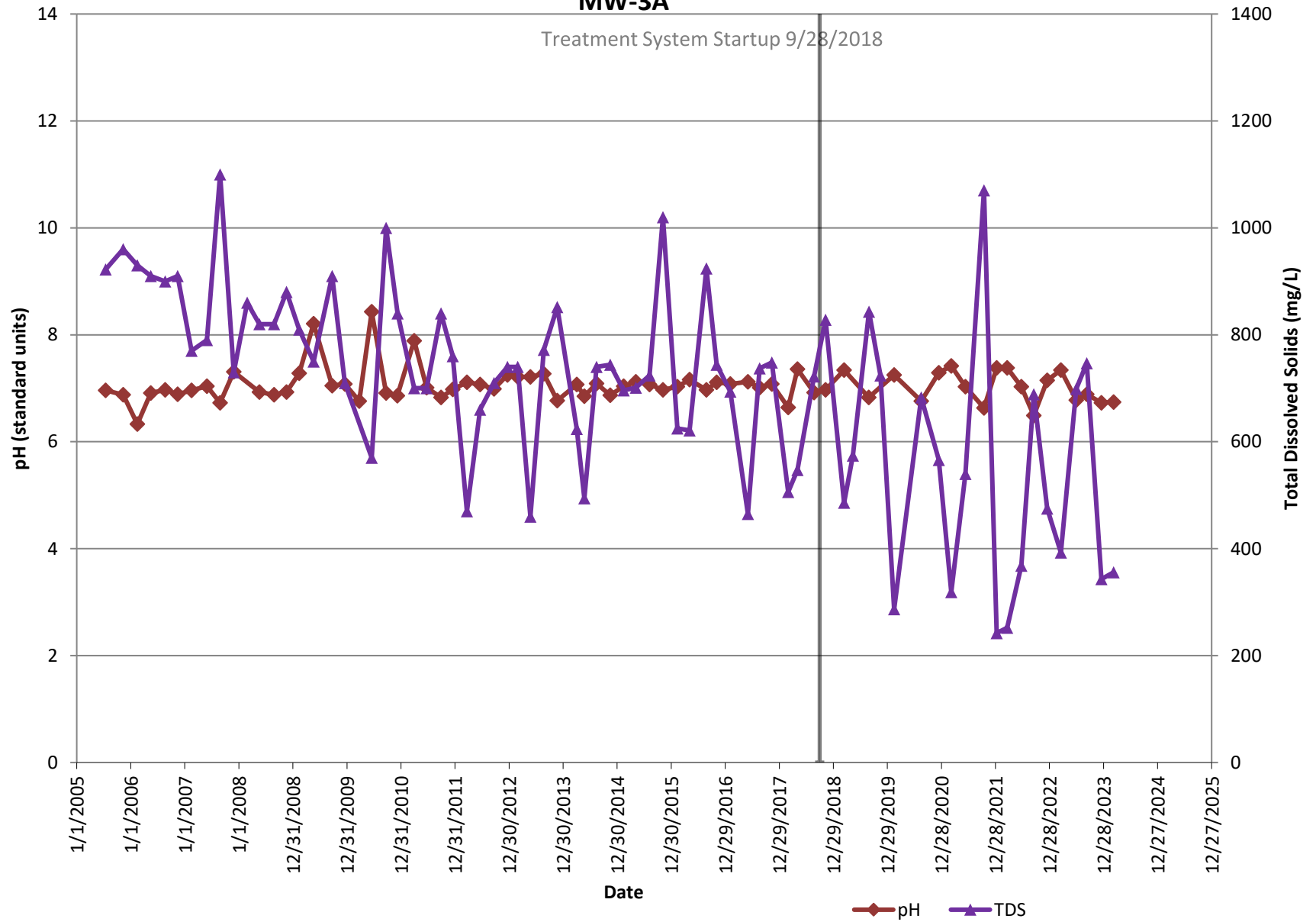
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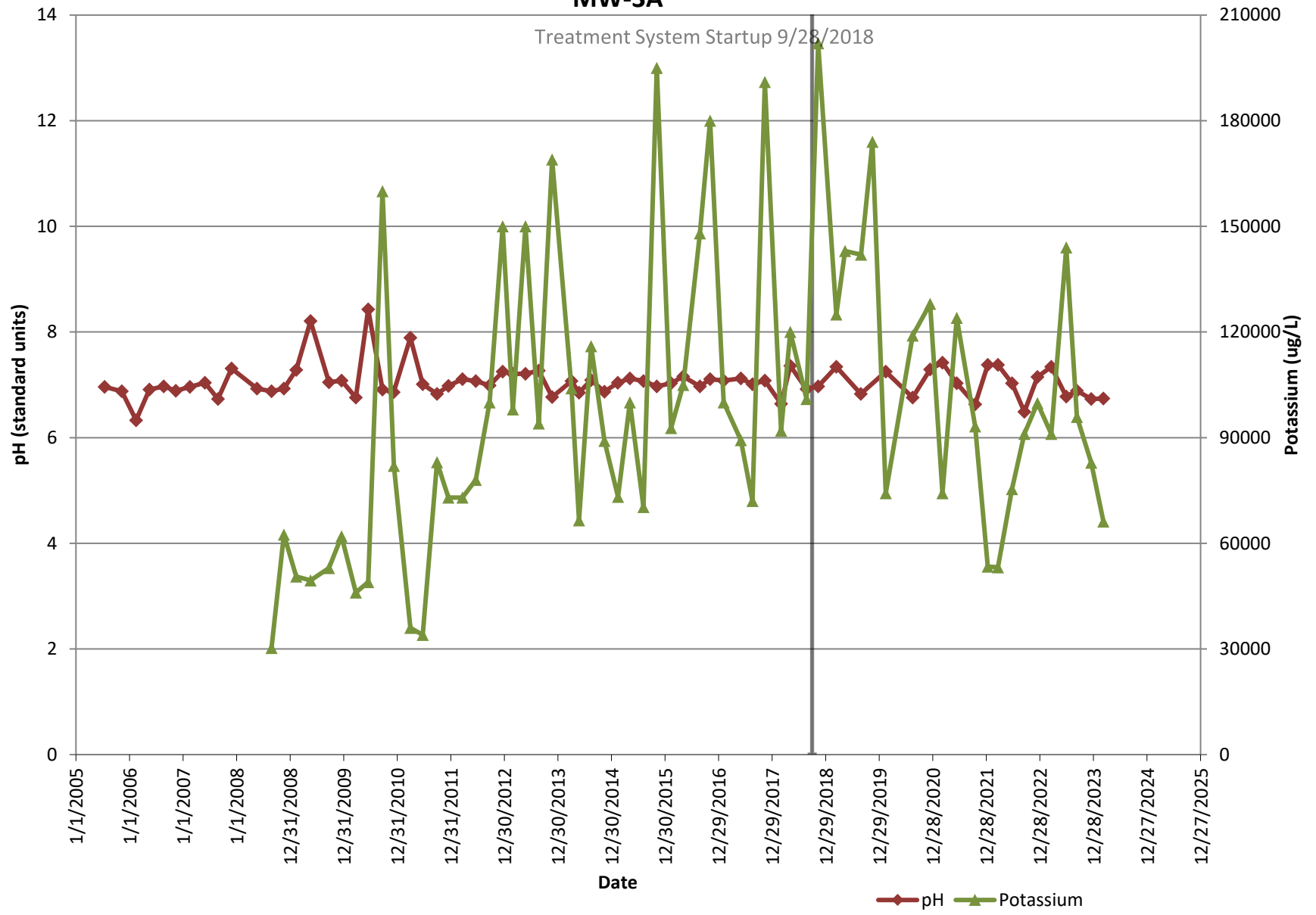
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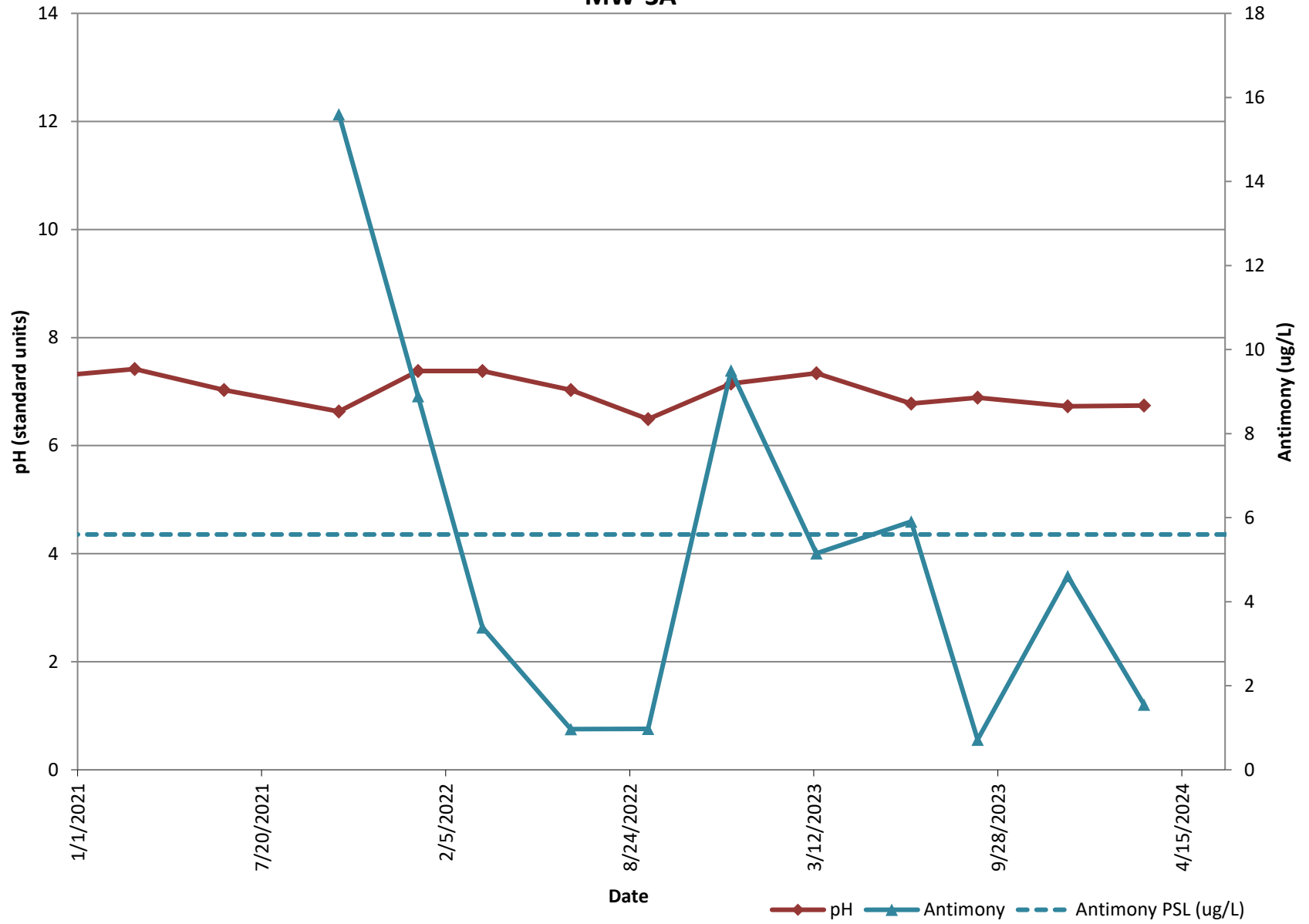
# LDA Shallow/Alluvial Monitoring Wells MW-3A



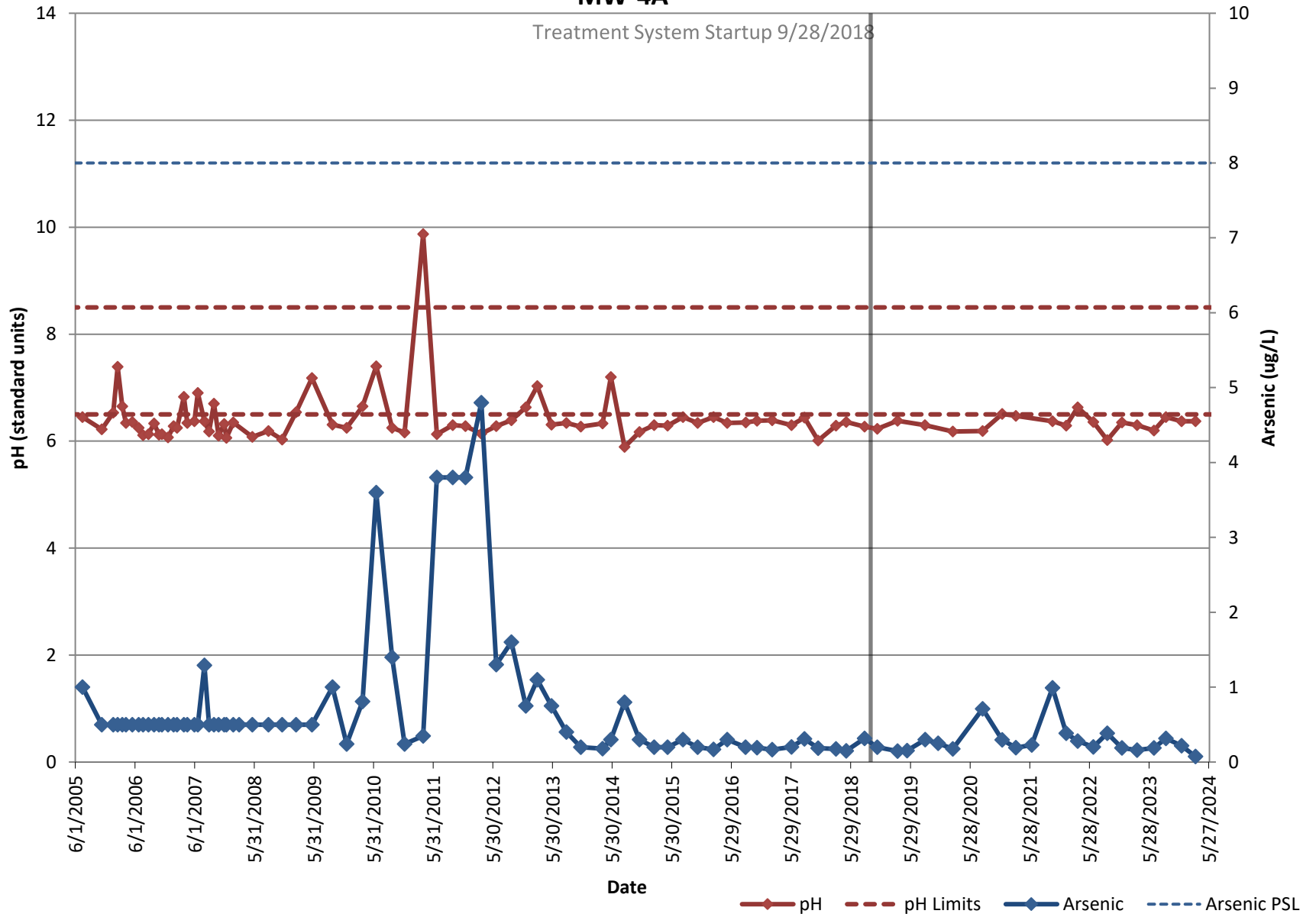
# LDA Shallow/Alluvial Monitoring Wells MW-3A



### LDA Shallow/Alluvial Monitoring Wells MW-3A

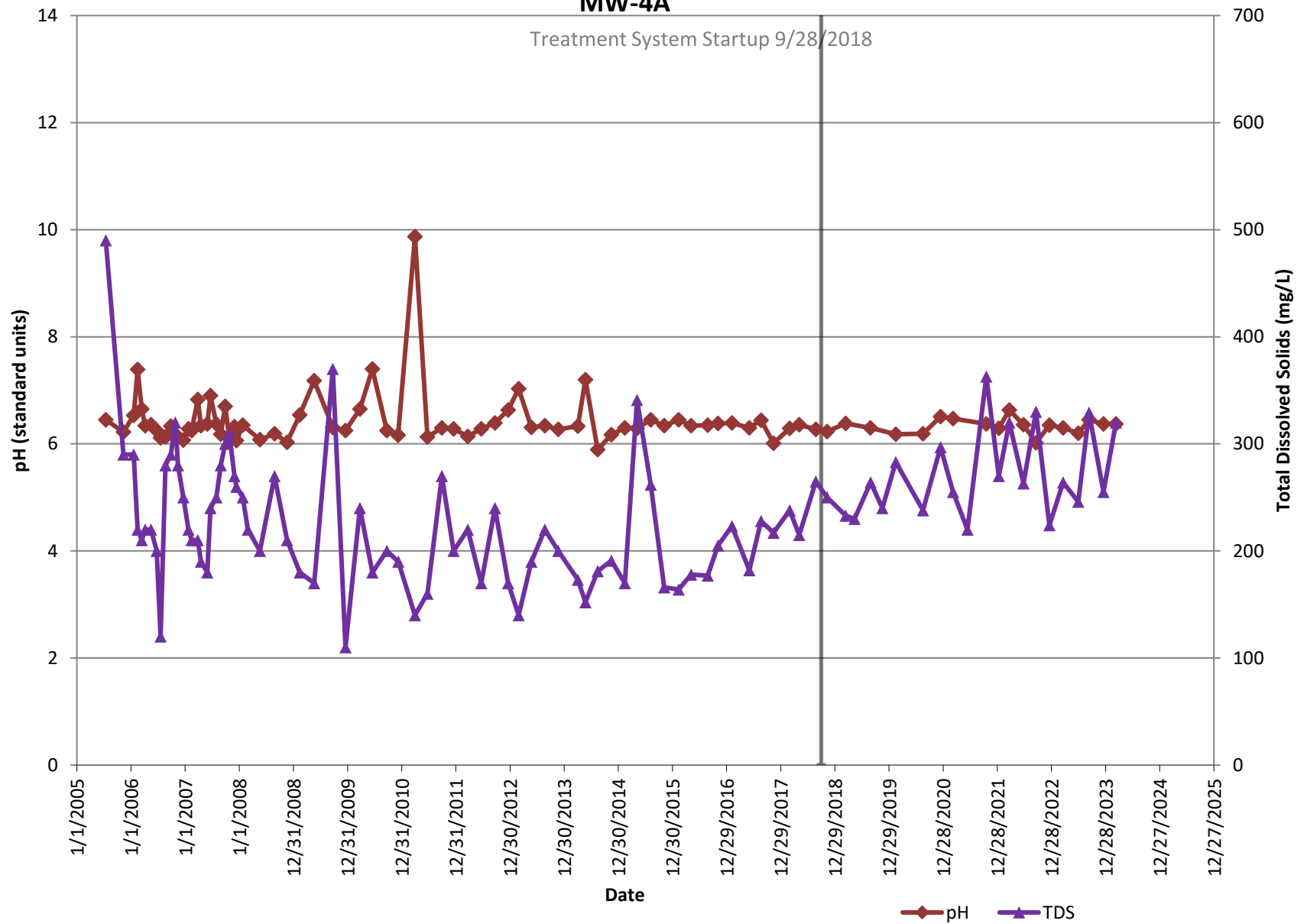


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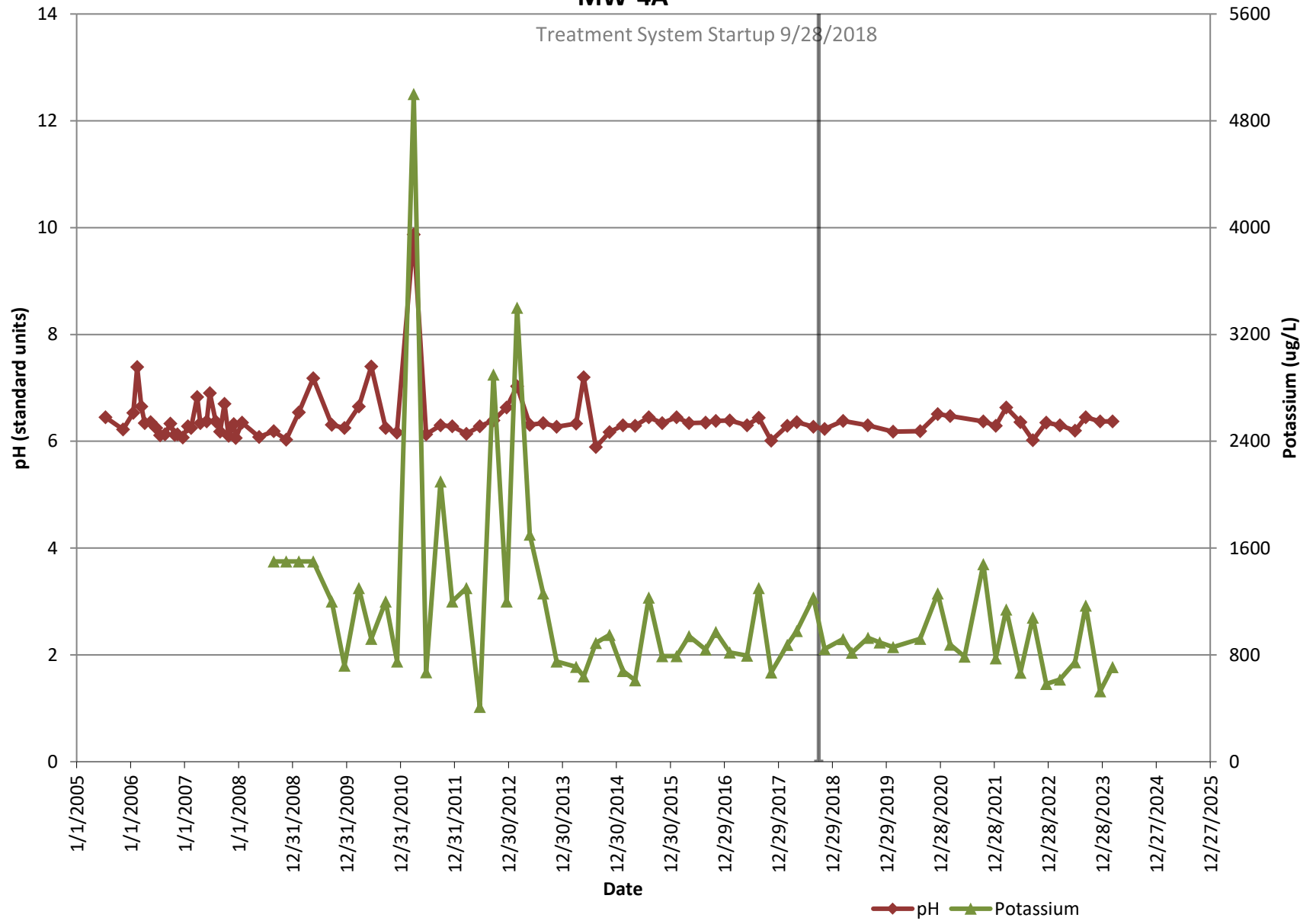


# LDA Shallow/Alluvial Monitoring Wells

## MW-4A

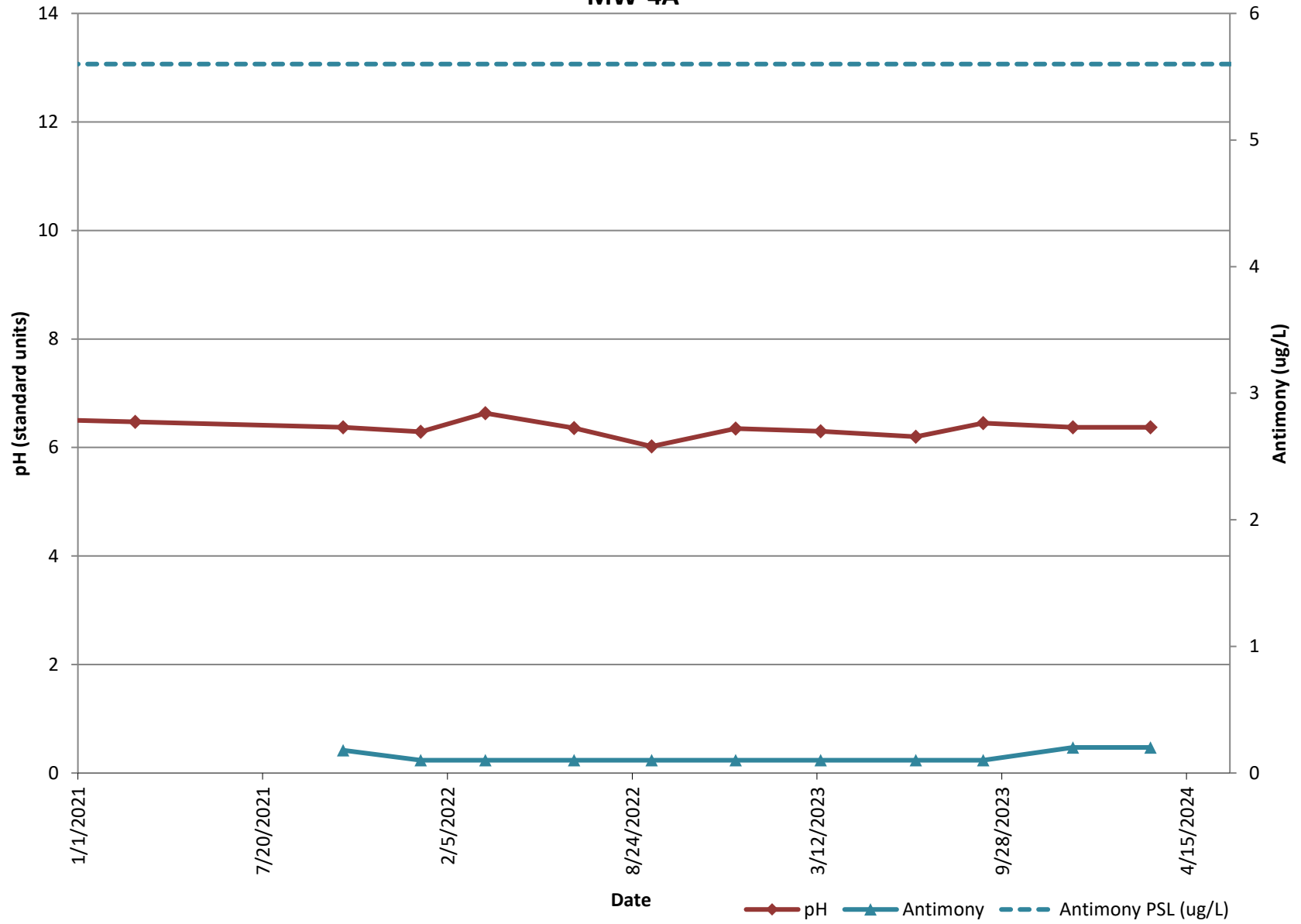


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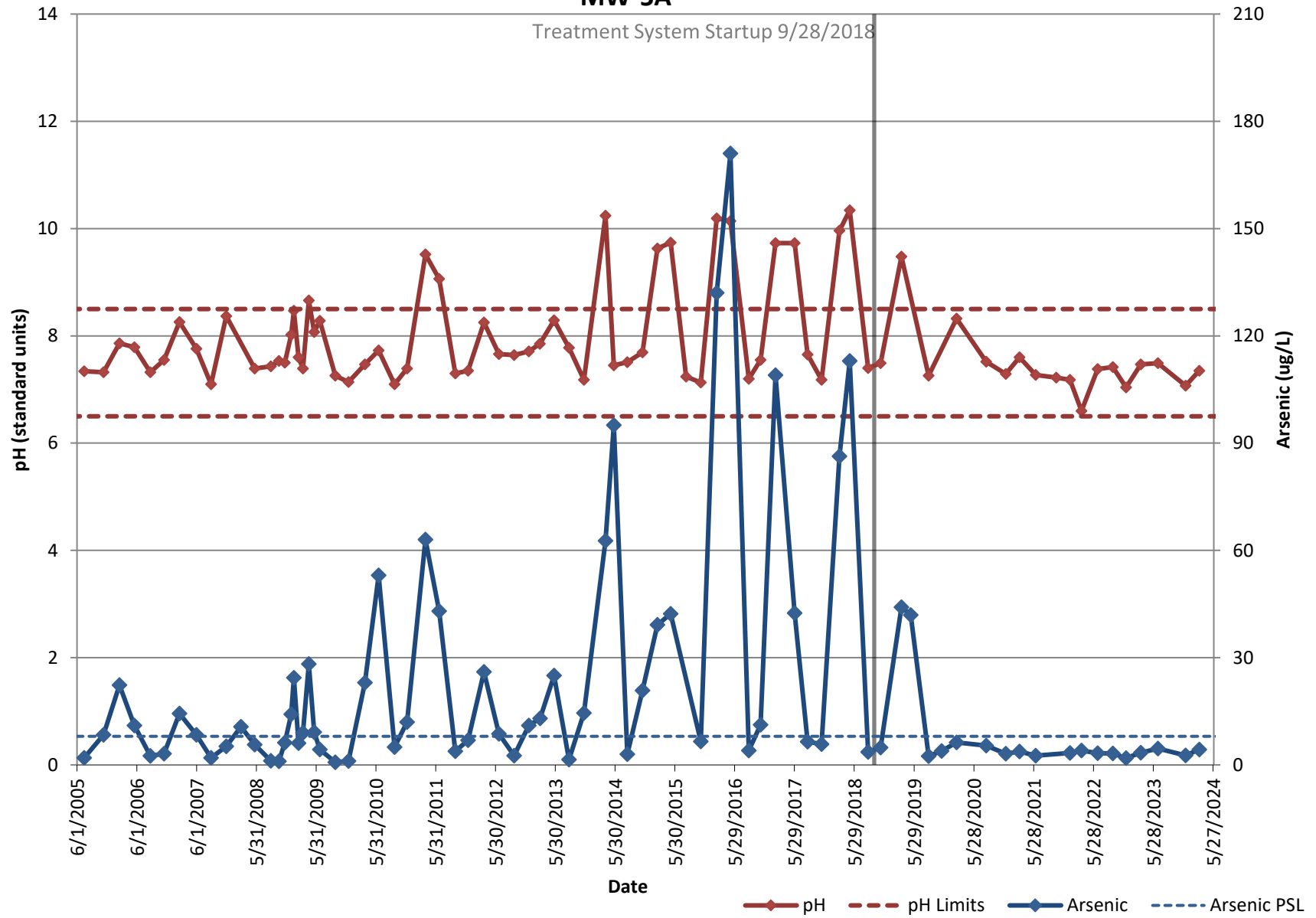




# LDA Shallow/Alluvial Monitoring Wells MW-4A

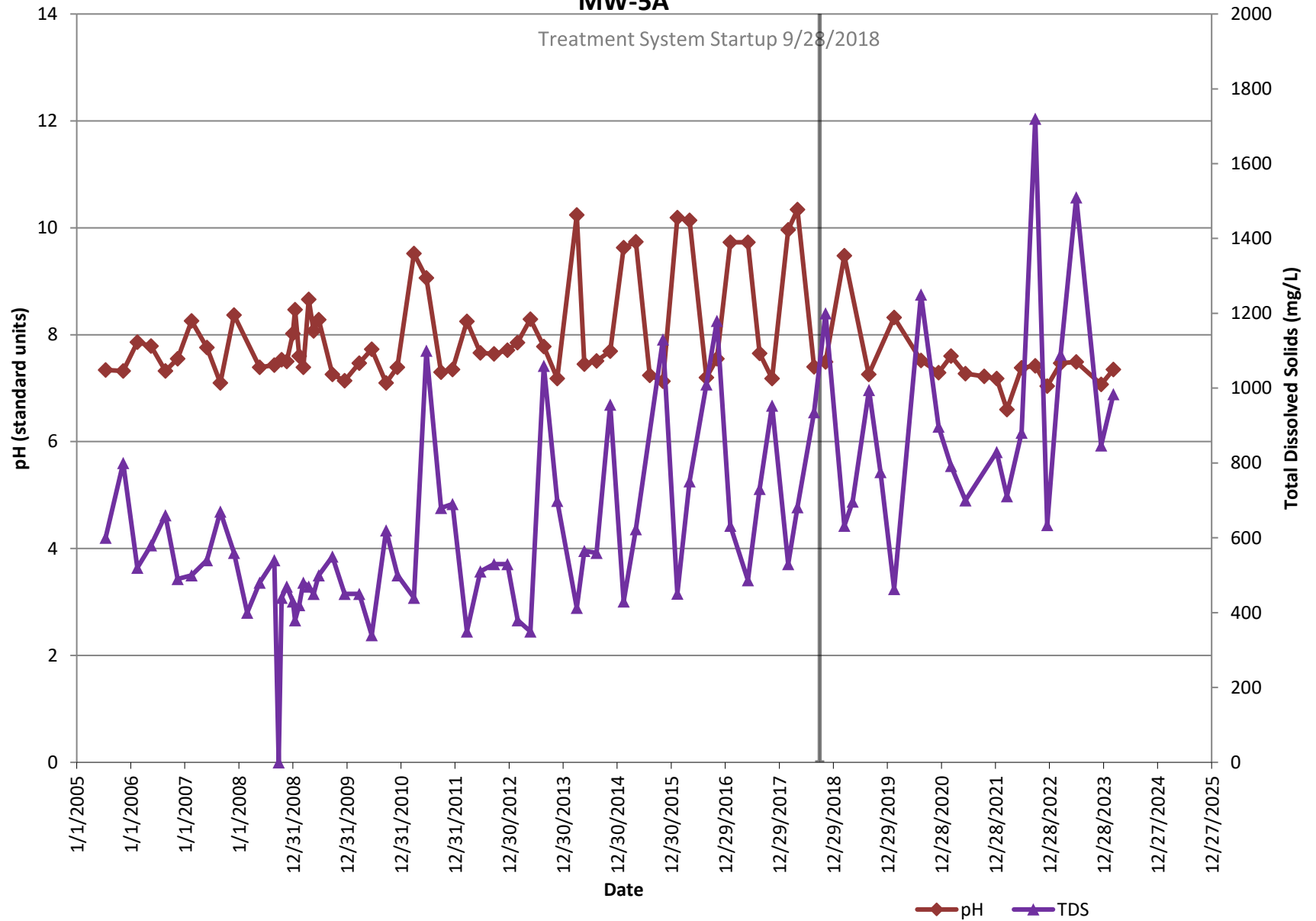


# LDA Shallow/Alluvial Monitoring Wells MW-5A

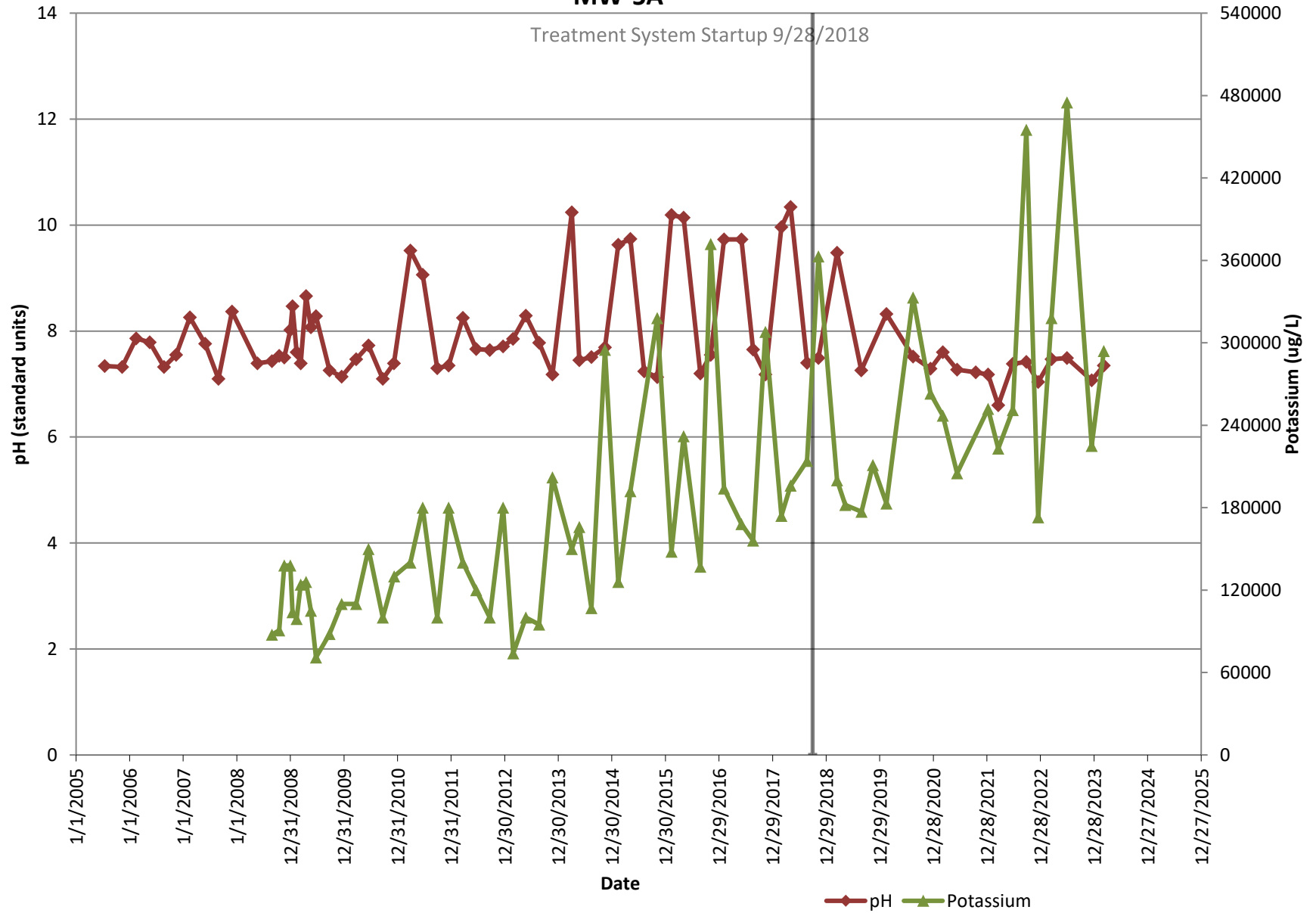


# LDA Shallow/Alluvial Monitoring Wells

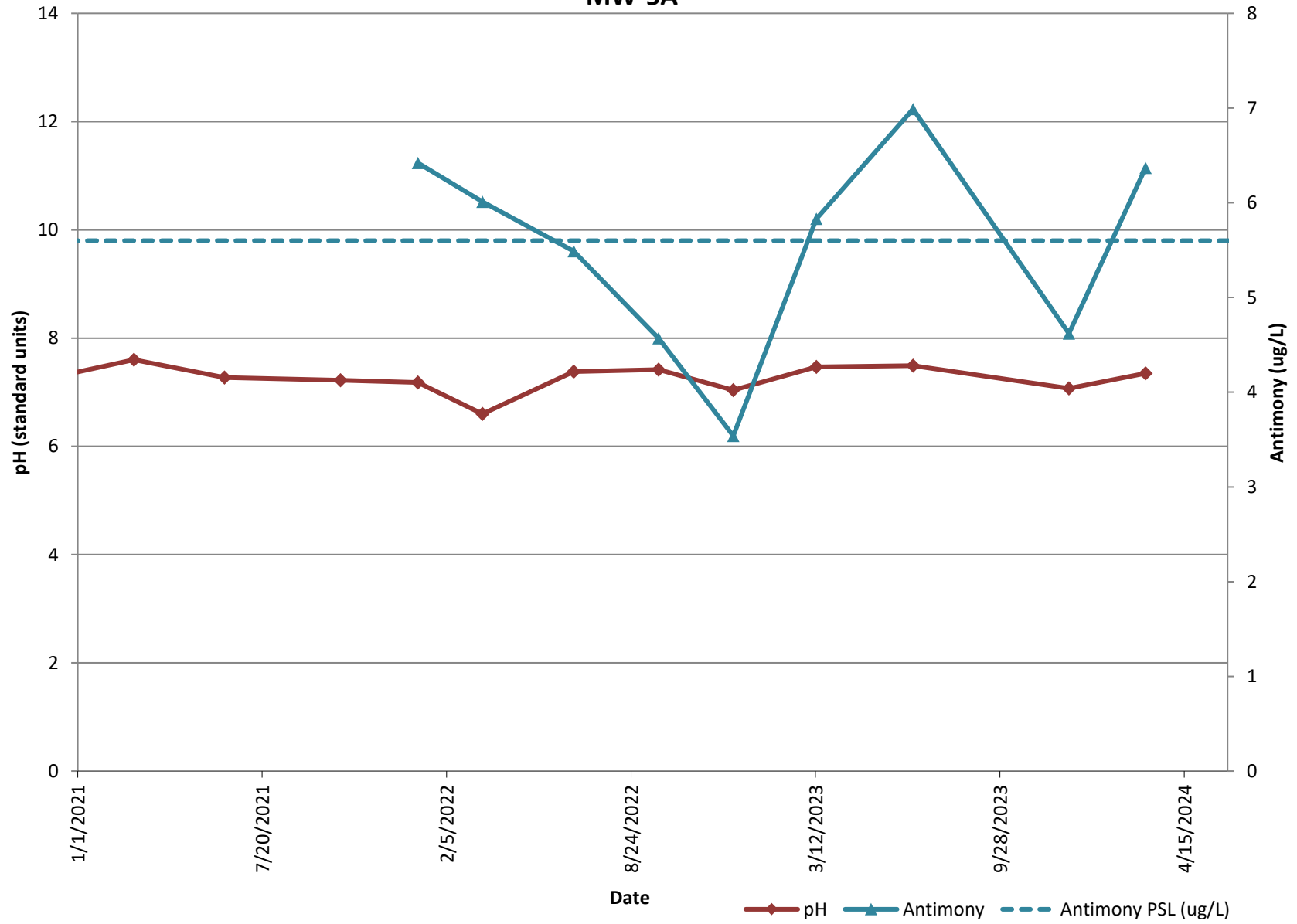
## MW-5A



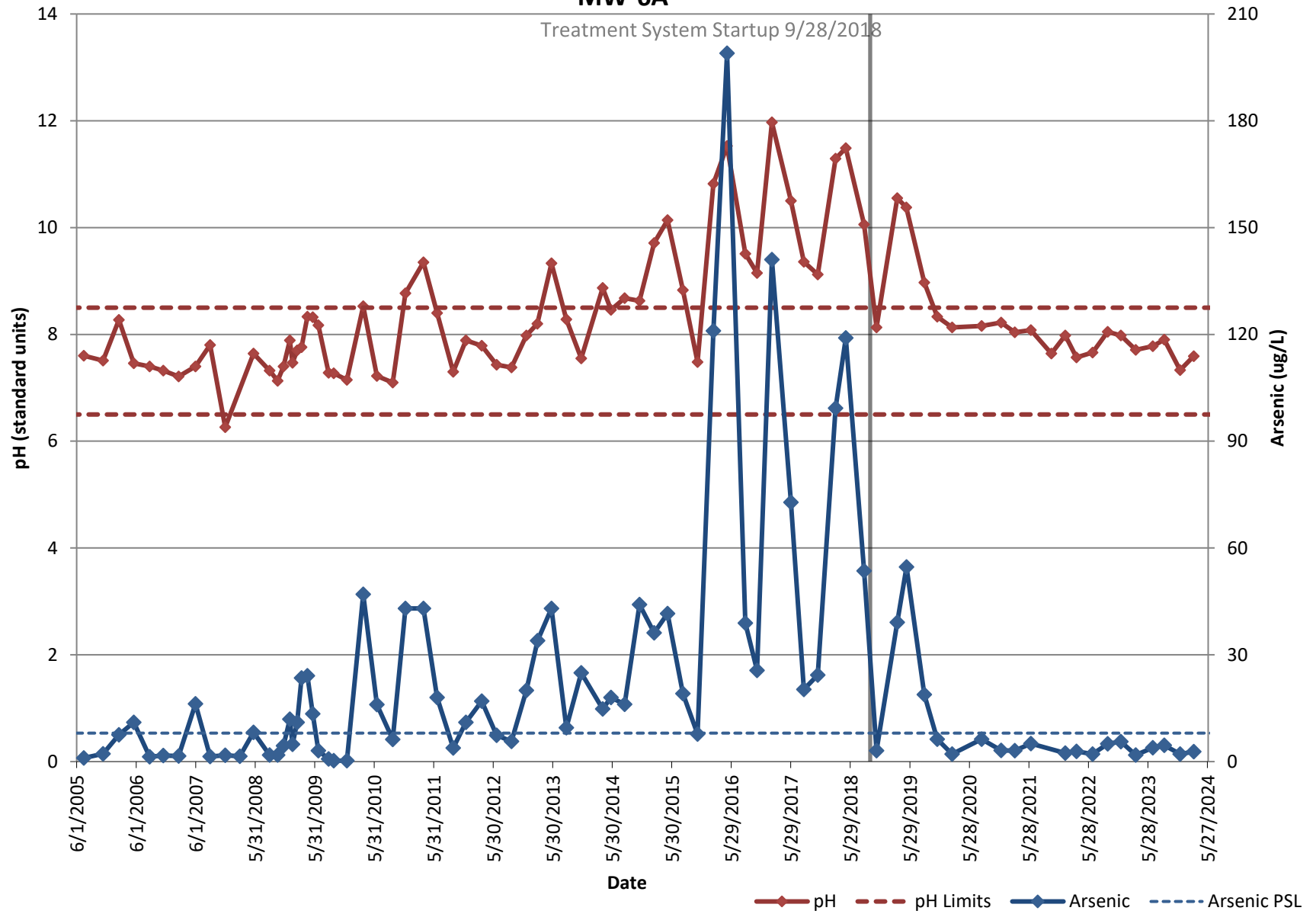
# LDA Shallow/Alluvial Monitoring Wells MW-5A



### LDA Shallow/Alluvial Monitoring Wells MW-5A

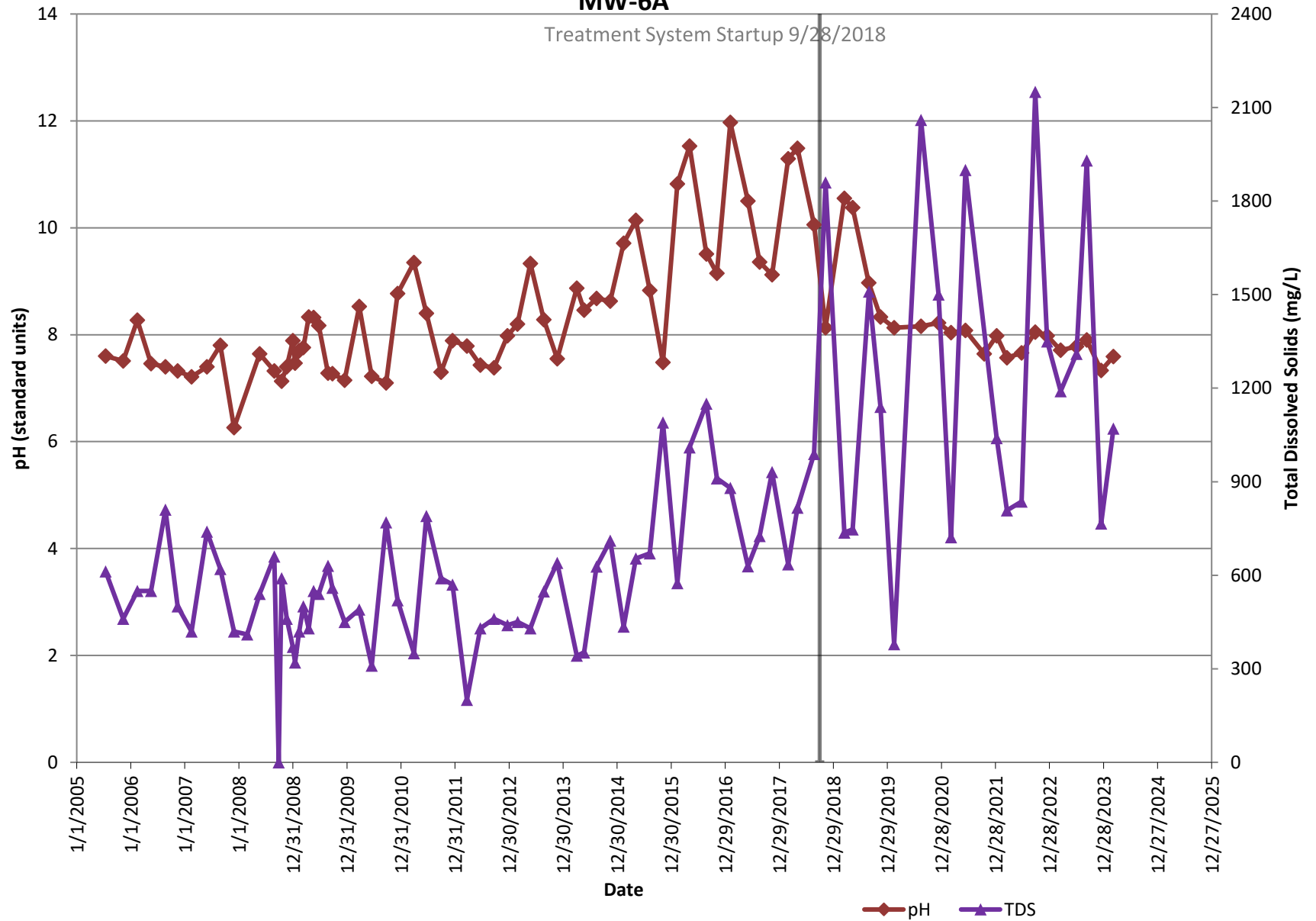


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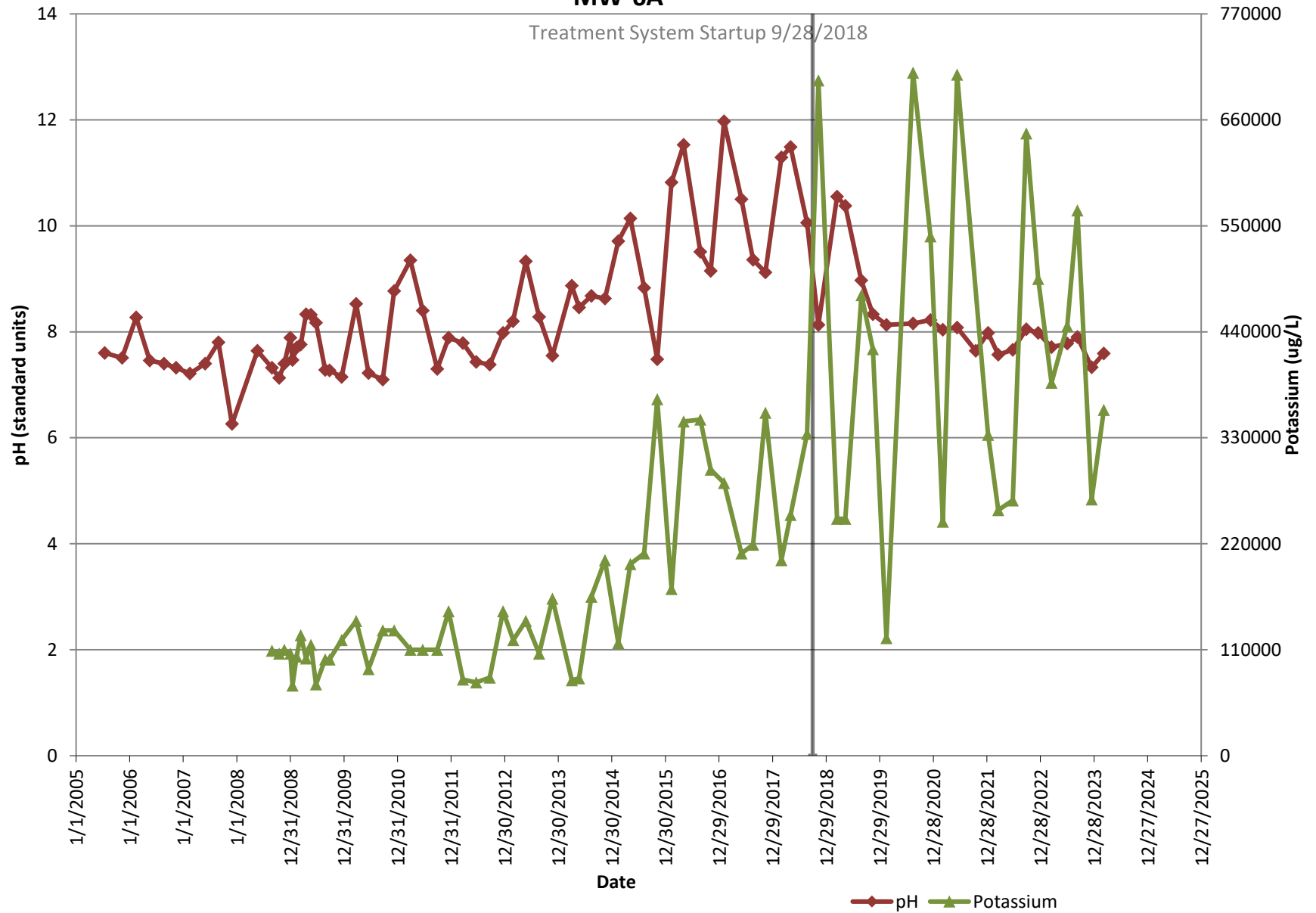


# LDA Shallow/Alluvial Monitoring Wells

## MW-6A

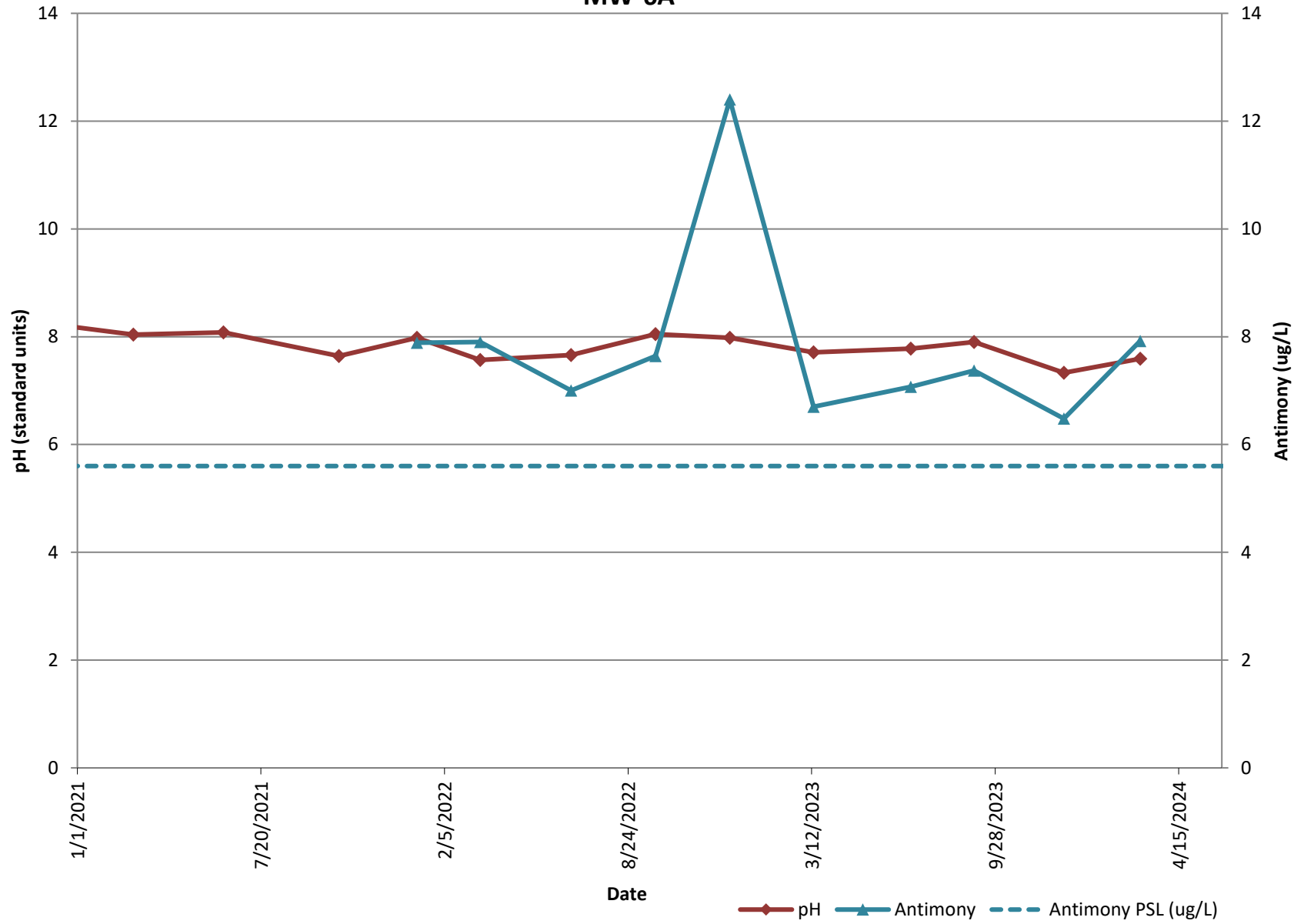


# LDA Shallow/Alluvial Monitoring Wells MW-6A

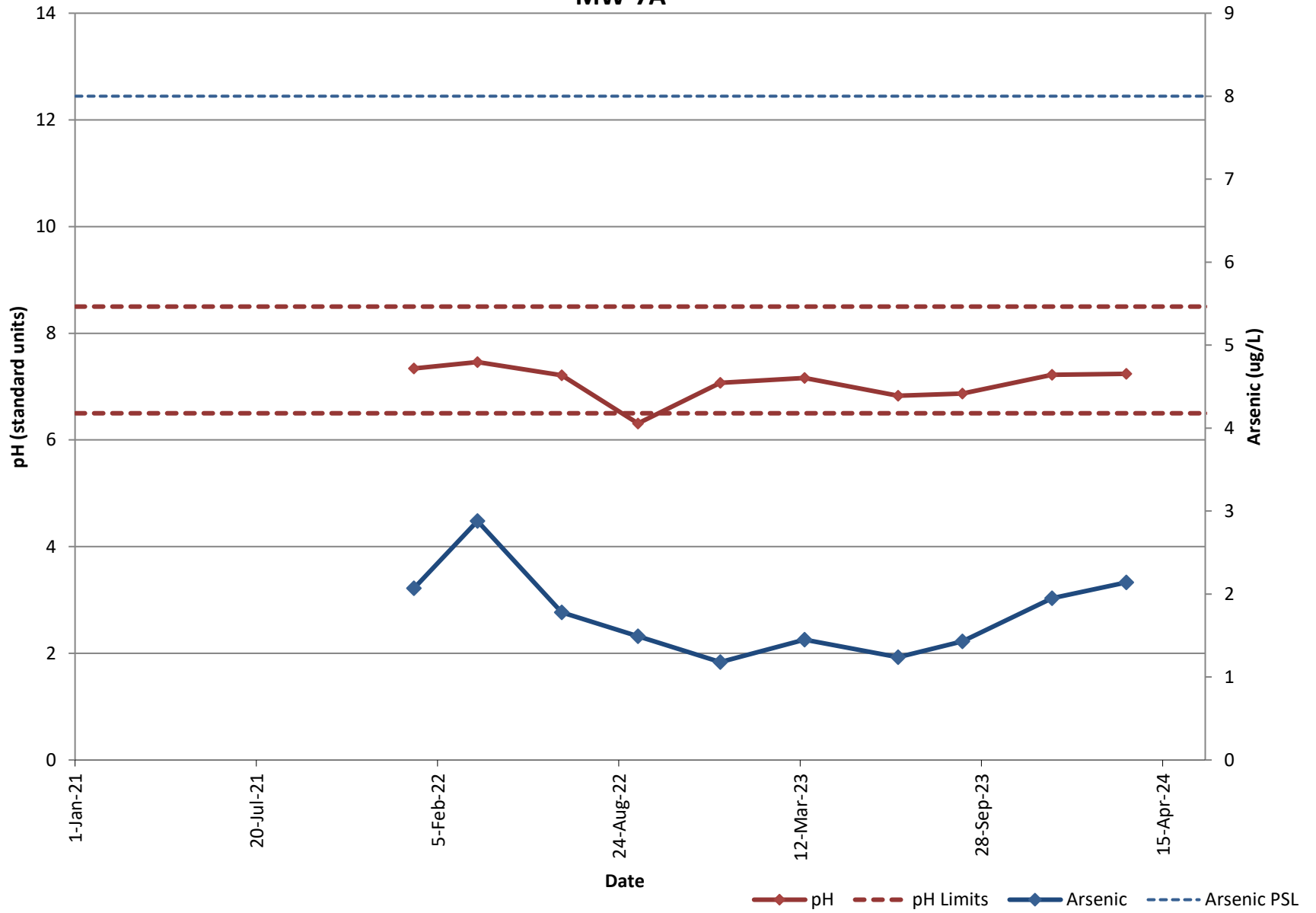




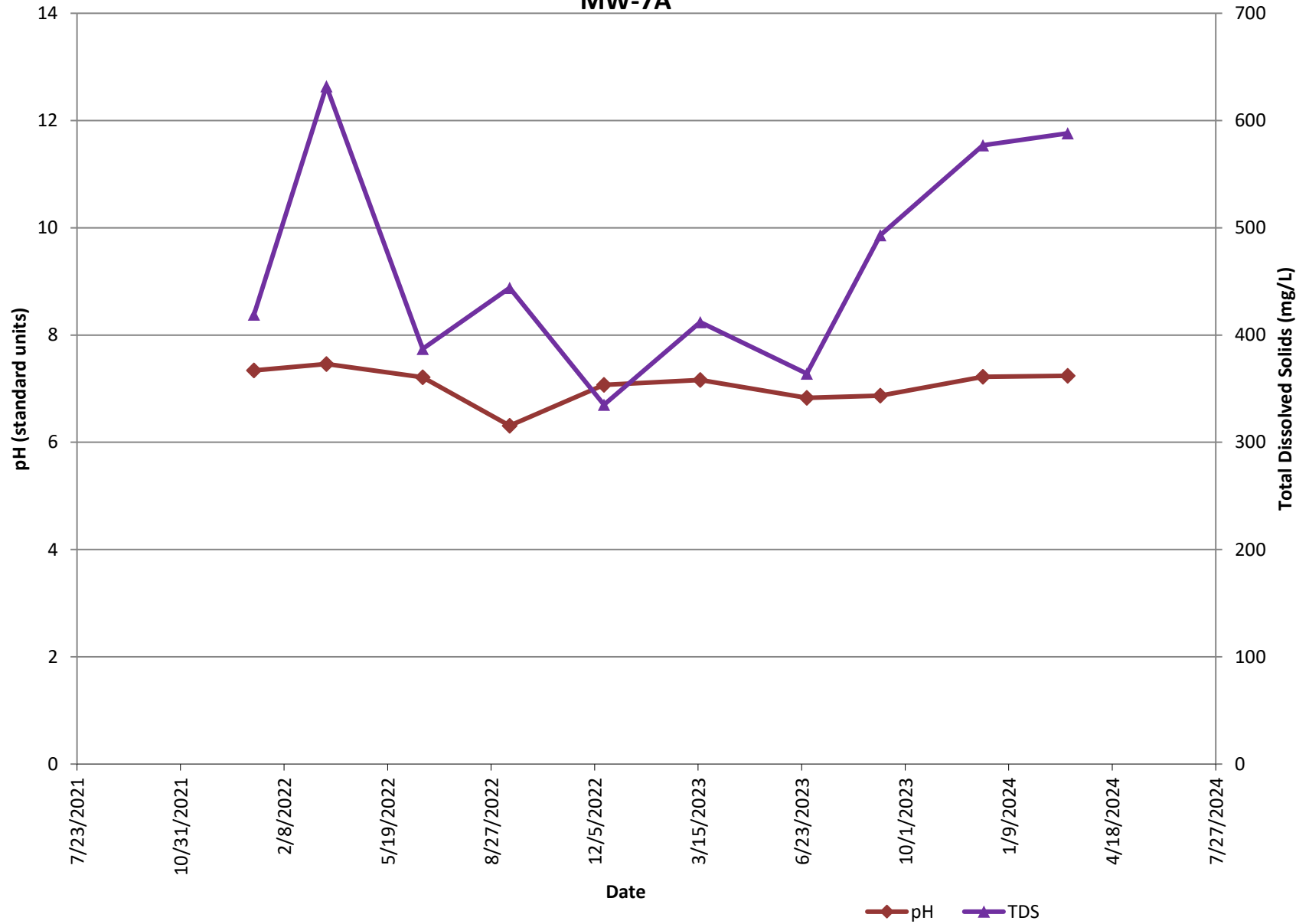
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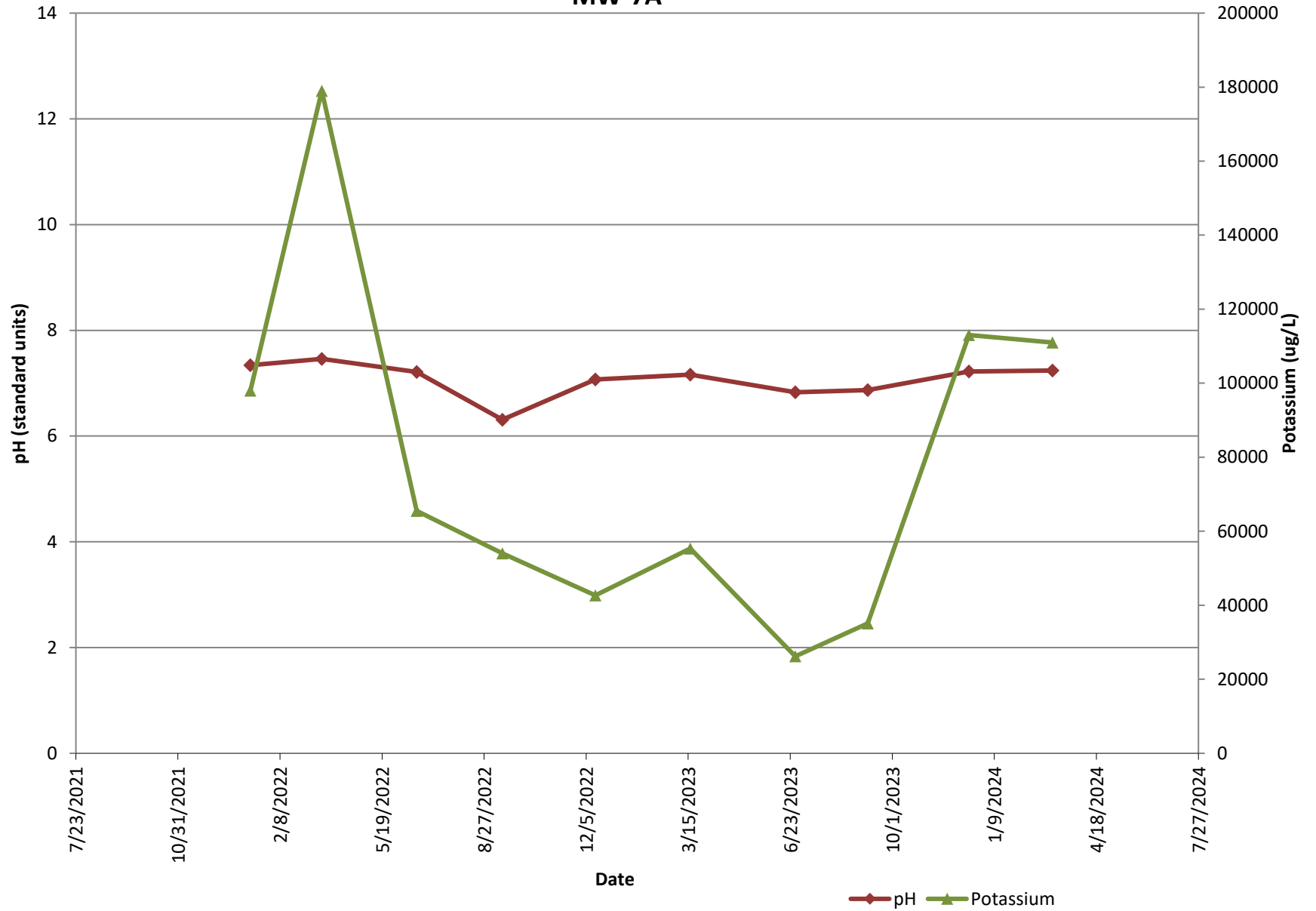
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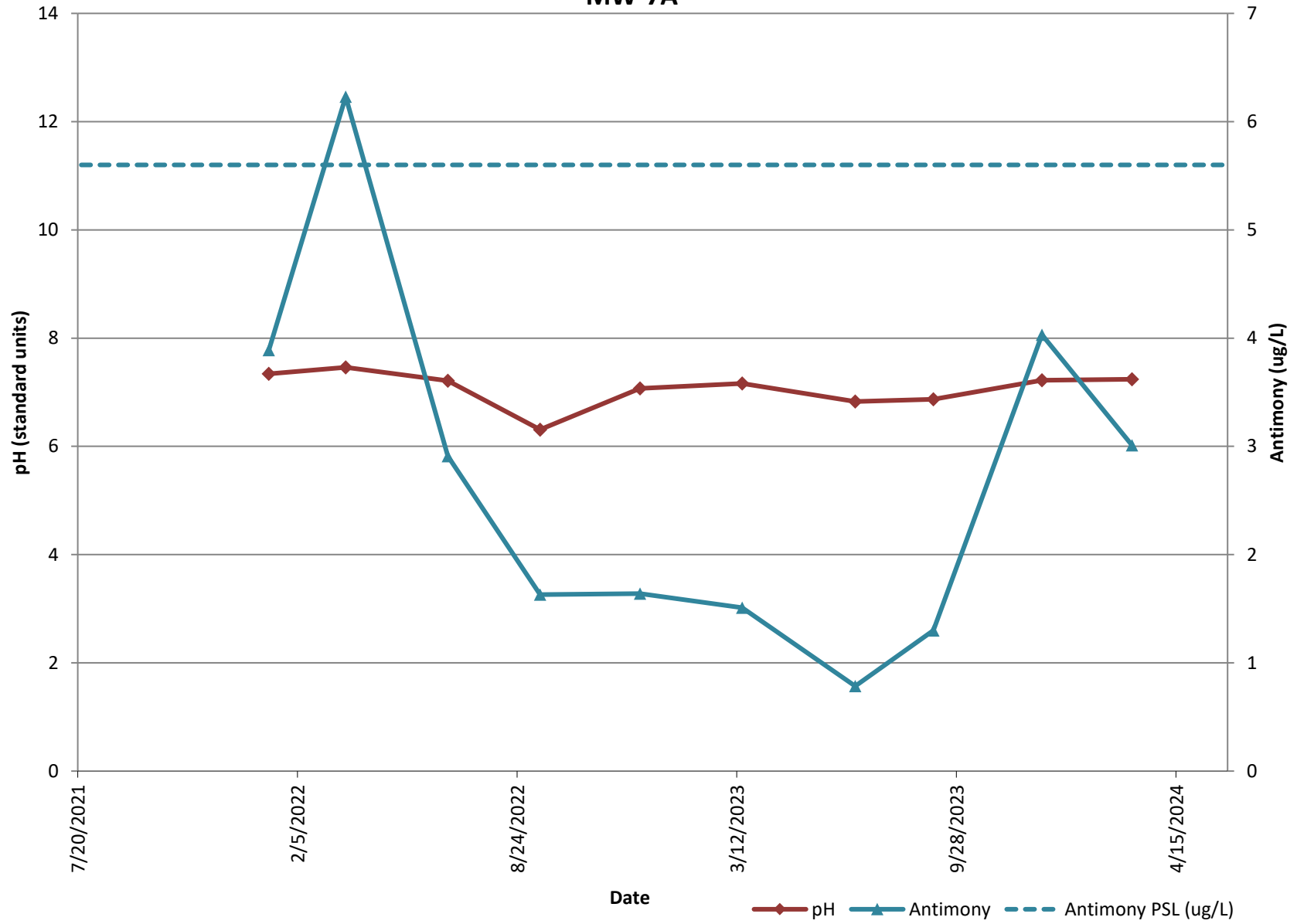
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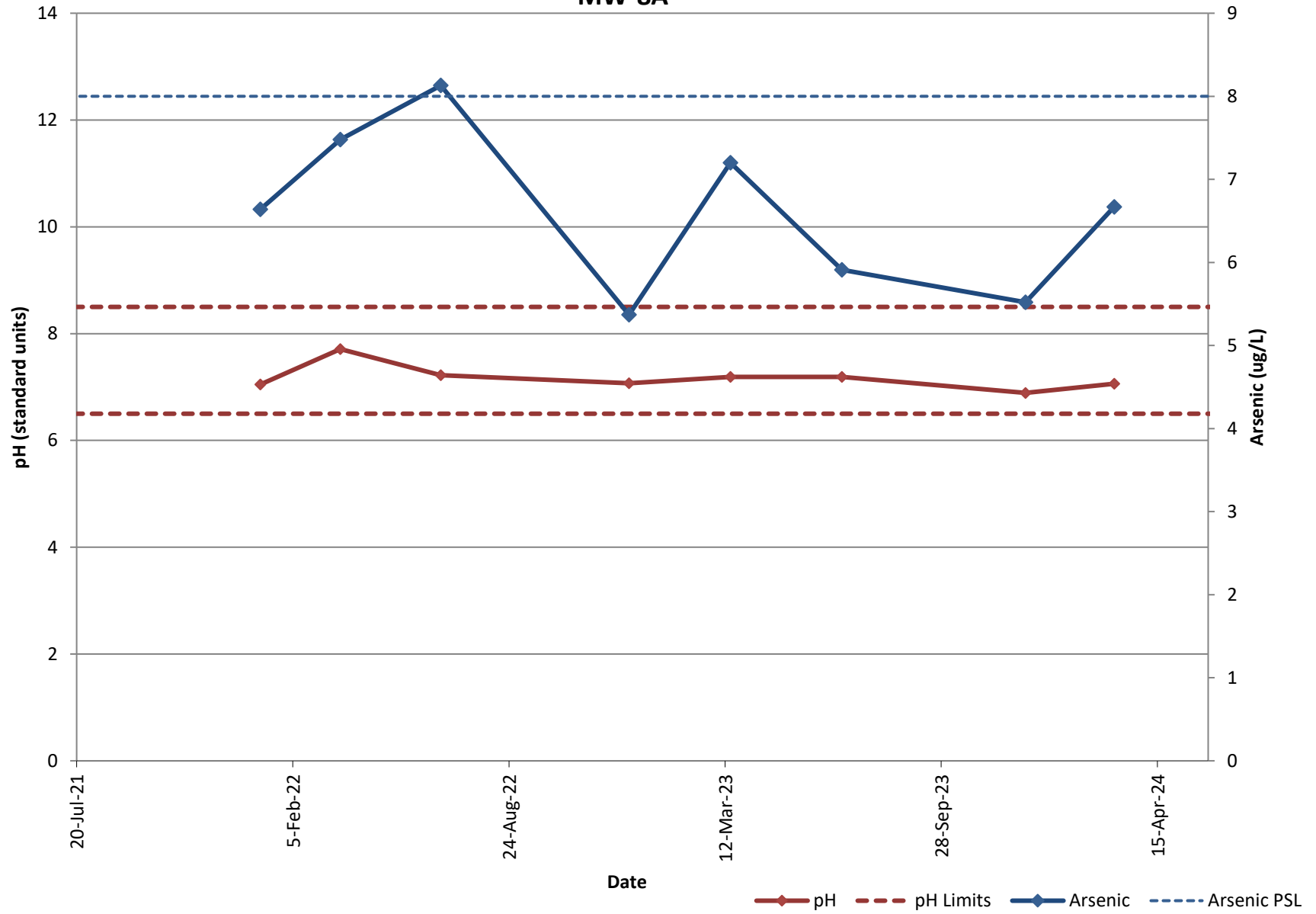
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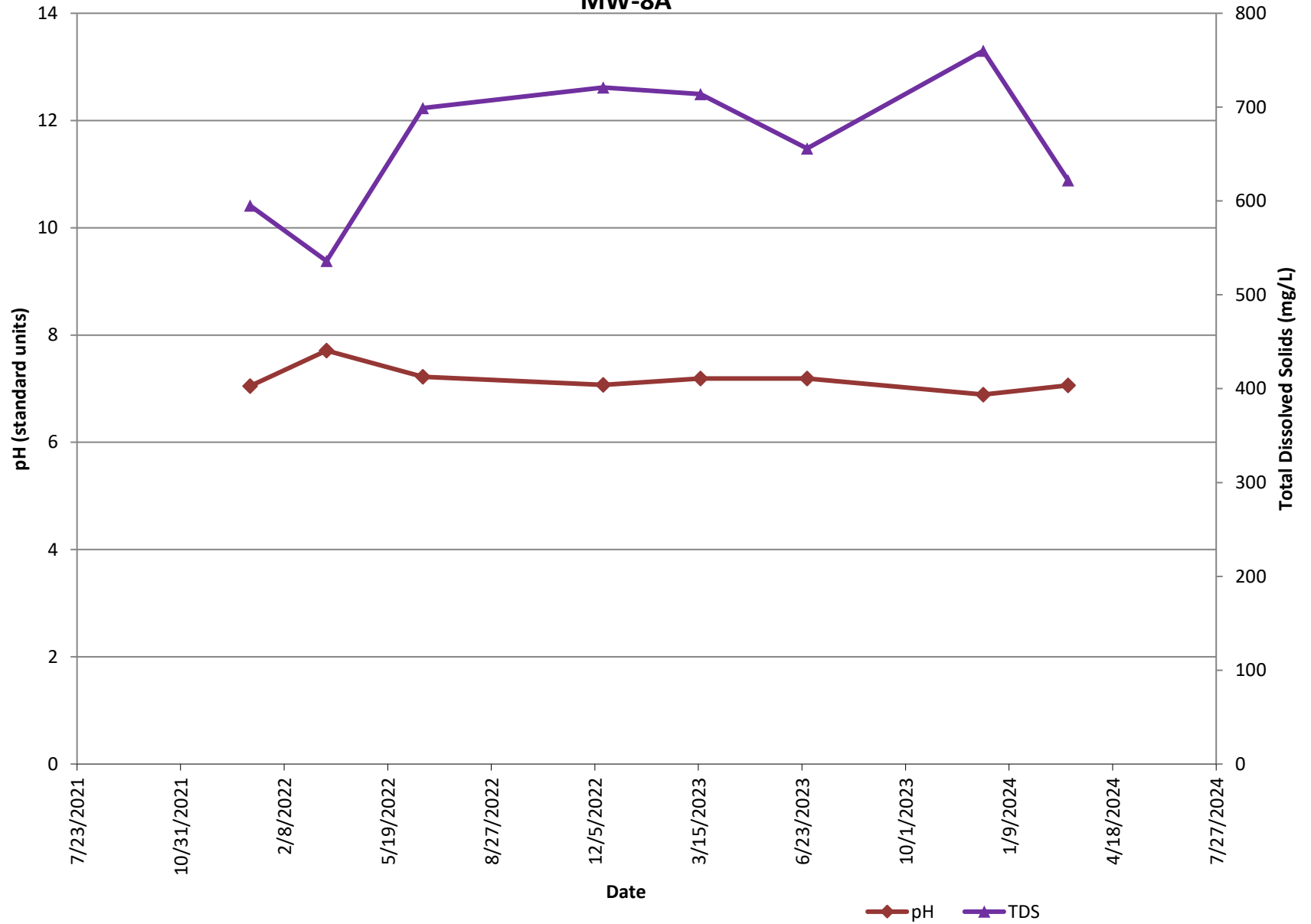
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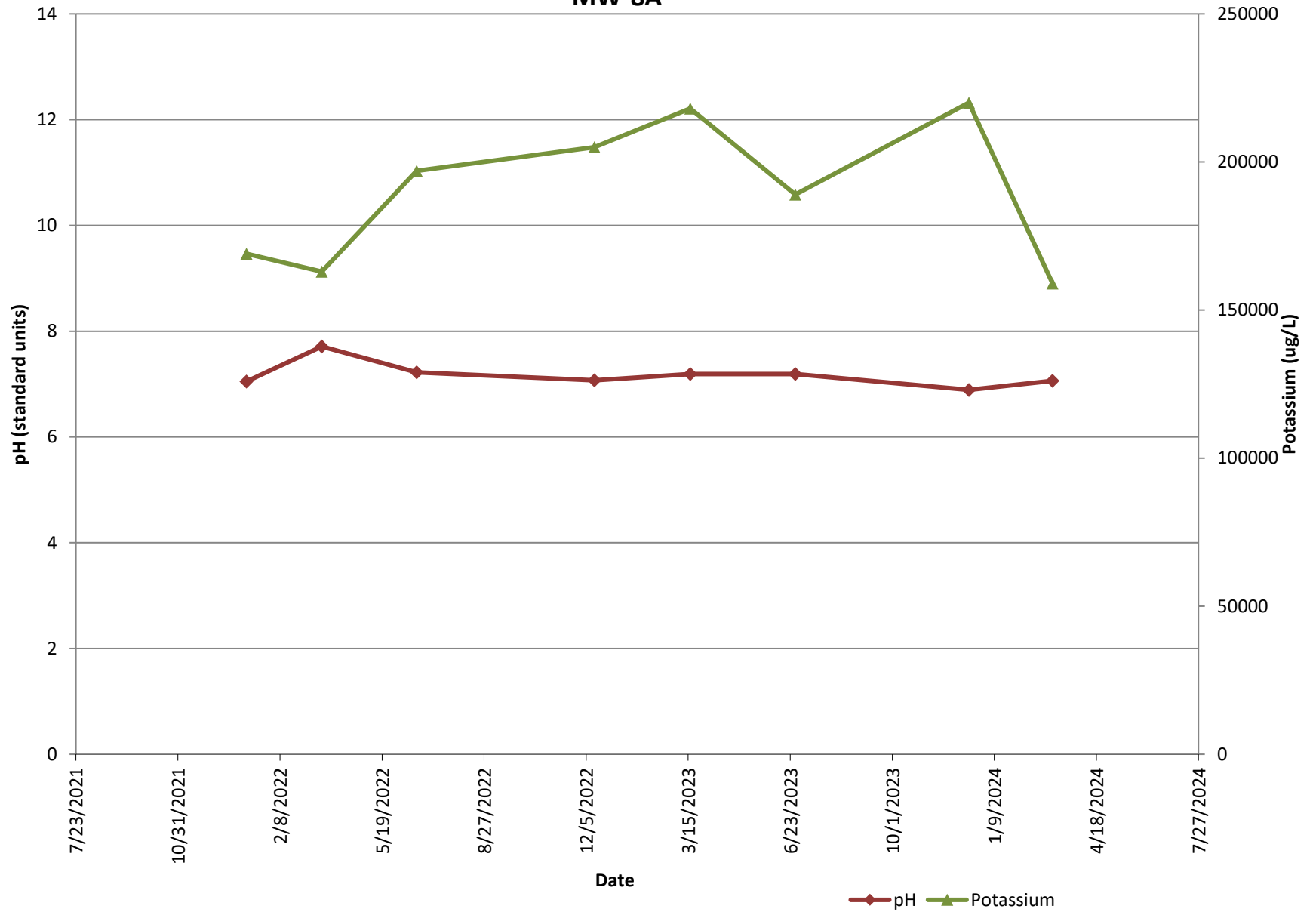
## LDA Shallow/Alluvial Monitoring Wells MW-8A



# LDA Shallow/Alluvial Monitoring Wells MW-8A

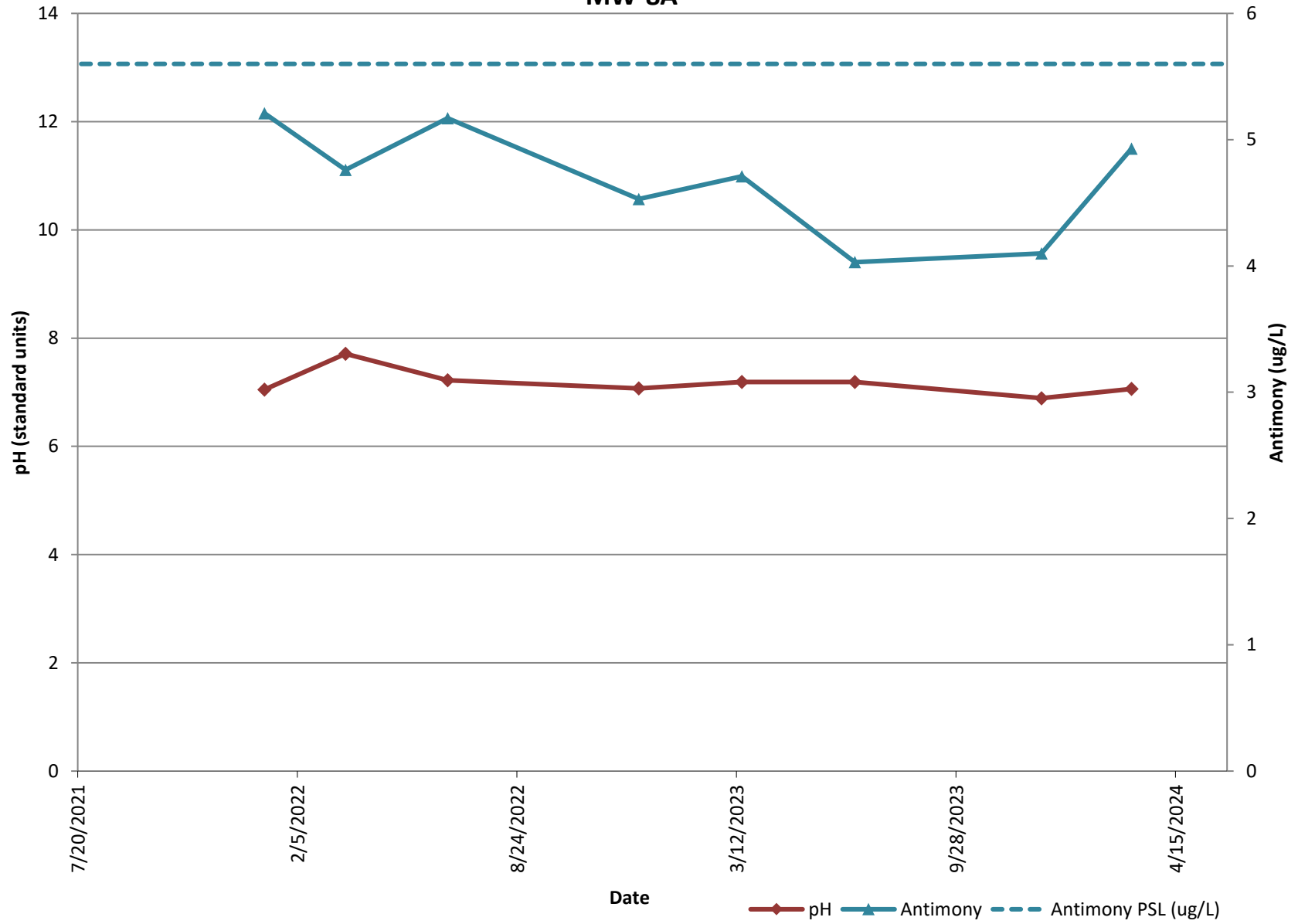


### LDA Shallow/Alluvial Monitoring Wells MW-8A

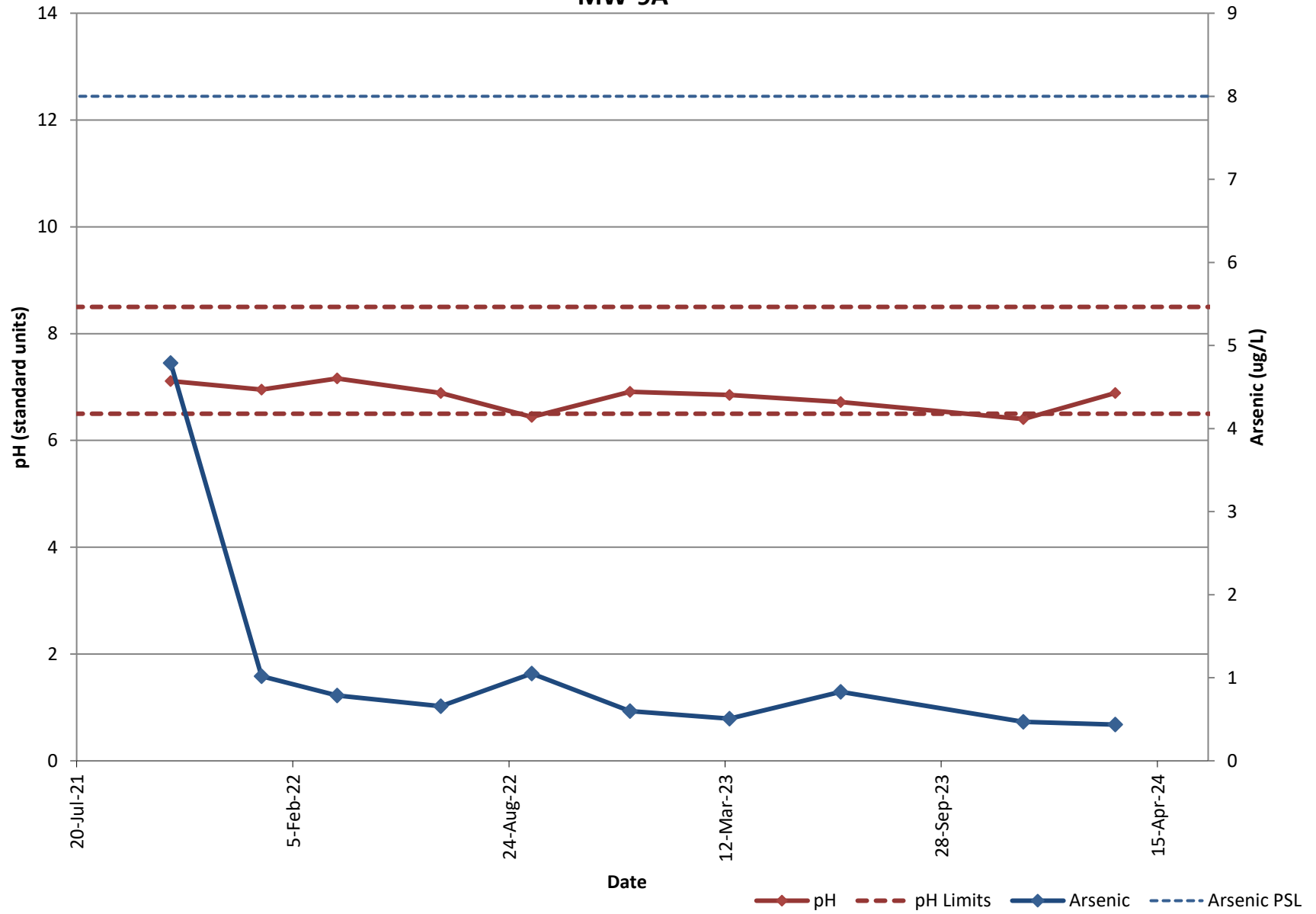




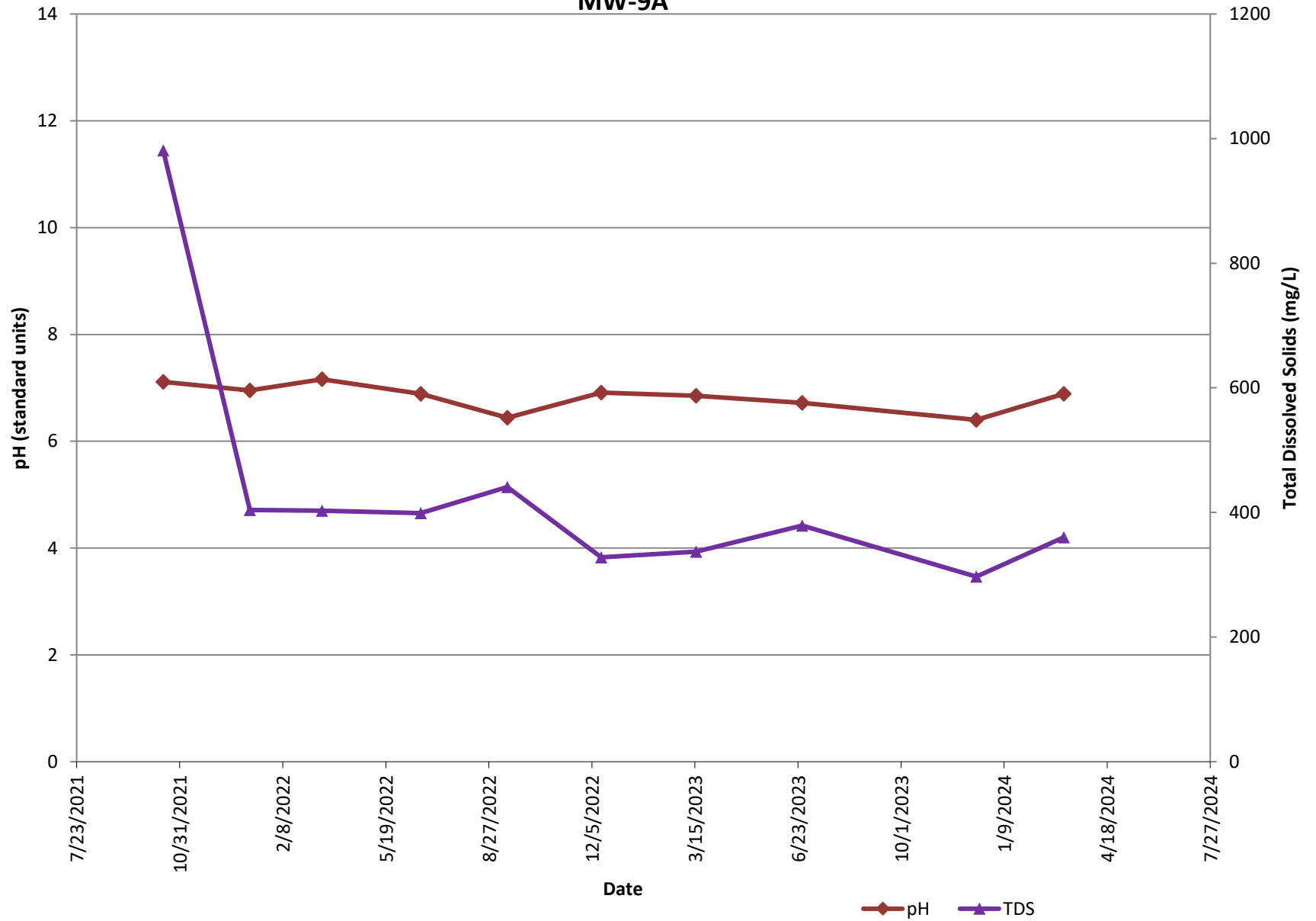
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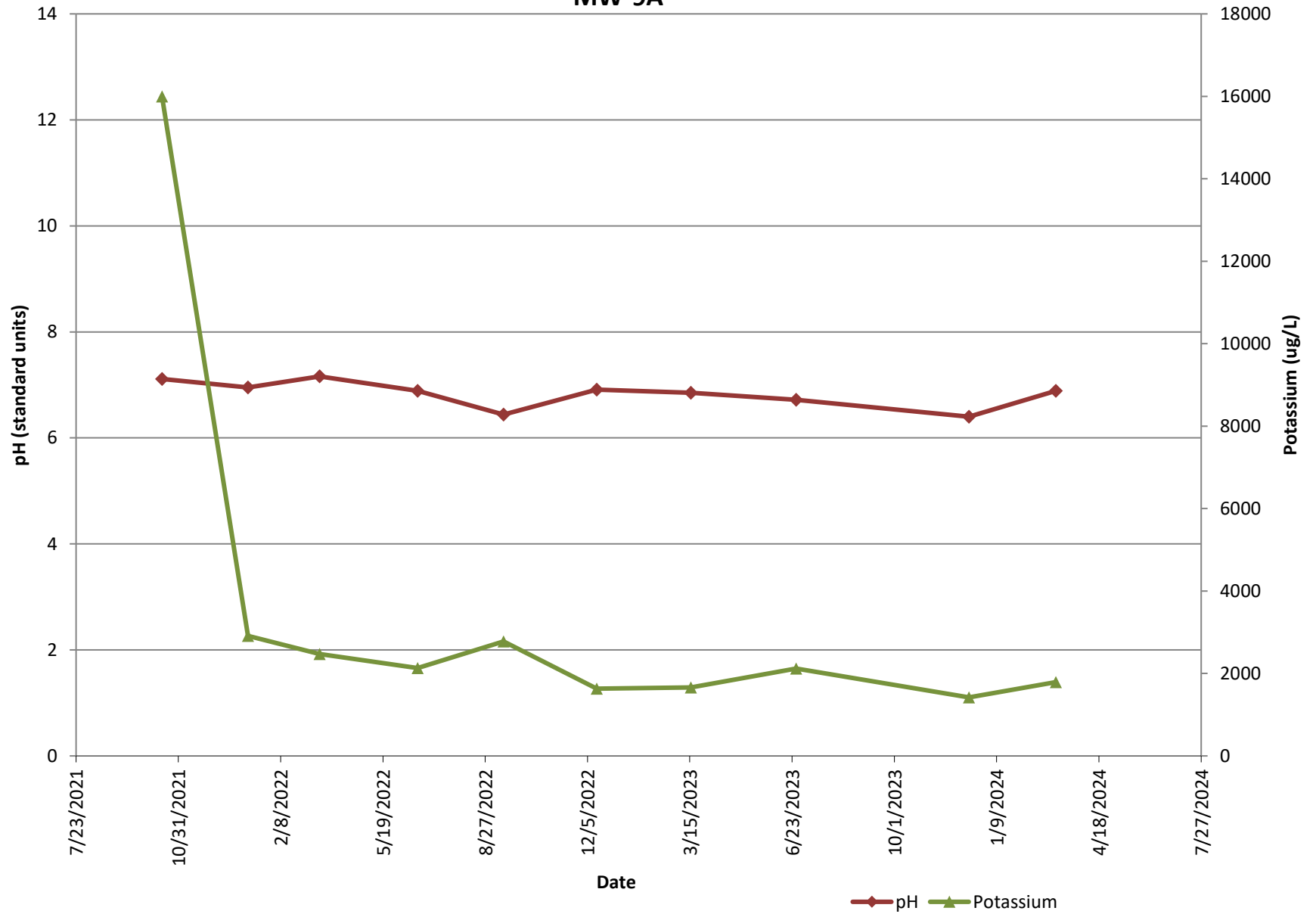
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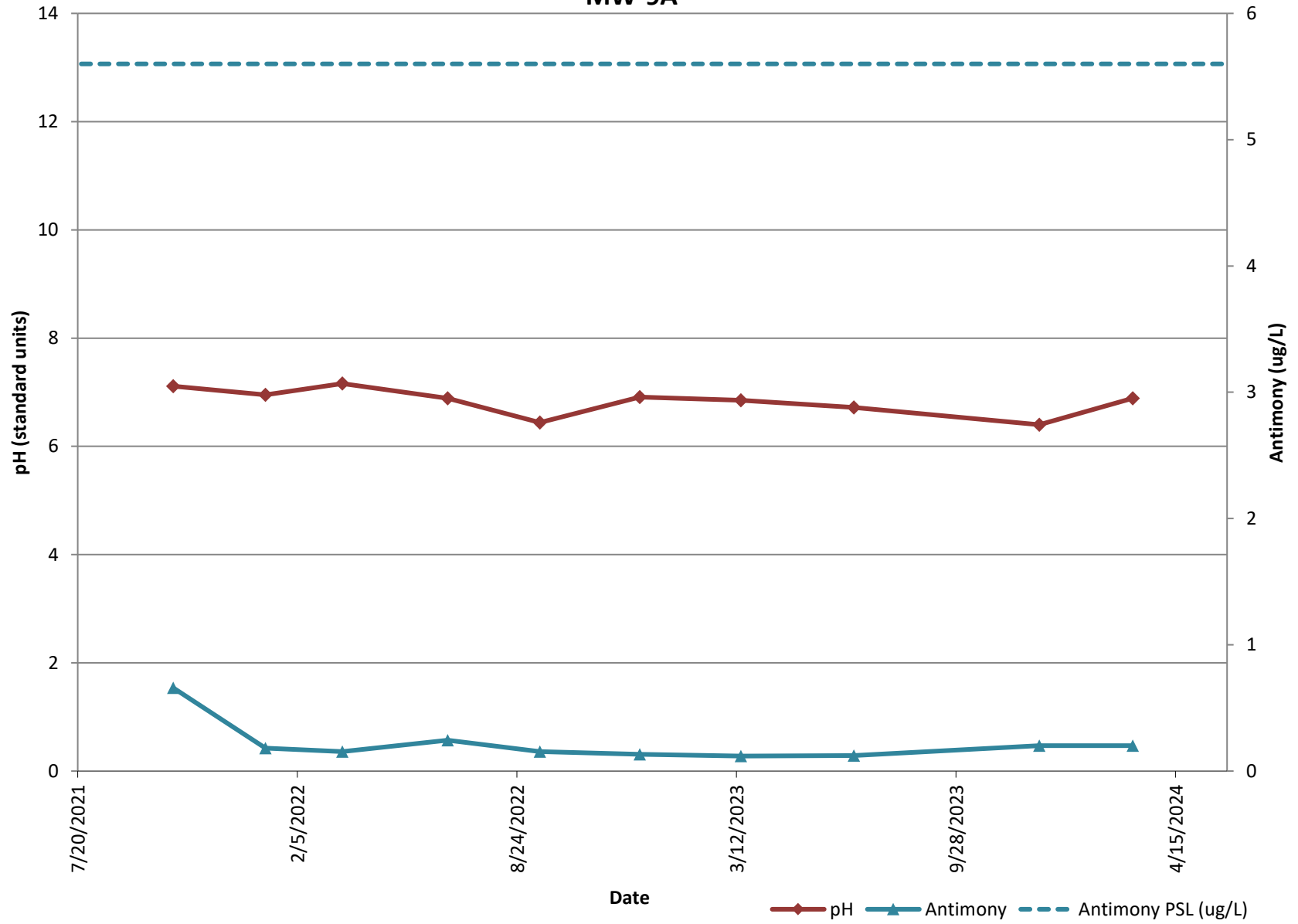
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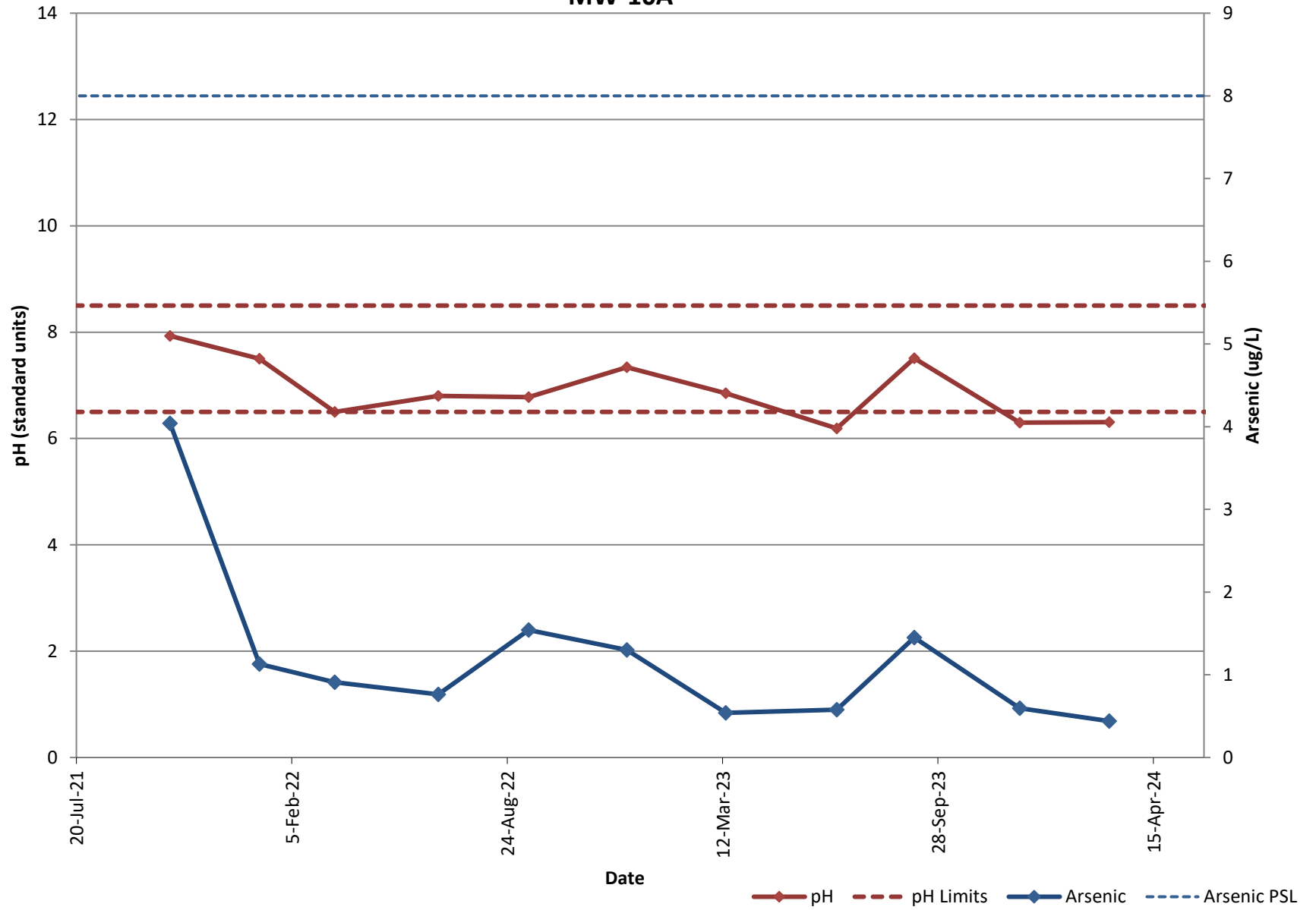
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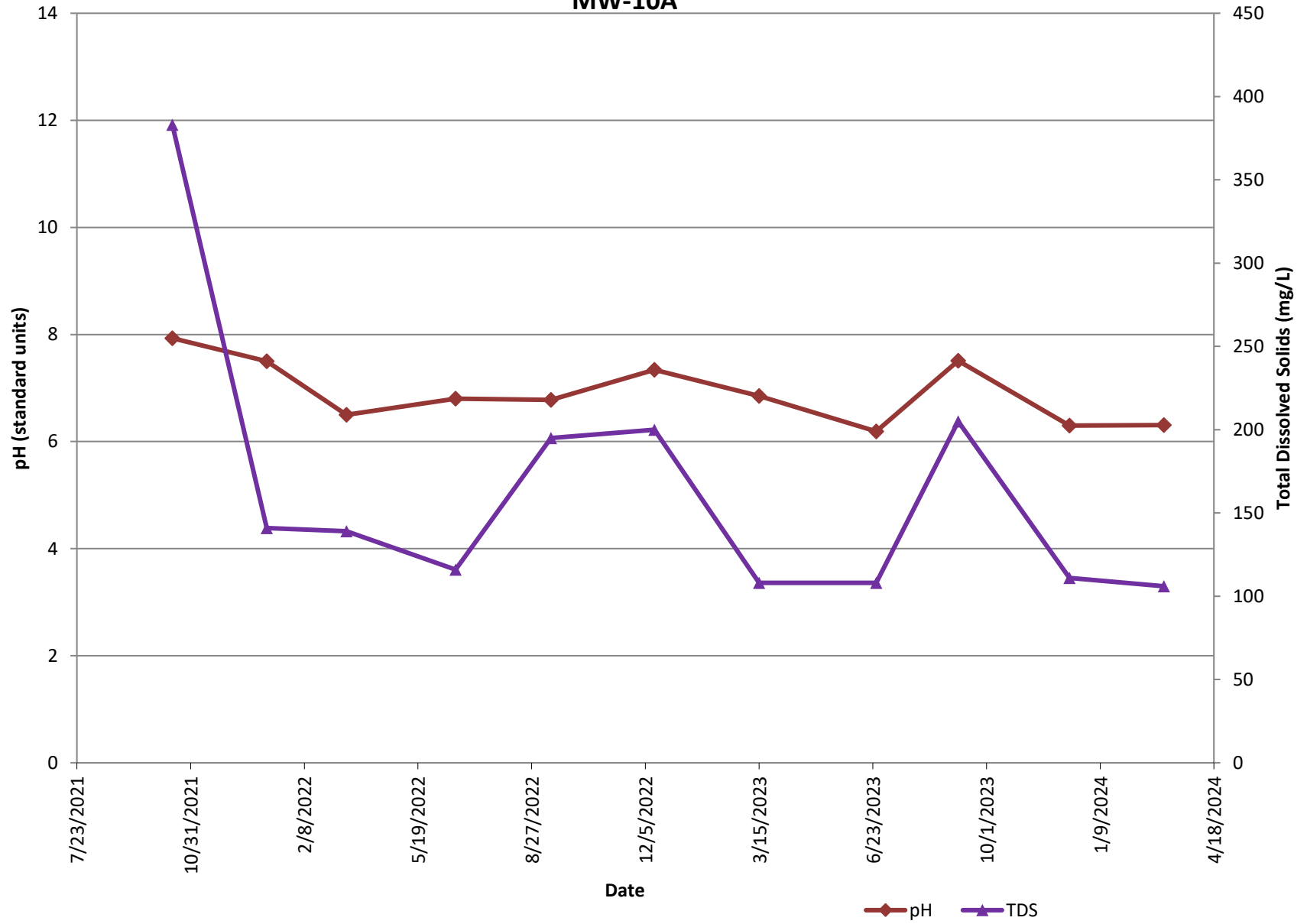
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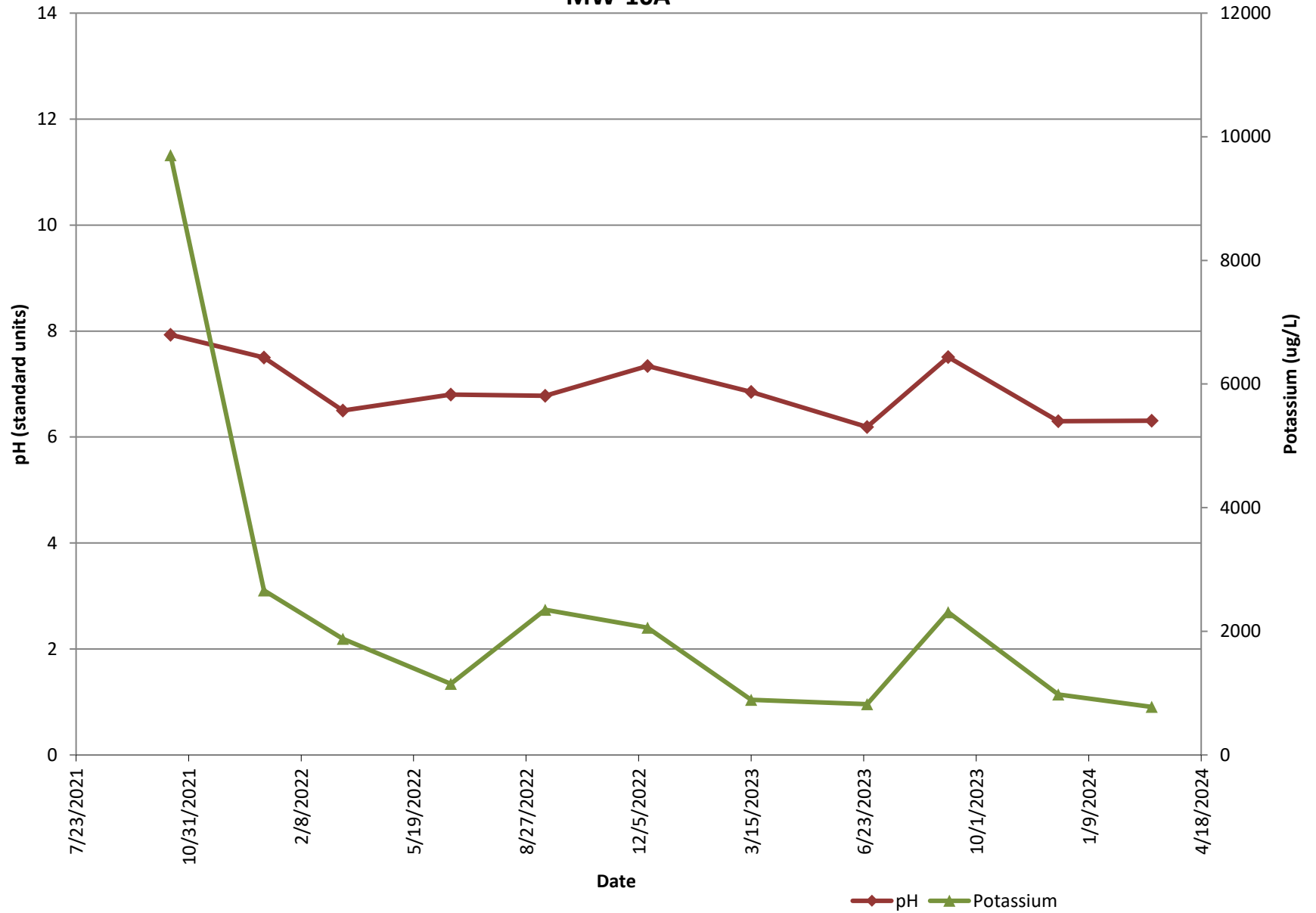
# LDA Shallow/Alluvial Monitoring Wells MW-10A



# LDA Shallow/Alluvial Monitoring Wells MW-10A

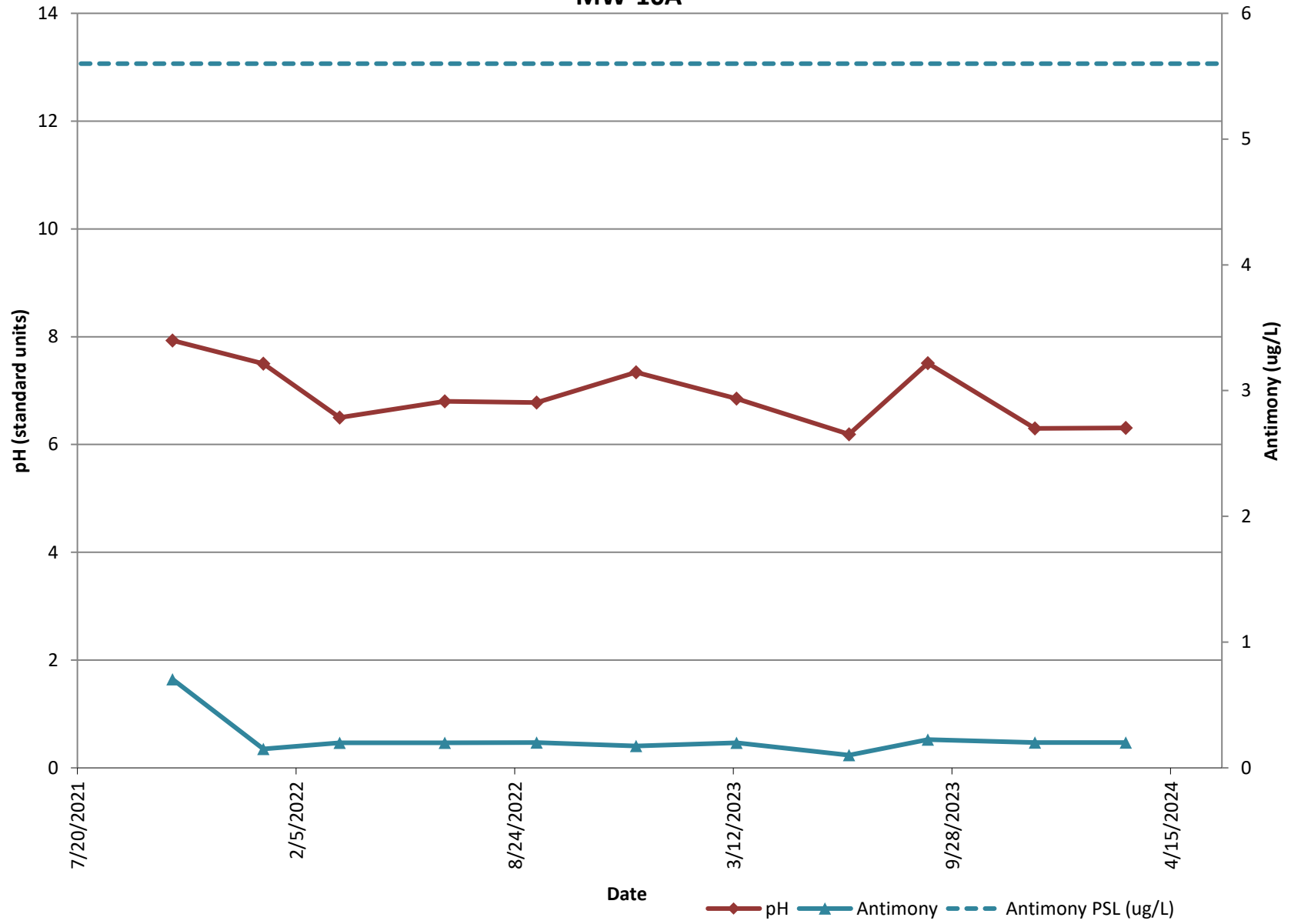


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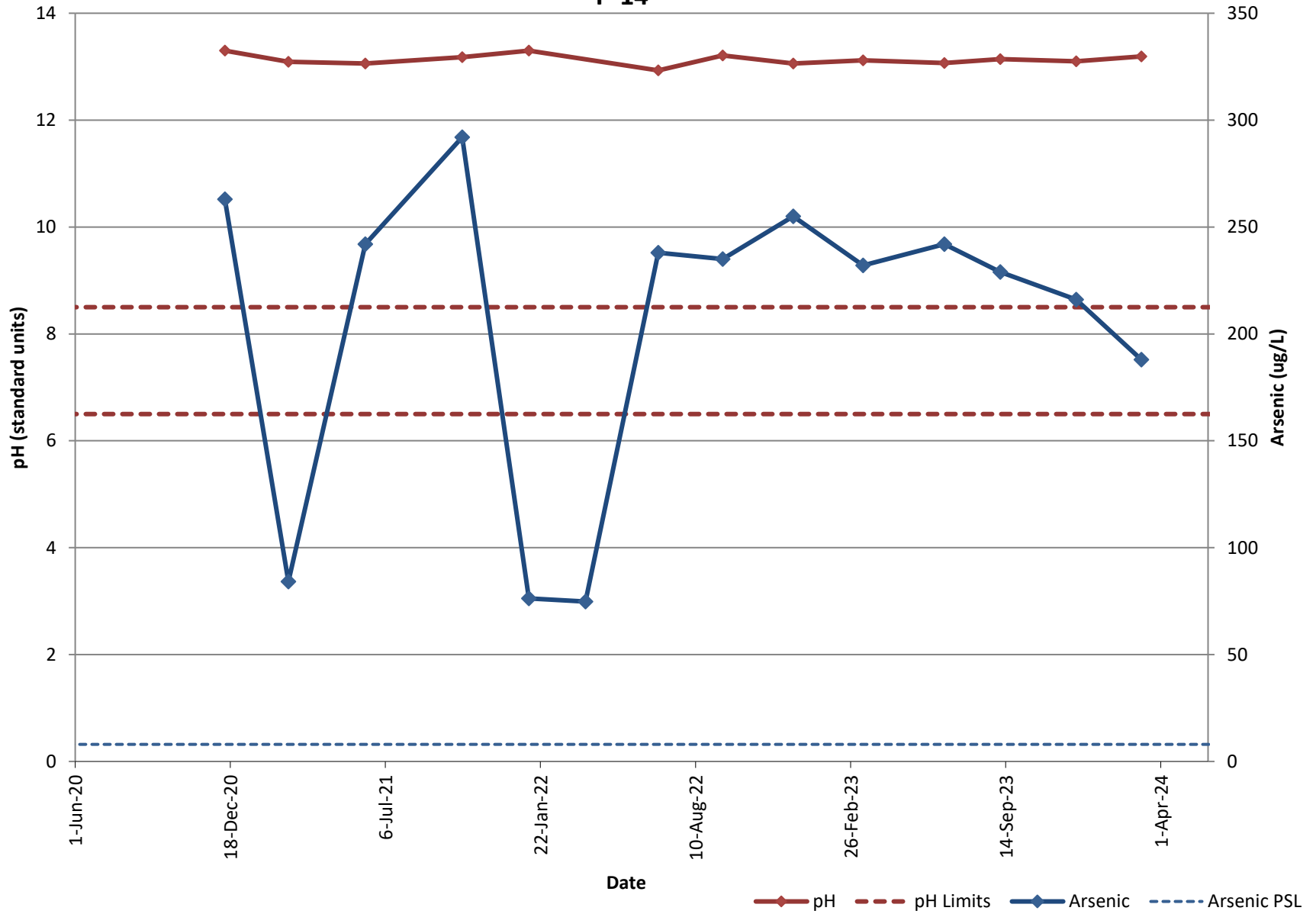




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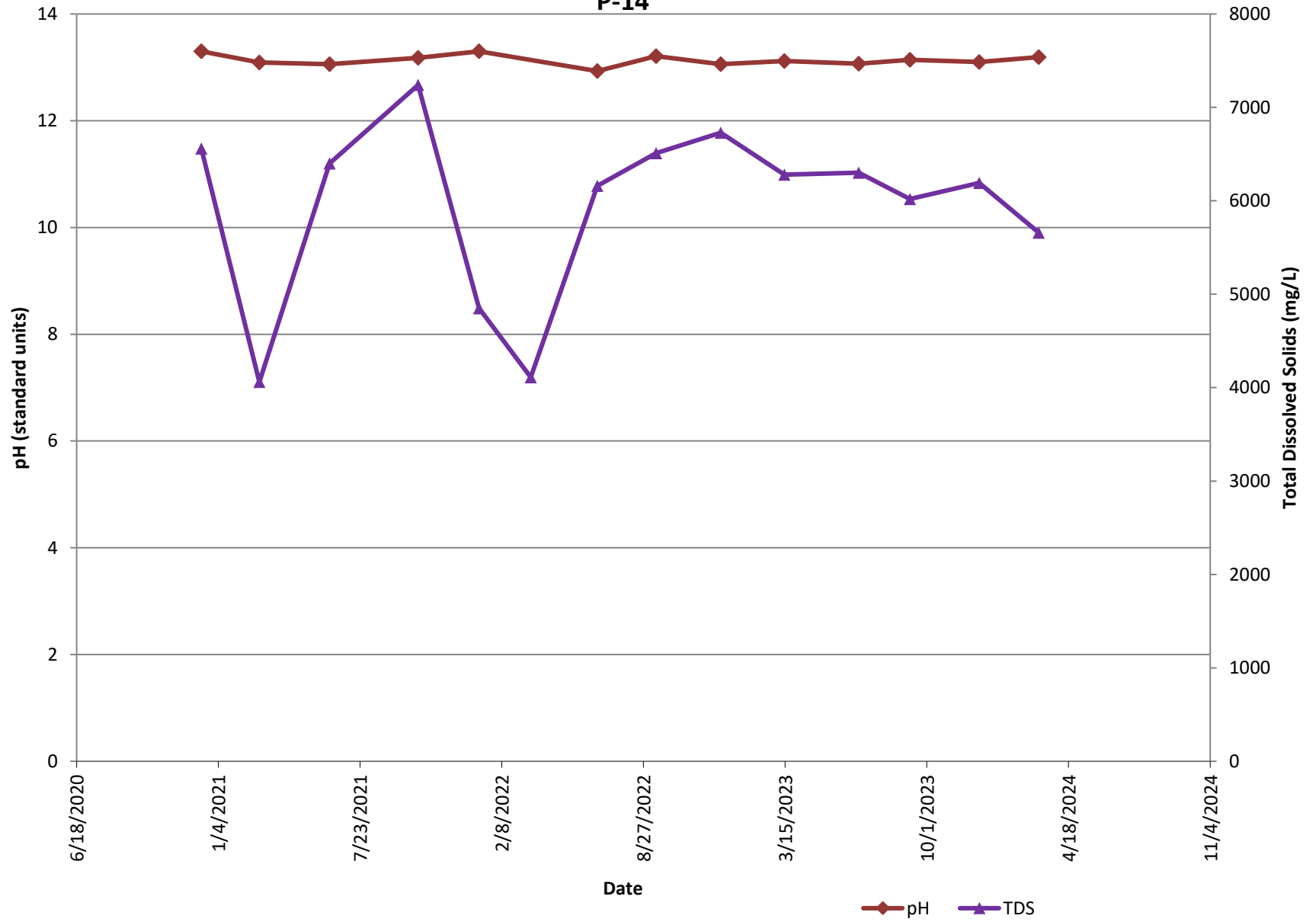


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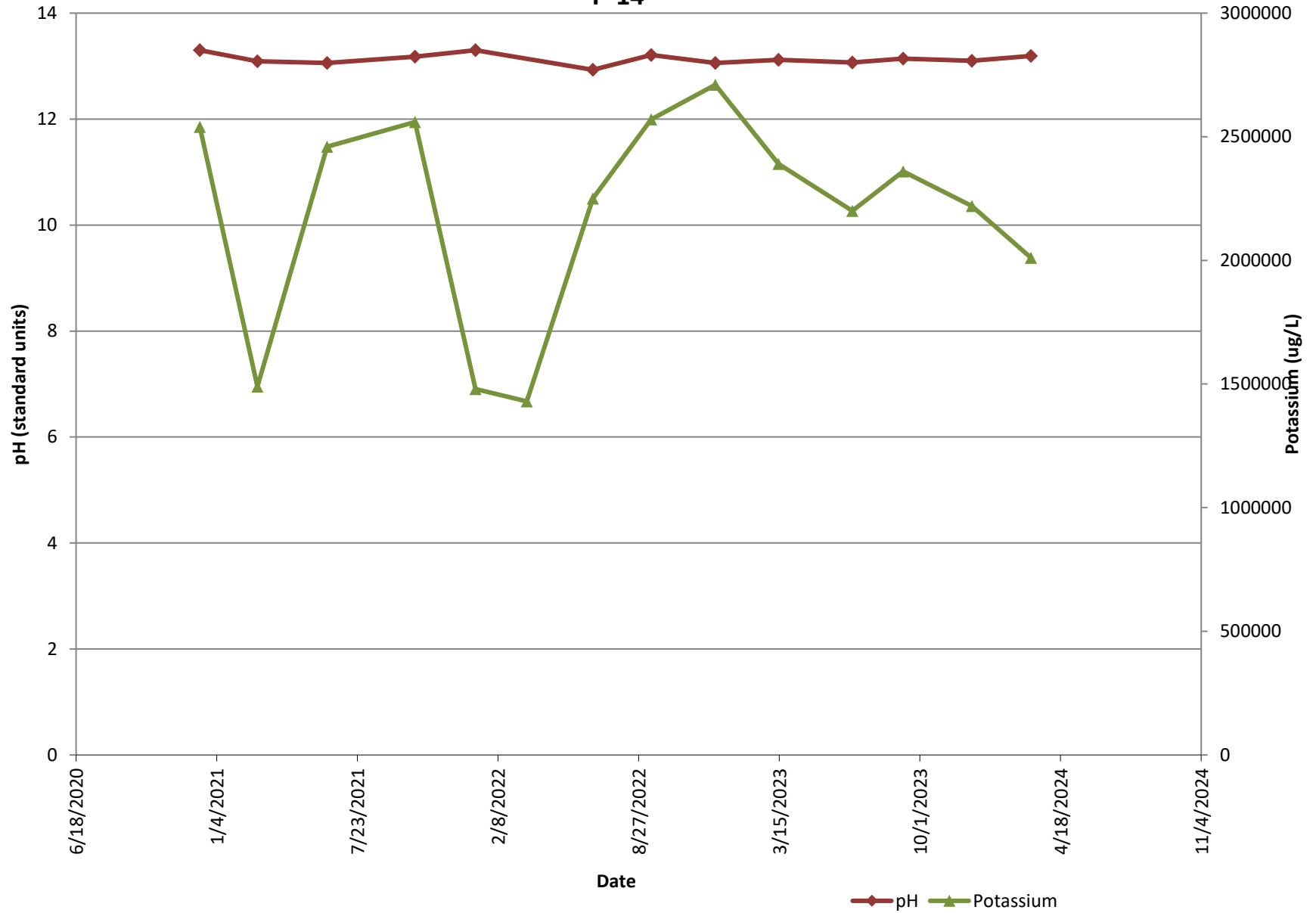


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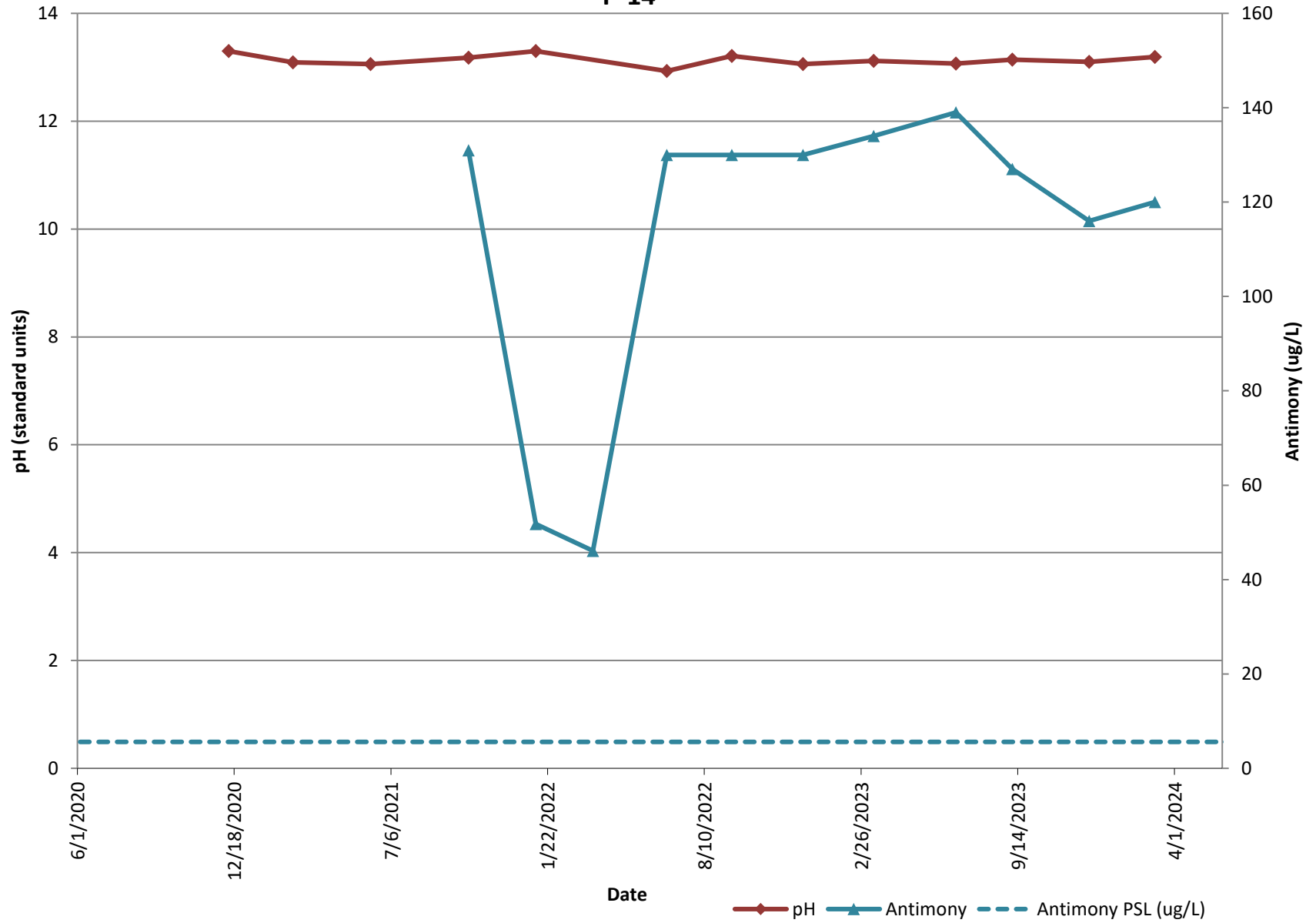
P-14



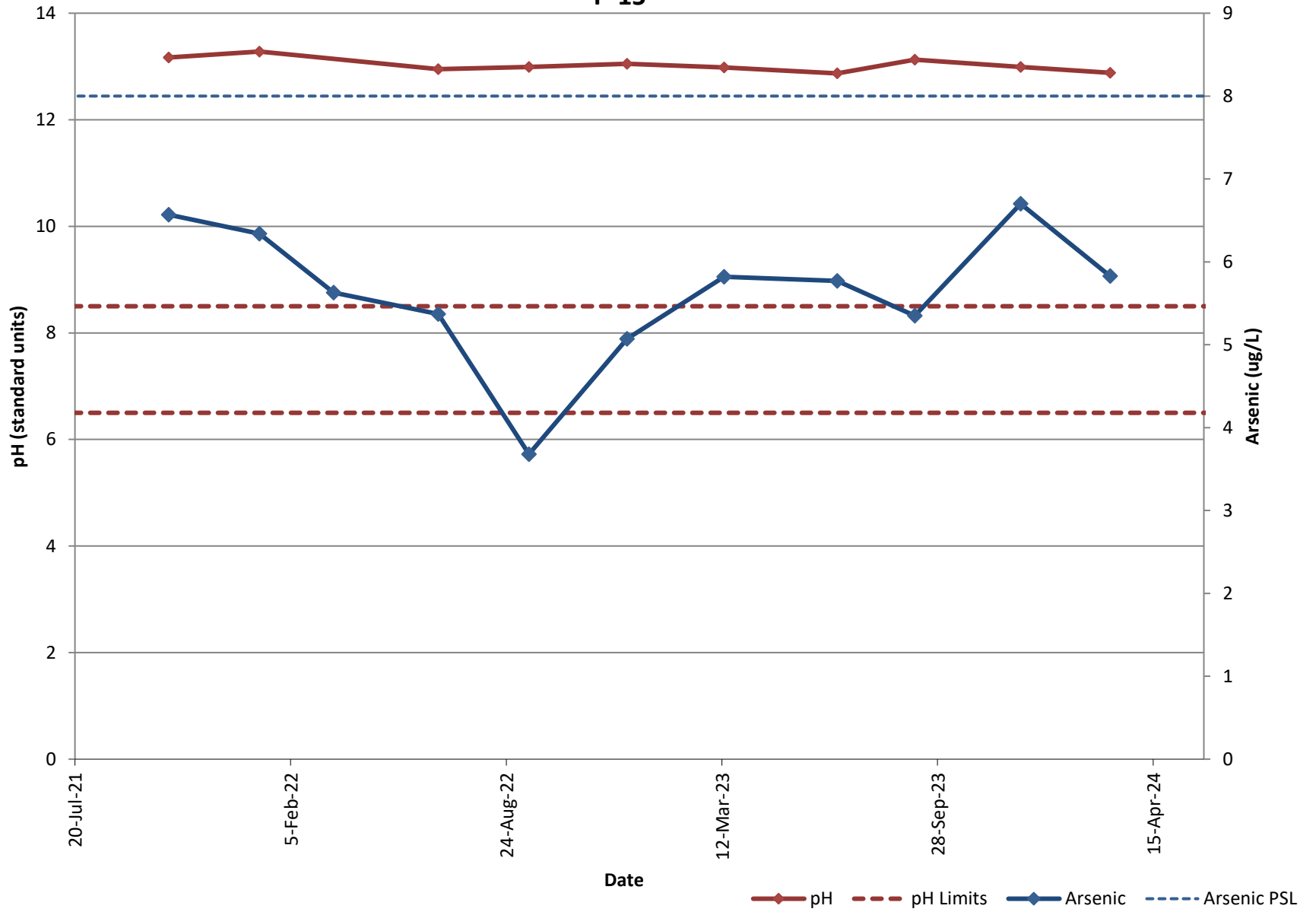
### LDA Shallow/Alluvial Monitoring Wells P-14



# LDA Shallow/Alluvial Monitoring Wells P-14

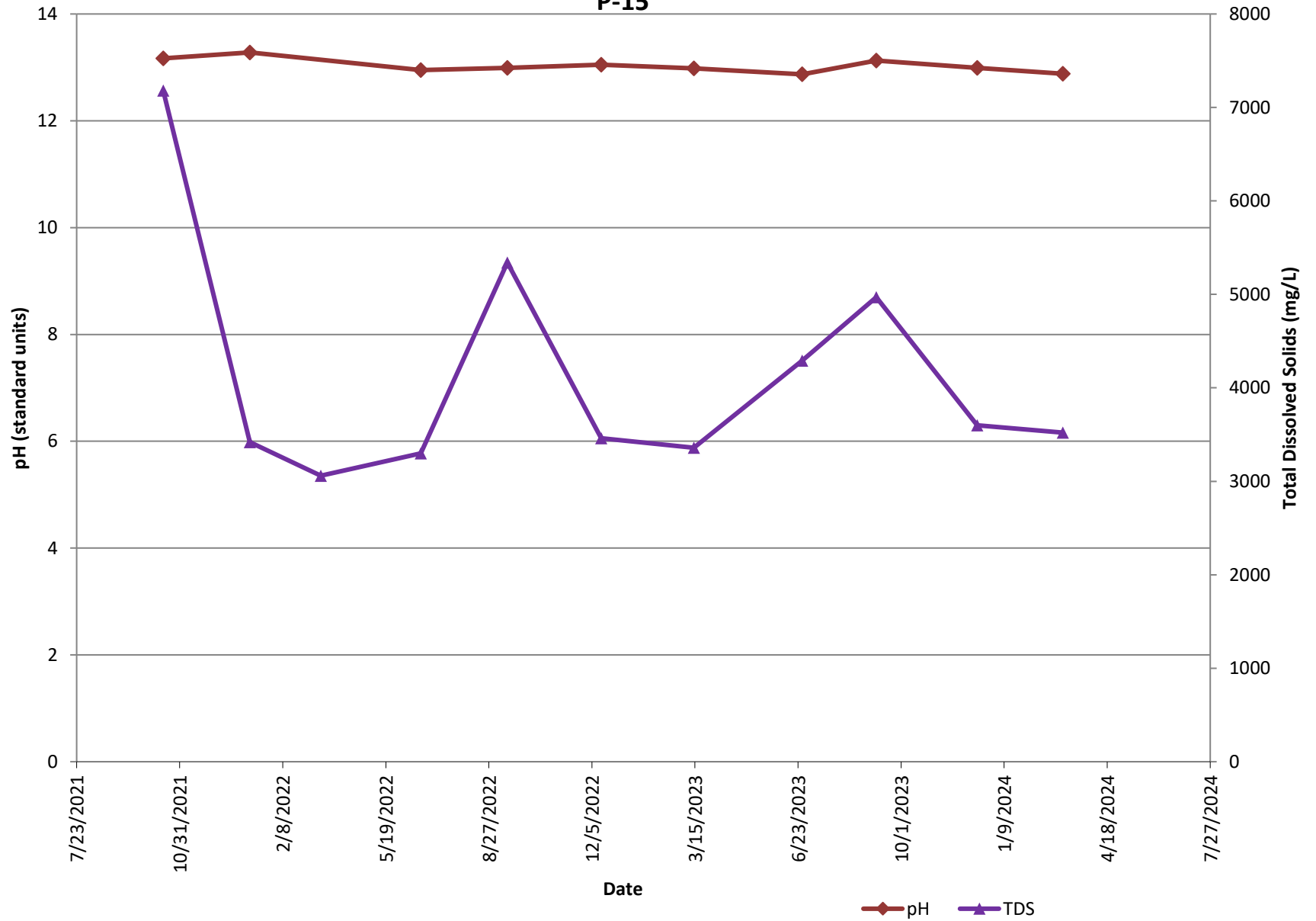


## LDA Shallow/Alluvial Monitoring Wells P-15

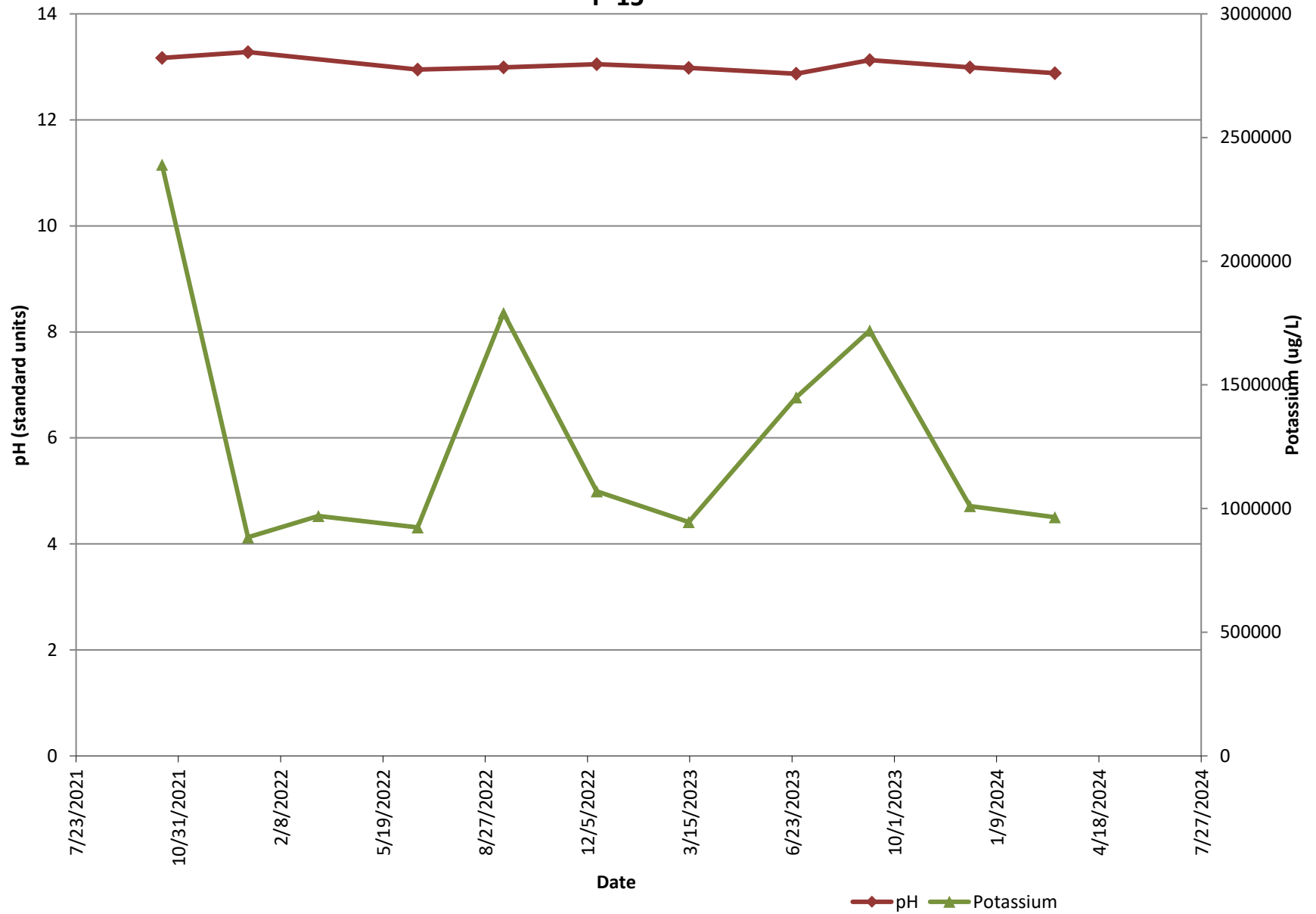


# LDA Shallow/Alluvial Monitoring Wells

## P-15

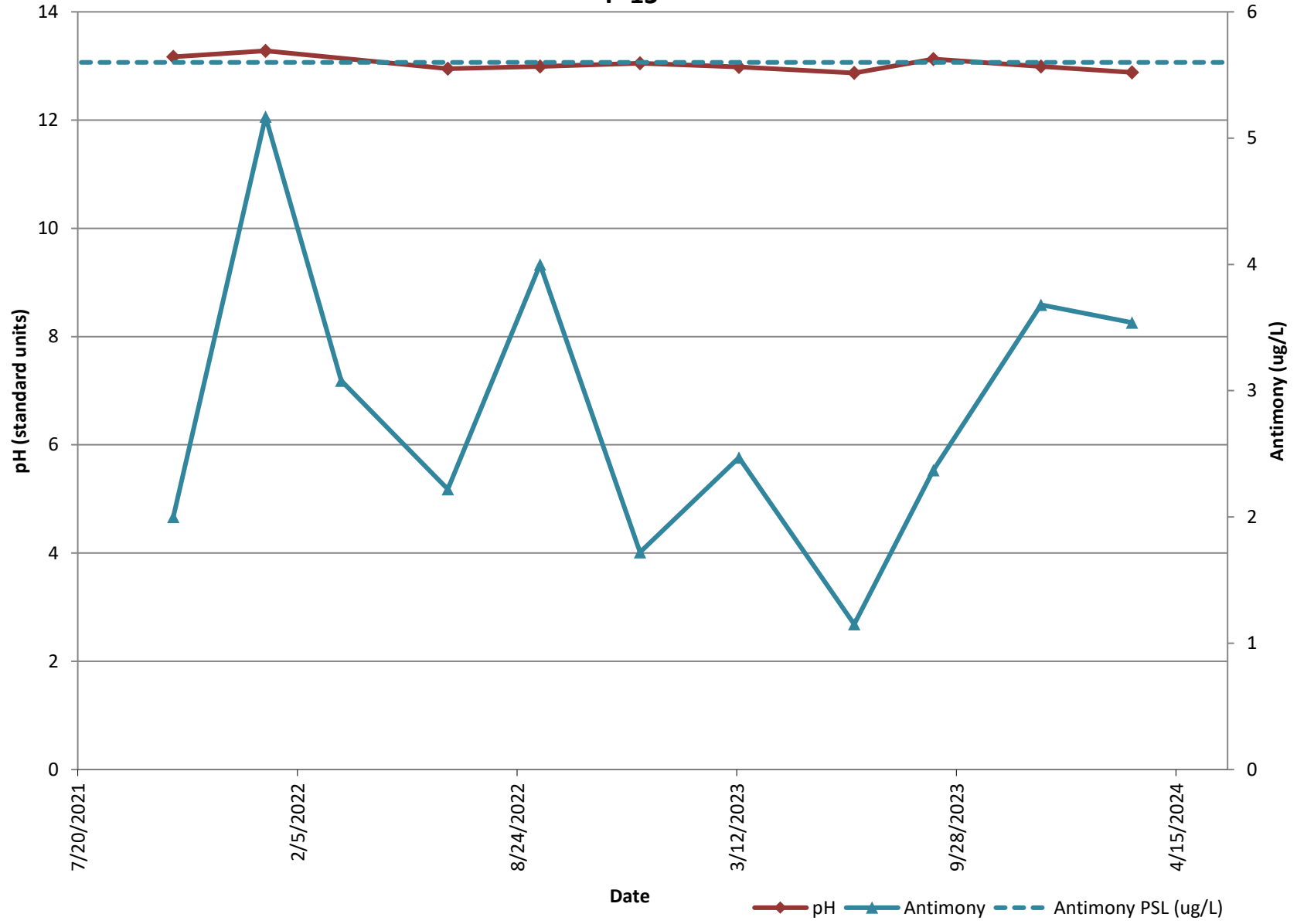


### LDA Shallow/Alluvial Monitoring Wells P-15

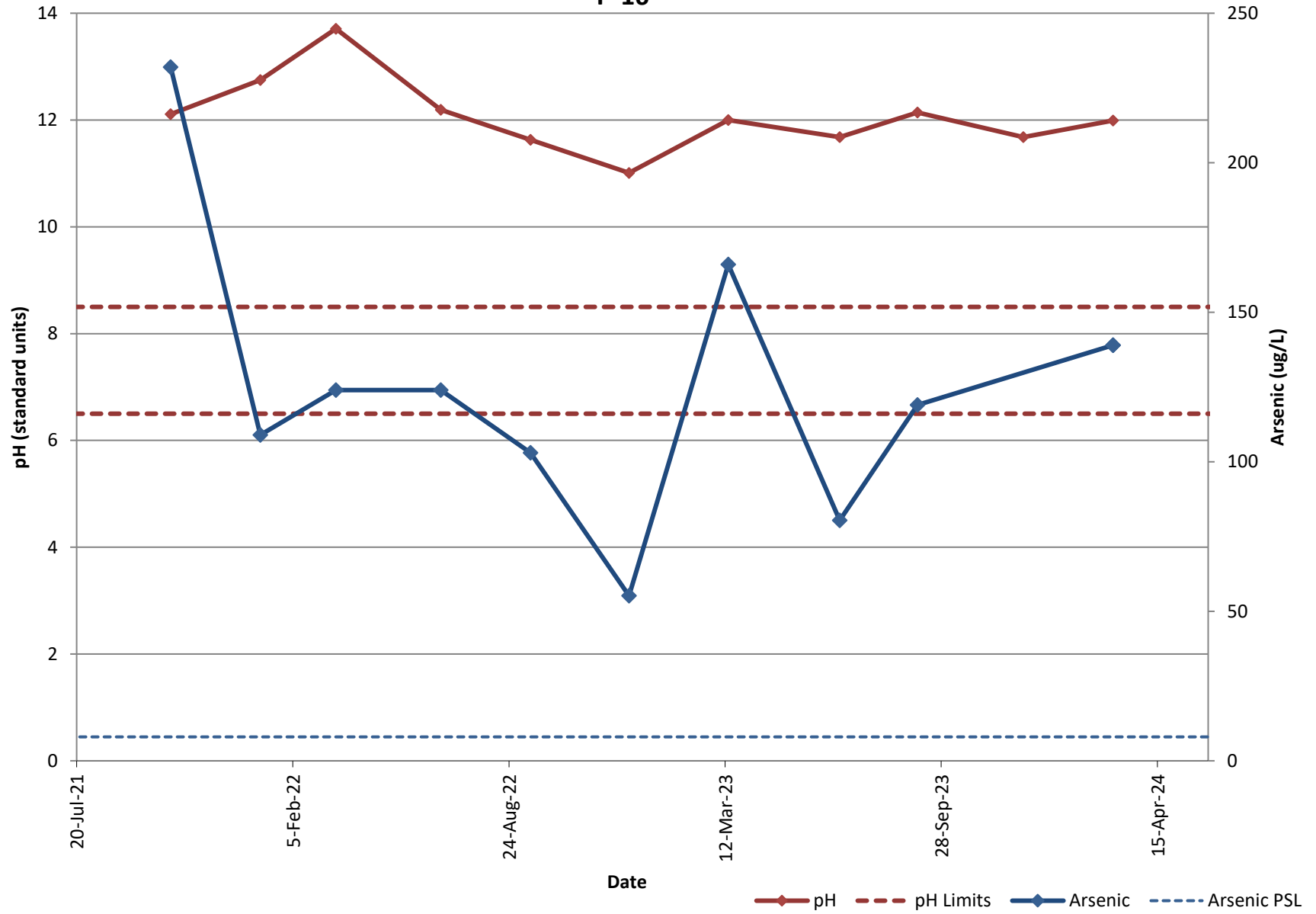




# LDA Shallow/Alluvial Monitoring Wells P-15

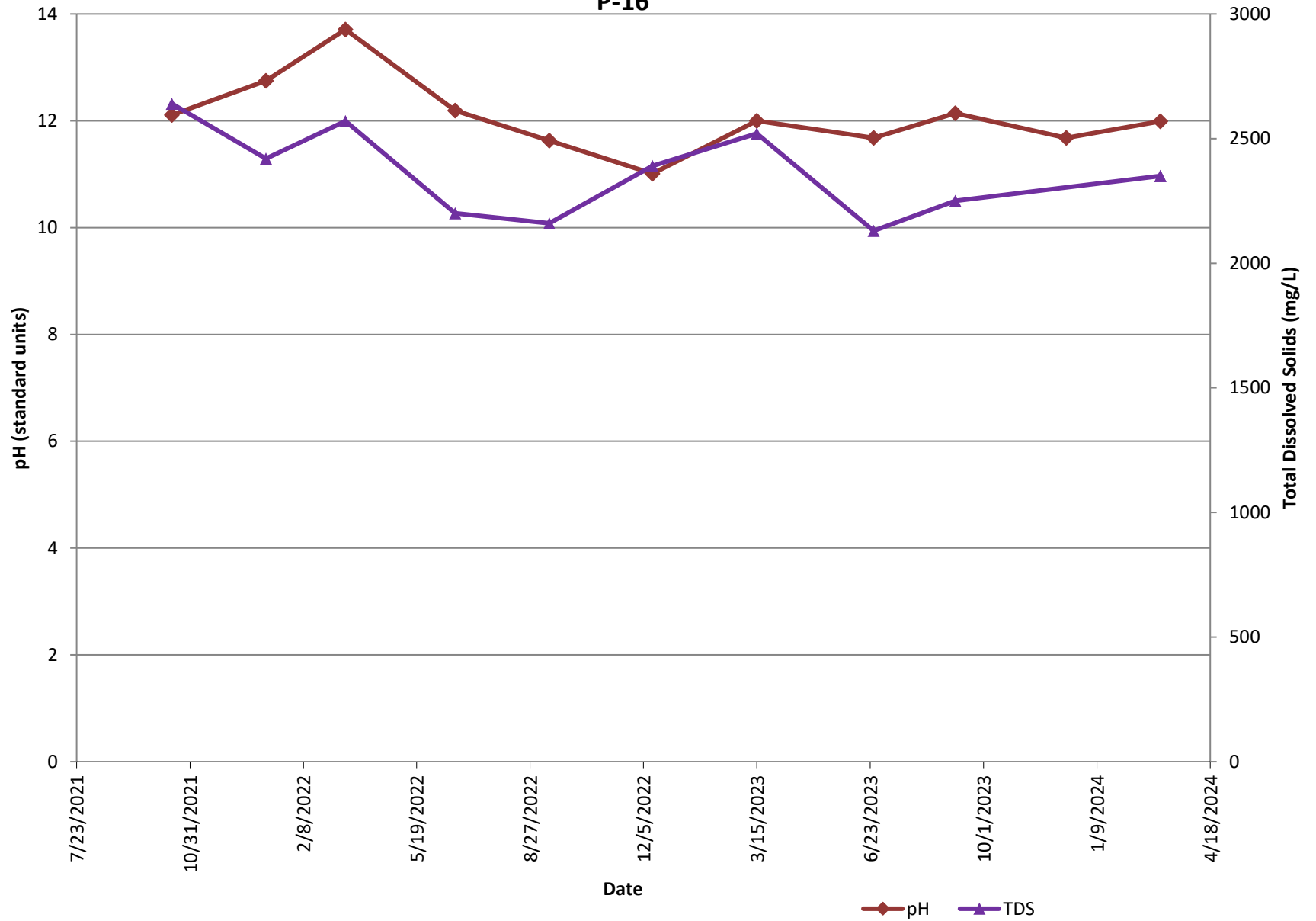


## LDA Shallow/Alluvial Monitoring Wells P-16

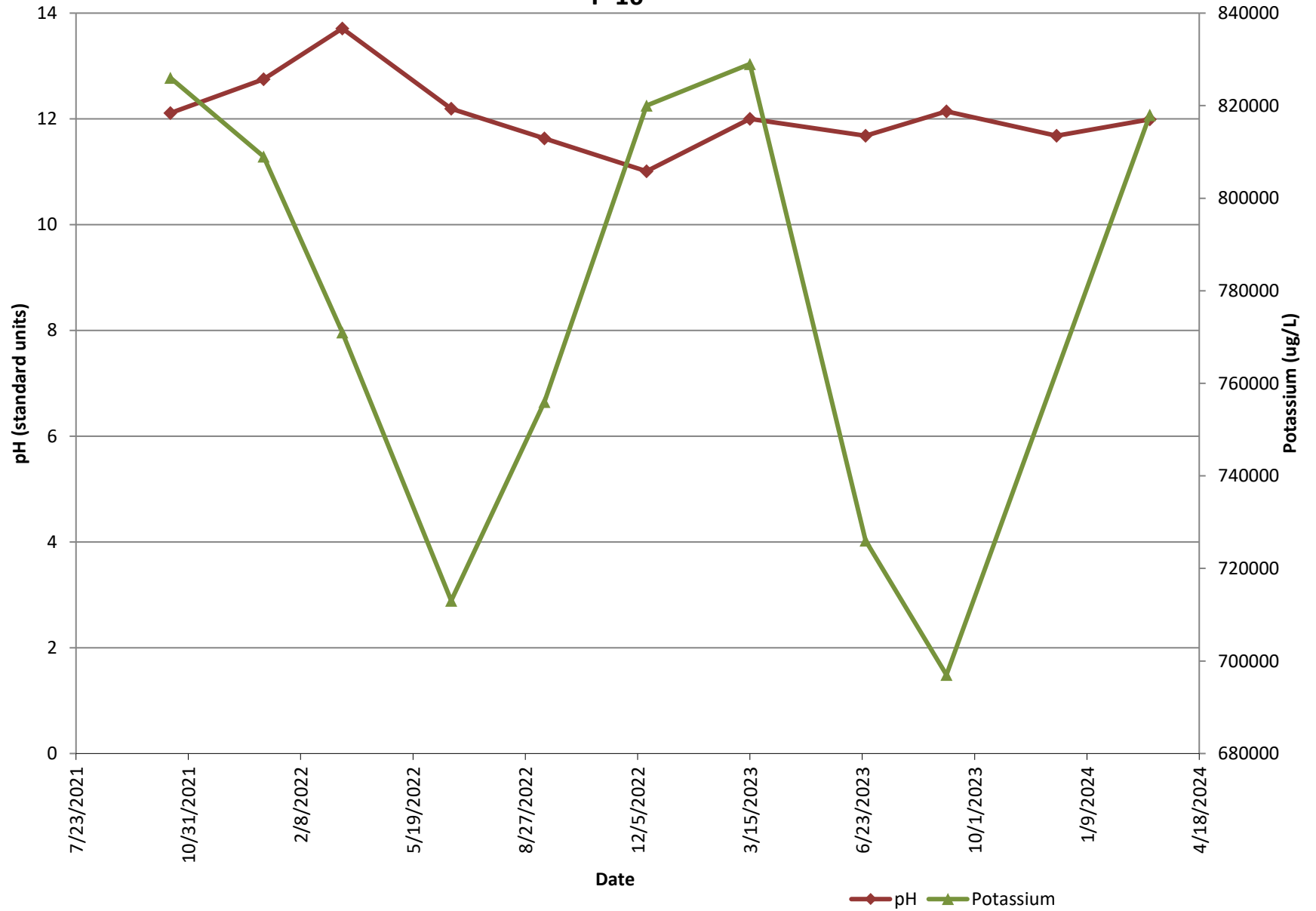


# LDA Shallow/Alluvial Monitoring Wells

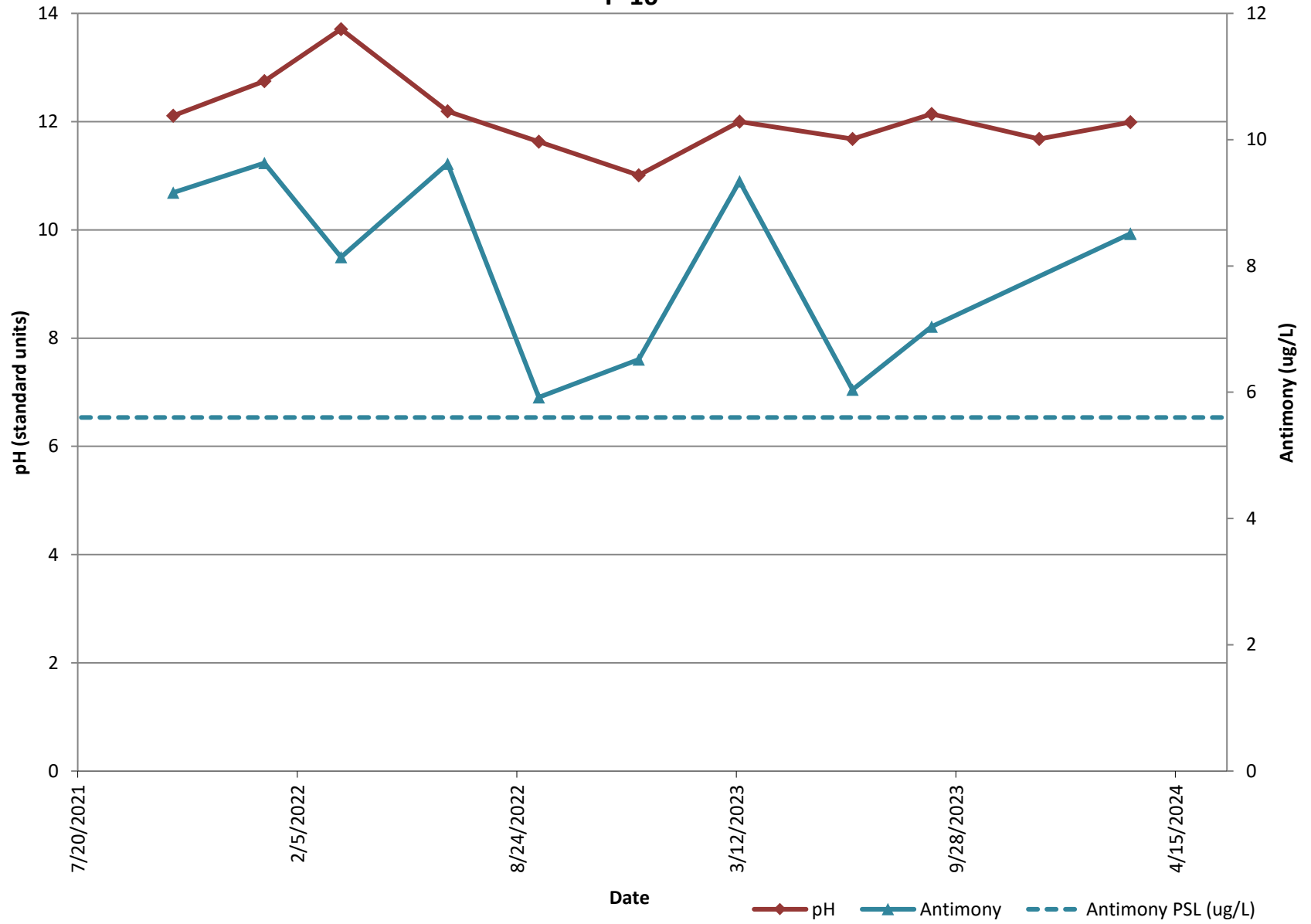
## P-16



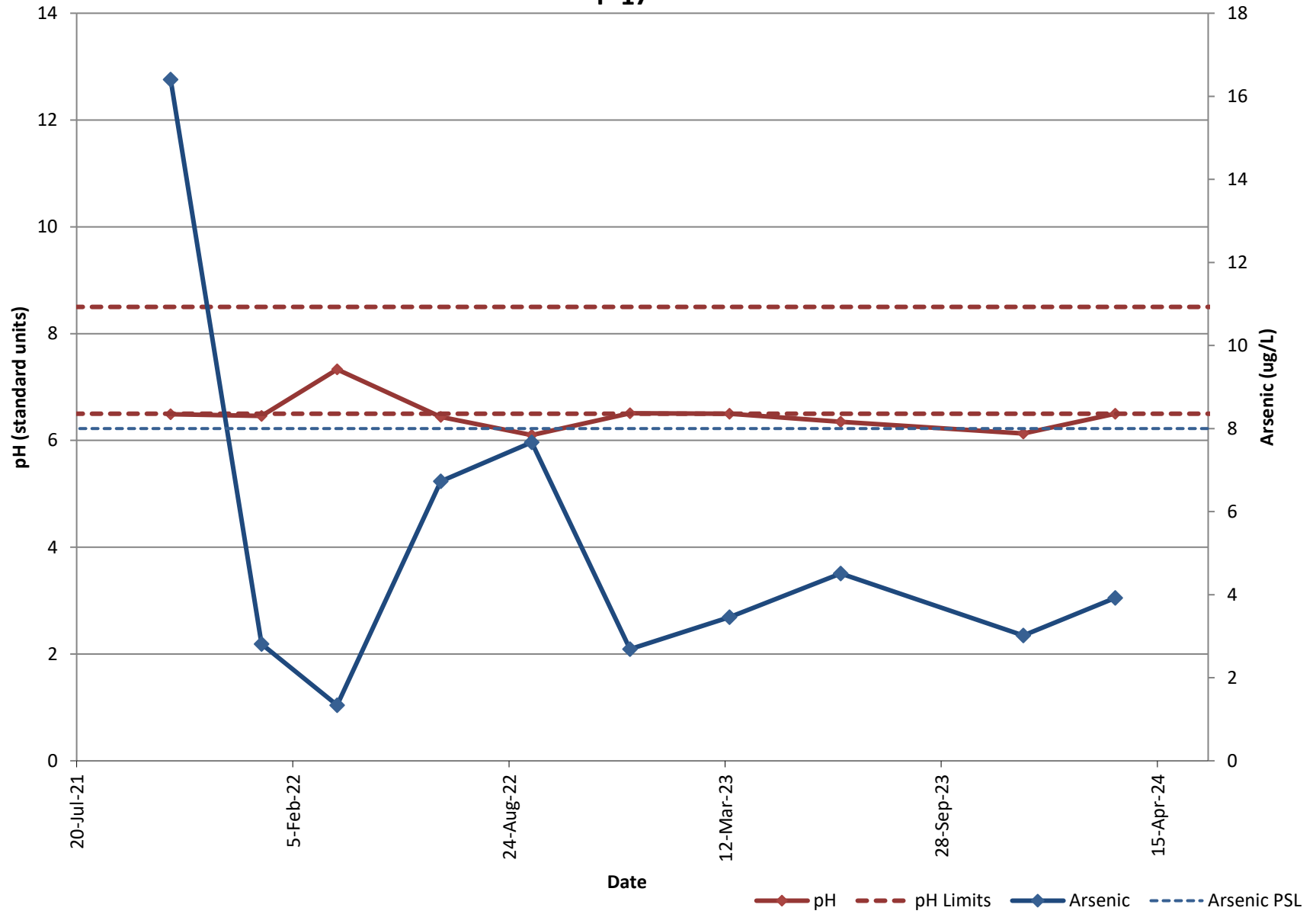
# LDA Shallow/Alluvial Monitoring Wells P-16



### LDA Shallow/Alluvial Monitoring Wells P-16

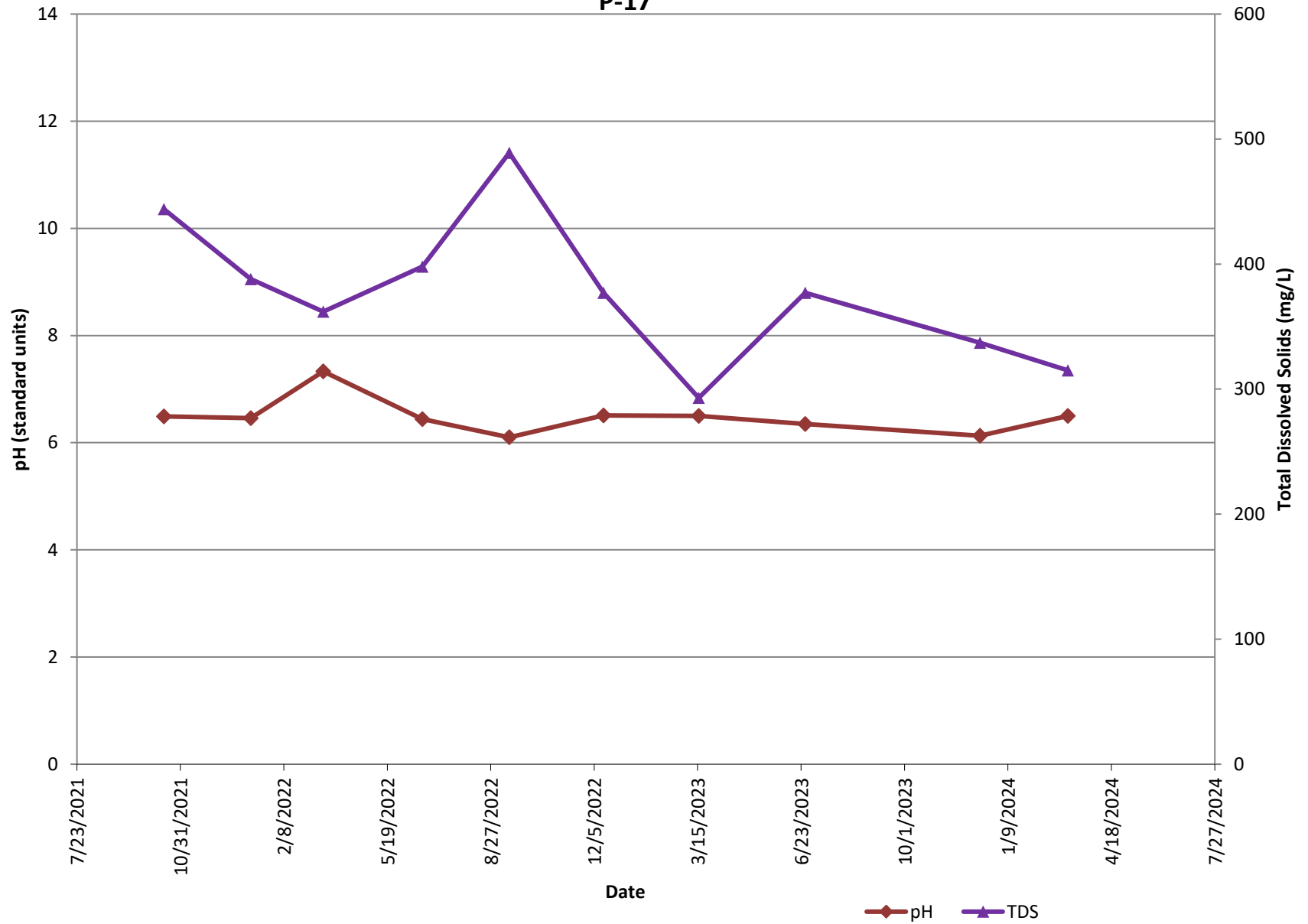


# LDA Shallow/Alluvial Monitoring Wells P-17

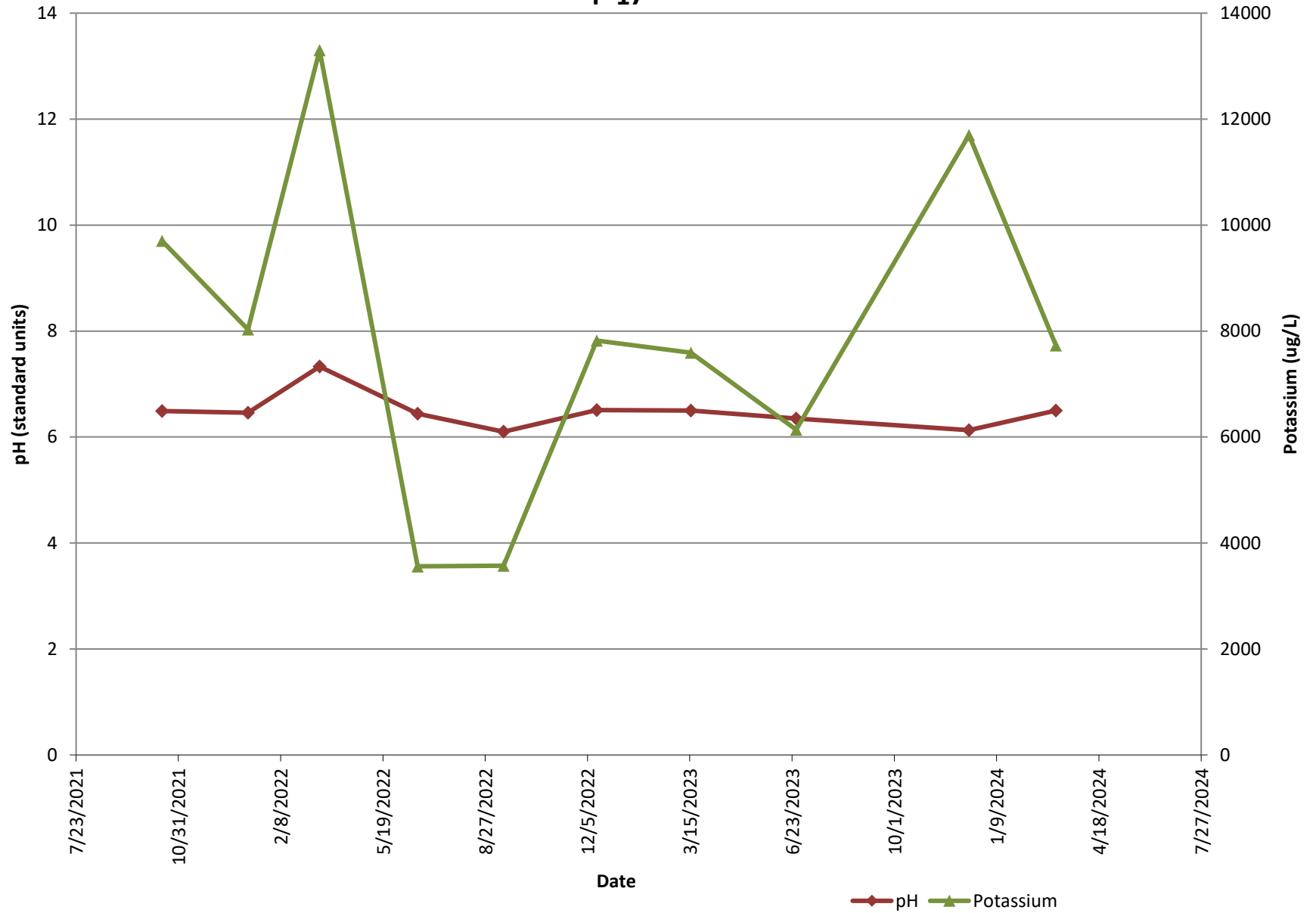


# LDA Shallow/Alluvial Monitoring Wells

## P-17

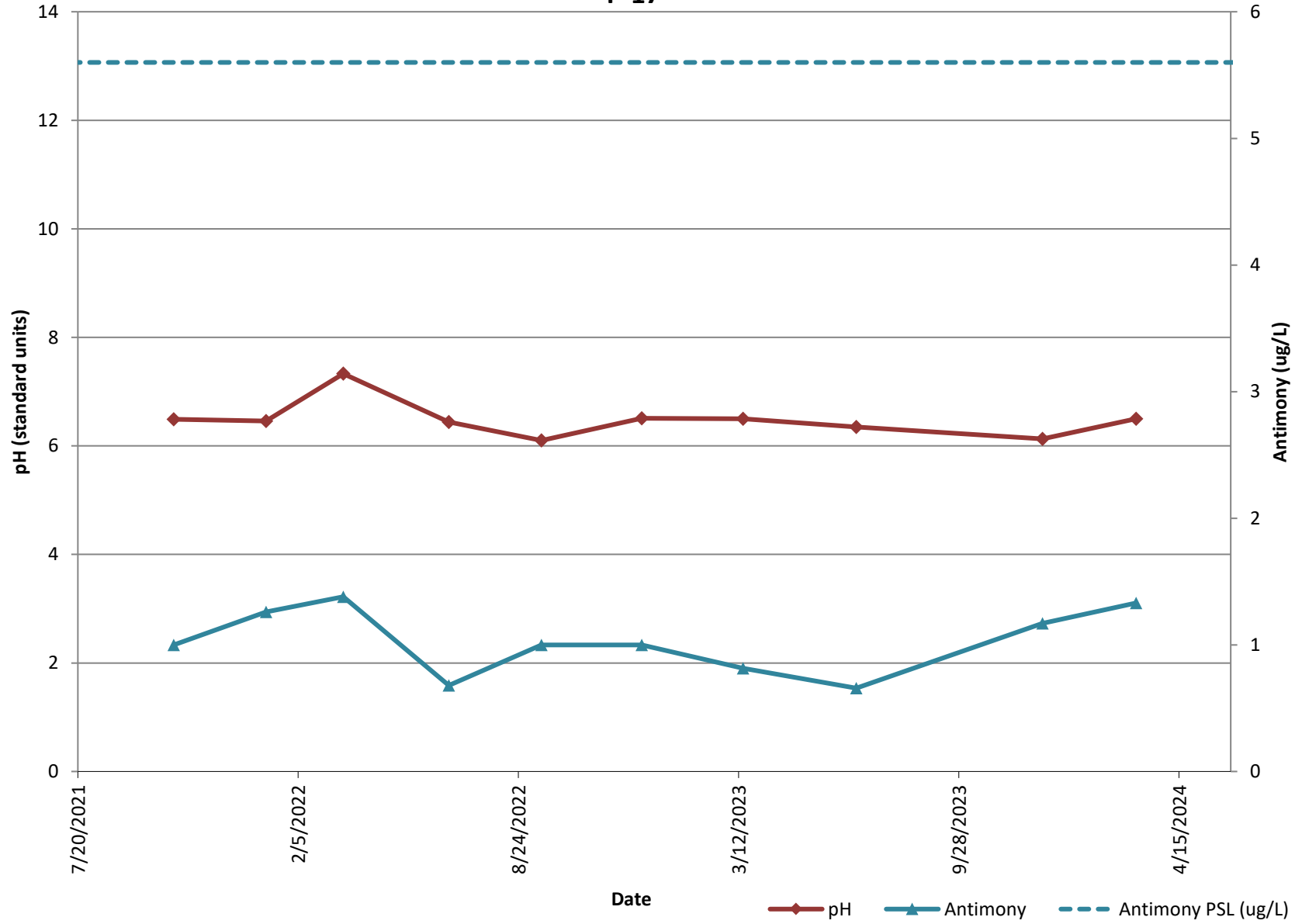


### LDA Shallow/Alluvial Monitoring Wells P-17





# LDA Shallow/Alluvial Monitoring Wells P-17



**APPENDIX C**

**Data Validation Report and  
Laboratory Analytical Results**

**DATA VALIDATION CHECKLIST**

<b>Project Name:</b>	Ravensdale Project
<b>Project Number:</b>	GL152030402.001/03.LBR
<b>Sample Identification(s):</b>	Infiltration Ponds-0324, South-Pond-0324, Still Well-0324, Interceptor Trench-0324, MW-35A-0324, MWB-1LDA-0324, MWB-2LDA-0324, MWB-3LDA-0324, MW-1A-0324, MW-2A-0324, MW-3A-0324, MW-4A-0324, MW-5A-0324, MW-6A-0324, MW-7A-0324, MW-8A-0324, MW-9A-0324, MW-10A-0324, P-14-0324, P-15-0324, P-16-0324, P-17-0324, MWB-15DSP-0324, MWB-10DSP-0324, MWB-5DSP-0324, MWB-6DSP-0324, MW-55A-0324, Portal-0324, MW-99-1-0324, and MW-99-2-0324, Missing Weir-0324, MW-45A-0324
<b>Sample Date(s):</b>	3/4/24, 3/5/24, 3/6/24, 3/7/24, and 3/8/24
<b>Sample Team:</b>	Sean Johnson, WSP
<b>Sample Matrix:</b>	Aqueous
<b>Analyzing Laboratory:</b>	Analytical Resources, Inc. – Tukwila, WA
<b>Analyses:</b>	TDS (SM2540C); Total Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED), Dissolved Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED)
<b>Laboratory Report No.:</b>	24C0209

**FIELD DATA PACKAGE DOCUMENTATION**

Field Sampling Logs:	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Sampling dates noted		X		X	
2. Sampling team indicated		X		X	
3. Sampling identification traceable to location collected		X		X	
4. Sample location		X		X	
5. Collection technique (bailer, pump, etc.)		X		X	
6. Sample container type		X		X	
7. Preservation methods		X	X		
8. Chain-of-custody form completed		X		X	
9. Required analytical methods requested		X		X	
10. Field sample logs completed properly and signed		X		X	
11. Number and type of field QC samples collected		X		X	
12. Field equipment calibration		X		X	
13. Field equipment decontamination		X		X	

QC – quality control

**COMMENTS:**

Performance was acceptable, with the following exceptions and/or notes:

- A container for metals analysis for sample P-15-0324 had a pH above 2 upon arrival to the lab. Lab personnel added 1.25 mL of concentrated HNO<sub>3</sub> to bring pH down below 2. No further action is required other than to note.

**ANALYTICAL DATA PACKAGE DOCUMENTATION**

**GENERAL INFORMATION**

	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Sample results		X		X	
2. Parameters analyzed		X		X	
3. Method of analysis		X		X	
4. Reporting limits of analysis		X		X	
5. Sample collection date		X		X	
6. Laboratory sample received date		X		X	
7. Sample preparation/extraction date		X		X	
8. Sample analysis date		X		X	
9. Copy of chain-of-custody form signed by lab sample custodian		X		X	
10. Narrative summary of QA or sample problems provided		X		X	

QA – quality assurance

**COMMENTS:**

Performance was acceptable.

**INORGANIC ANALYSES**

Metals (EPA 6010/200.8) (E200.8 UCT-KED)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X		X	
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X	X		
b. Equipment /Rinsate blanks		X	X		
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R		X	X		
6. LCS duplicate (LCSD) %R	X				
7. MS duplicate (MSD) %R		X	X		
8. MS / MSD RPD		X		X	
9. LCS / LCSD RPD	X				
10. Laboratory Duplicate RPD		X		X	
11. Field duplicate comparison		X		X	

%R – percent recovery

RPD – relative percent difference

**COMMENTS:**

Performance was acceptable, with the following exceptions and/or notes:

- There was a detection in the method and equipment blank as shown below. When the blank concentration was less than the RL and associated sample results were greater than the RL no qualifications were required. Following inorganic guidance, when the blank concentration was between the MDL and RL, associated sample results detected between the MDL and RL were qualified as non-detect (U) at the RL and the MDL was raised to the sample result.

Sample ID	Method	Type	Analyte	Blank Result	Reporting Limit	Units
MW-99-1-0324	200.8	Equipment	Arsenic	0.0920J	0.400	mg/L
BMC0447-BLK1	200.8	Method	Arsenic	0.123J	0.200	mg/L

- Certain MS/MSD recoveries are above QC limits. Using professional judgement, when associated samples have a native concentration 4x greater than the spike, no qualifications are required.

Sample ID	Method	Analyte	MS/MSD Recovery (%)	RPD (%)	QC limits	Units
Weir--0324	6010D	Potassium*	<b>138/122</b>	1.73	75-125 / 20	mg/L
Infiltration Ponds-0324	6010D	Potassium*	<b>195/151</b>	0.90	75-125 / 20	mg/L
Infiltration Ponds-0324	6010D	Potassium, Dissolved*	<b>209/290</b>	1.66	75-125 / 20	mg/L

\*Native concentrations are 4x greater the spike

- Field duplicates are as follows: MW-35A-0324 is a duplicate for Infiltration Ponds-0324, MW-45A-0324 is a field duplicate for MW-2A-0324, and MW-55A is a field duplicate MWB-6DSP-0324. All were within QC limits; no qualifications were required.
- Certain samples were analyzed at dilutions to bring sample concentrations within the instrument calibration range. Reporting limits were elevated proportional to the dilution when undiluted results were not provided by the laboratory. The Guidelines do not require qualification based on dilution, but the end user is alerted that the sensitivity of non-detect results should be considered as part of determining data usability.

**GENERAL WET CHEMISTRY**

TDS (SM 2540C)	Reported		Performance Acceptable		Not Required
	NO	YES	NO	YES	
1. Holding times		X	X		
2. Reporting limits		X		X	
3. Blanks					
a. Method blanks		X		X	
b. Equipment rinsate blanks		X		X	
4. Laboratory control sample (LCS) %R		X		X	
5. Matrix spike (MS) %R		X		X	
6. LCS duplicate (LCSD) %R	X				
7. MS duplicate (MSD) %R	X				
8. MS/MSD RPD	X				
9. LCS/LCSD RPD	X				
10. Laboratory Duplicate RPD		X		X	
11. Field duplicate comparison		X		X	

%R – percent recovery                      RPD – relative percent difference

**COMMENTS:**

- The following samples were analyzed outside the 7-day holding time by 1-day for total dissolved solids: InfiltrationPonds-0324, MW-35A-0324, MWB-1LDA-0324, MW-1A-0324, MW-2A-0324, MW-45A-0324, MW-5A-0324, and MW-6A-0324. Samples were qualified as estimated (J).
- Field duplicates are as follows: MW-35A-0324 is a duplicate for Infiltration Ponds-0324, MW-45A-0324 is a field duplicate for MW-2A-0324, and MW-55A is a field duplicate MWB-6DSP-0324. All were within QC limits; no qualifications were required.
- Certain samples were analyzed at dilutions to bring sample concentrations within the instrument calibration range. Reporting limits were elevated proportional to the dilution when undiluted results were not provided by the laboratory. The Guidelines do not require qualification based on dilution, but the end user is alerted that the sensitivity of non-detect results should be considered as part of determining data usability.

## DATA VALIDATION CHECKLIST

### SUMMARY AND DATA QUALIFIER CODES

<b>Project Name:</b>	Ravensdale Project
<b>Project Number:</b>	GL152030402.001/03.LBR
<b>Sample Identification(s):</b>	Infiltration Ponds-0324, South-Pond-0324, Still Well-0324, Interceptor Trench-0324, MW-35A-0324, MWB-1LDA-0324, MWB-2LDA-0324, MWB-3LDA-0324, MW-1A-0324, MW-2A-0324, MW-3A-0324, MW-4A-0324, MW-5A-0324, MW-6A-0324, MW-7A-0324, MW-8A-0324, MW-9A-0324, MW-10A-0324, P-14-0324, P-15-0324, P-16-0324, P-17-0324, MWB-15DSP-0324, MWB-10DSP-0324, MWB-5DSP-0324, MWB-6DSP-0324, MW-55A-0324, Portal-0324, MW-99-1-0324, and MW-99-2-0324 , Missing Weir-0324, MW-45A-0324
<b>Sample Date(s):</b>	3/4/24, 3/5/24, 3/6/24, 3/7/24, and 3/8/24
<b>Sample Team:</b>	Sean Johnson, WSP
<b>Sample Matrix:</b>	Aqueous
<b>Analyzing Laboratory:</b>	Analytical Resources, Inc. – Tukwila, WA
<b>Analyses:</b>	TDS (SM2540C); Total Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED), Dissolved Metals: K, Pb, Sb, V (SW6010D, E200.8); As (E200.8 UCT-KED)
<b>Laboratory Report No.:</b>	24C0209

Sample ID	Analyte(s)	Old Result	Old Qualifier	New Result	New Qualifier	Reason(s)
MW-4A-0324	Arsenic	--	--	0.400	U	Method blank contamination
Infiltration Ponds-0324	Total Dissolved Solids	--	--	--	J	Holding time exceeded for analysis
MW-35A-0324	Total Dissolved Solids	--	--	--	J	Holding time exceeded for analysis
MWB-1LDA-0324	Total Dissolved Solids	--	--	--	J	Holding time exceeded for analysis
MW-1A-0324	Total Dissolved Solids	--	--	--	J	Holding time exceeded for analysis
MW-2A-0324	Total Dissolved Solids	--	--	--	J	Holding time exceeded for analysis
MW-45A-0324	Total Dissolved Solids	--	--	--	J	Holding time exceeded for analysis
MW-6A-0324	Total Dissolved Solids	--	--	--	J	Holding time exceeded for analysis

<b>VALIDATION PERFORMED BY:</b>	Julia Campbell, WSP
<b>DATE:</b>	4/18/24
<b>PEER REVIEW PERFORMED BY:</b>	<b>Michael Shadle, WSP</b>
<b>DATE:</b>	4/22/24



Analyte	Infiltration Ponds		MW-35A Duplicate		RPD	Unit	Qualifier	RL	MDL
	Result	Result	Result	Result					
Antimony	13.3	13.6	13.6	13.6	2%	ug/L		0.4	0.202
Arsenic	21.8	22.4	22.4	22.4	3%	ug/L		0.4	0.0746
Potassium	471	463	463	463	2%	mg/L		1	0.214
Lead	2.86	2.73	2.73	2.73	5%	ug/L		0.2	0.103
Vanadium	3.16	3.1	3.1	3.1	2%	ug/L		0.4	0.111
Total Dissolved Solids	1370	1380	1380	1380	1%	ug/L	J	20	20
Antimony, dissolved	12.7	12.5	12.5	12.5	2%	ug/L		0.4	0.202
Arsenic, dissolved	21	21.6	21.6	21.6	3%	ug/L		0.4	0.044
Potassium, dissolved	460	470	470	470	2%	ug/L		1	0.214
Lead, dissolved	0.136	0.136	0.136	0.136	0%	ug/L		0.2	0.136
Vanadium, dissolved	2.64	2.73	2.73	2.73	3%	mg/L		0.4	0.111

Analyte	MW-2A		MW-45A Duplicate		RPD	Unit	Qualifier	RL	MDL
	Result	Result	Result	Result					
Antimony	2.27	2.29	2.29	2.29	1%	ug/L		0.4	0.202
Arsenic	1.39	1.41	1.41	1.41	1%	ug/L		0.4	0.0746
Potassium	71.9	75.1	75.1	75.1	4%	ug/L		0.5	0.107
Lead	0.103	0.103	0.103	0.103	0%	mg/L		0.2	0.103
Vanadium	0.97	0.998	0.998	0.998	3%	ug/L		0.4	0.111
Total Dissolved Solids	360	334	334	334	7%	mg/L	J	10	10

Analyte	MW-55A		MWB-6DSP Duplicate		RPD	Unit	Qualifier	RL	MDL
	Result	Result	Result	Result					
Antimony	0.202	0.202	0.202	0.202	0%	ug/L		0.4	0.202
Arsenic	0.9	0.966	0.966	0.966	7%	ug/L		0.4	0.0746
Potassium	1.13	1.07	1.07	1.07	5%	ug/L		0.5	0.107
Lead	0.103	0.103	0.103	0.103	0%	mg/L		0.2	0.103
Vanadium	0.556	0.556	0.556	0.556	0%	ug/L		2	0.556
Total Dissolved Solids	255	264	264	264	3%	mg/L		10	10





**Analytical Resources, LLC**  
**Analytical Chemists and Consultants**  
**Tukwila, WA**

02 April 2024

Accounts Payable  
 WSP USA, Inc.  
 840 HOWE STREET, #1000  
 VANCOUVER, BRITISH COLUMBIA V6Z 2M1

RE: Ravensdale (GL152030402.001)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

<u>Associated Work Order(s)</u>	<u>Associated SDG ID(s)</u>
24C0209	N/A

-----

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



# Chain of Custody Record & Laboratory Analysis Request



**Analytical Resources, Incorporated**  
 Analytical Chemists and Consultants  
 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: <b>240209</b>	Turn-around Requested: Standard	Date: <b>3/8/24</b>	
ARI Client Company: WSP	Phone: (425) 883-0777	Page: <b>1</b> of <b>4</b>	
Client Contact: Gary Zimmerman		No. of Coolers: <b>5</b>	Cooler Temps: <b>3.1, 2.7, 0.4, 3.2, 3.0</b>

Client Project Name: Ravensdale 2024 Q1 Sampling	Analysis Requested
Client Project #: GL152030402.001	Samplers: <b>SJ+TK+CK+KH</b>

Sample ID	Date	Time	Matrix	No. Containers	Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K						Notes/Comments
INFILTRATION PONDS-0324	3/4/24	13:05	SW	3	X	X	X						
MW-35A-0324	3/4/24	13:10	SW	3	X	X	X						
WEIR-0324	3/5/24	9:50	SW	6	X	X							MS/MSD
SOUTH POND-0324	3/5/24	13:40	SW	2	X	X							
STILL WELL-0324	3/5/24	14:10	SW	2	X	X							
INTERCEPTOR TRENCH-0324	3/6/24	14:30	SW	1		X							

Comments/Special Instructions  Analyze in accordance with MSA between Golder/WSP and ARI.  Ecology EIM EDD.	Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)
	Printed Name: <b>SEAN JOHNSON</b>	Printed Name: <b>Phillip Bates</b>	Printed Name:
	Company: <b>WSP</b>	Company: <b>AR</b>	Company:
	Date & Time: <b>3/8/24 14:30</b>	Date & Time: <b>3/8/24 14:30</b>	Date & Time:

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

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ARI Client Company: WSP	Phone: (425) 883-0777	Page: <b>2</b> of <b>4</b>
Client Contact: Gary Zimmerman	No. of Coolers:	Cooler Temps:

Client Project Name: Ravensdale 2024 Q1 Sampling	Analysis Requested						Notes/Comments
Client Project #: GL152030402.001	Samplers: <b>SJ+TK+CK+KH</b>	Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K			

Sample ID	Date	Time	Matrix	No. Containers	Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K						
MWB-1LDA-0324	3/4/24	14:50	GW	2	X	X							
MWB-2LDA-0324	3/6/24	12:50	GW	2	X	X							
MWB-3LDA-0324	3/7/24	12:35	GW	2	X	X							
MW-1A-0324	3/4/24	9:40	GW	2	X	X							
MW-2A-0324	3/4/24	10:45	GW	2	X	X							
MW-45A-0324	3/4/24	10:50	GW	2	X	X							
MW-3A-0324	3/5/24	9:40	GW	2	X	X							
MW-4A-0324	3/7/24	14:45	GW	2	X	X							
MW-5A-0324	3/4/24	12:50	GW	2	X	X							
MW-6A-0324	3/4/24	11:40	GW	2	X	X							

Comments/Special Instructions Analyze in accordance with MSA between Golder/WSP and ARI. Ecology EIM EDD.	Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <b>SEAN JOHNSON</b>	Printed Name: <b>Philip Bates</b>	Printed Name:	Printed Name:
	Company: <b>WSP</b>	Company: <b>AR</b>	Company:	Company:
	Date & Time: <b>3/8/24 14:30</b>	Date & Time: <b>3/8/24 14:30</b>	Date & Time:	Date & Time:

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ARI Client Company: WSP	Phone: (425) 883-0777	Page: <b>3</b> of <b>4</b>
Client Contact: Gary Zimmerman	No. of Coolers:	Cooler Temps:

Client Project Name: Ravensdale 2024 Q1 Sampling					Analysis Requested							Notes/Comments	
Client Project #: GL152030402.001		Samplers: <b>SJ+TK+CK+KH</b>			Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K						
Sample ID	Date	Time	Matrix	No. Containers									
MW-7A-0324	3/6/24	10:55	GW	2	X	X							
MW-8A-0324	3/6/24	10:05	GW	2	X	X							
MW-9A-0324	3/7/24	15:25	GW	2	X	X							
MW-10A-0324	3/5/24	11:00	GW	2	X	X							
P-14-0324	3/7/24	10:50	GW	2	X	X							
P-15-0324	3/6/24	14:00	GW	2	X	X							
P-16-0324	3/5/24	12:45	GW	2	X	X							
P-17-0324	3/7/24	13:40	GW	2	X	X							
MWB-1SDSP-0324	3/8/24	10:30	GW	2	X	X							
MWB-1DDSP-0324	3/8/24	11:30	GW	2	X	X							
Comments/Special Instructions Analyze in accordance with MSA between Golder/WSP and ARI. Ecology EIM EDD.	Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>		Relinquished by: (Signature)		Received by: (Signature)							
	Printed Name: <b>SEAN JOHNSON</b>	Printed Name: <b>Phillip Bates</b>		Printed Name:		Printed Name:							
	Company: <b>WSP</b>	Company: <b>AR</b>		Company:		Company:							
	Date & Time: <b>3/8/24 14:30</b>	Date & Time: <b>3/8/24 14:30</b>		Date & Time:		Date & Time:							

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 4611 South 134th Place, Suite 100  
 Tukwila, WA 98168  
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: <b>24C0209</b>	Turn-around Requested: Standard	Date: <b>3/8/24</b>
ARI Client Company: WSP	Phone: (425) 883-0777	Page: <b>4</b> of <b>4</b>
Client Contact: Gary Zimmerman		No. of Coolers: Cooler Temps:

Client Project Name: Ravensdale 2024 Q1 Sampling					Analysis Requested								Notes/Comments	
Client Project #: GL152030402.001		Samplers: <b>SJ+TK+CK+KH</b>			Total Metals: As, Pb, Sb, V, K	TDS	Dissolved Metals: As, Pb, Sb, V, K							
Sample ID	Date	Time	Matrix	No. Containers										
MWB-5DSP-0324	3/8/24	9:25	GW	2	X	X								
MWB-6DSP-0324	3/8/24	12:25	GW	2	X	X								
MW-55A-0324	3/8/24	12:30	GW	2	X	X								
PORTAL-0324	3/8/24	13:02	GW	2	X	X								
MW-99-1-0324	3/5/24	15:25	DI	2	X	X								
MW-99-2-0324	3/8/24	10:35	DI	2	X	X								

Comments/Special Instructions Analyze in accordance with MSA between Golder/WSP and ARI. Ecology EIM EDD.	Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <b>SEAN JOHNSON</b>	Printed Name: <b>Phillip Bates</b>	Printed Name:	Printed Name:
	Company: <b>WSP</b>	Company: <b>AR</b>	Company:	Company:
	Date & Time: <b>3/8/24 14:30</b>	Date & Time: <b>3/8/24 14:30</b>	Date & Time:	Date & Time:

**Limits of Liability:** ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

**Sample Retention Policy:** Unless specified by workorder or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



WSP USA, Inc.  
840 HOWE STREET, #1000  
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale  
Project Number: GL152030402.001  
Project Manager: Accounts Payable

**Reported:**  
02-Apr-2024 10:59

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
InfiltrationPonds-0324	24C0209-01	Water	04-Mar-2024 13:05	08-Mar-2024 14:30
InfiltrationPonds-0324	24C0209-02	Water	04-Mar-2024 13:05	08-Mar-2024 14:30
MW-35A-0324	24C0209-03	Water	04-Mar-2024 13:10	08-Mar-2024 14:30
MW-35A-0324	24C0209-04	Water	04-Mar-2024 13:10	08-Mar-2024 14:30
WEIR-0324	24C0209-05	Water	05-Mar-2024 09:50	08-Mar-2024 14:30
SouthPond-0324	24C0209-06	Water	05-Mar-2024 13:40	08-Mar-2024 14:30
StillWell-0324	24C0209-07	Water	05-Mar-2024 14:10	08-Mar-2024 14:30
InterceptorTrench-0324	24C0209-08	Water	06-Mar-2024 14:30	08-Mar-2024 14:30
MWB-1LDA-0324	24C0209-09	Water	04-Mar-2024 14:50	08-Mar-2024 14:30
MWB-2LDA-0324	24C0209-10	Water	06-Mar-2024 12:50	08-Mar-2024 14:30
MWB-3LDA-0324	24C0209-11	Water	07-Mar-2024 12:35	08-Mar-2024 14:30
MW-1A-0324	24C0209-12	Water	04-Mar-2024 09:40	08-Mar-2024 14:30
MW-2A-0324	24C0209-13	Water	04-Mar-2024 10:45	08-Mar-2024 14:30
MW-45A-0324	24C0209-14	Water	04-Mar-2024 10:50	08-Mar-2024 14:30
MW-3A-0324	24C0209-15	Water	05-Mar-2024 09:40	08-Mar-2024 14:30
MW-4A-0324	24C0209-16	Water	07-Mar-2024 14:45	08-Mar-2024 14:30
MW-5A-0324	24C0209-17	Water	04-Mar-2024 12:50	08-Mar-2024 14:30
MW-6A-0324	24C0209-18	Water	04-Mar-2024 11:40	08-Mar-2024 14:30
MW-7A-0324	24C0209-19	Water	06-Mar-2024 10:55	08-Mar-2024 14:30
MW-8A-0324	24C0209-20	Water	06-Mar-2024 10:05	08-Mar-2024 14:30
MW-9A-0324	24C0209-21	Water	07-Mar-2024 15:25	08-Mar-2024 14:30
MW-10A-0324	24C0209-22	Water	05-Mar-2024 11:00	08-Mar-2024 14:30
P-14-0324	24C0209-23	Water	07-Mar-2024 10:50	08-Mar-2024 14:30
P-15-0324	24C0209-24	Water	06-Mar-2024 14:00	08-Mar-2024 14:30
P-16-0324	24C0209-25	Water	05-Mar-2024 12:45	08-Mar-2024 14:30
P-17-0324	24C0209-26	Water	07-Mar-2024 13:40	08-Mar-2024 14:30
MWB-1SDSP-0324	24C0209-27	Water	08-Mar-2024 10:30	08-Mar-2024 14:30
MWB-1DDSP-0324	24C0209-28	Water	08-Mar-2024 11:30	08-Mar-2024 14:30
MWB-5DSP-0324	24C0209-29	Water	08-Mar-2024 09:25	08-Mar-2024 14:30
MWB-6DSP-0324	24C0209-30	Water	08-Mar-2024 12:25	08-Mar-2024 14:30
MW-55A-0324	24C0209-31	Water	08-Mar-2024 12:30	08-Mar-2024 14:30
Portal-0324	24C0209-32	Water	08-Mar-2024 13:02	08-Mar-2024 14:30
MW-99-1-0324	24C0209-33	Water	05-Mar-2024 15:25	08-Mar-2024 14:30
MW-99-2-0324	24C0209-34	Water	08-Mar-2024 10:35	08-Mar-2024 14:30



WSP USA, Inc.  
840 HOWE STREET, #1000  
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale  
Project Number: GL152030402.001  
Project Manager: Accounts Payable

**Reported:**  
02-Apr-2024 10:59

## **Work Order Case Narrative**

### **Total and Dissolved Metals - EPA Method 200.8 and 6010D**

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

### **Wet Chemistry**

The sample(s) were prepared and analyzed within the recommended holding times with the exception of samples for TDS which were not logged in due to a login error. Samples have been flagged with an "H" qualifier.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.





WORK ORDER

24C0209

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: WSP USA, Inc.

Project Manager: Kelly Bottem

Project: Ravensdale

Project Number: GL152030402.001

Preservation Confirmation

Container ID	Container Type	pH
24C0209-01 A	HDPE NM, 1000 mL	
24C0209-01 B	HDPE NM, 500 mL, 1:1 HNO3	LZ PASS (P)
24C0209-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ P
24C0209-03 A	HDPE NM, 1000 mL	
24C0209-03 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ P
24C0209-05 A	HDPE NM, 1000 mL	
24C0209-05 B	HDPE NM, 1000 mL	
24C0209-05 C	HDPE NM, 1000 mL	
24C0209-05 D	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-05 E	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-05 F	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-06 A	HDPE NM, 1000 mL	
24C0209-06 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-07 A	HDPE NM, 1000 mL	
24C0209-07 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-08 A	HDPE NM, 1000 mL	
24C0209-09 A	HDPE NM, 1000 mL	
24C0209-09 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-10 A	HDPE NM, 1000 mL	
24C0209-10 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-11 A	HDPE NM, 1000 mL	
24C0209-11 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-12 A	HDPE NM, 1000 mL	
24C0209-12 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-13 A	HDPE NM, 1000 mL	
24C0209-13 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-14 A	HDPE NM, 1000 mL	
24C0209-14 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-15 A	HDPE NM, 1000 mL	
24C0209-15 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-16 A	HDPE NM, 1000 mL	
24C0209-16 B	HDPE NM, 500 mL, 1:1 HNO3	LZ P
24C0209-17 A	HDPE NM, 1000 mL	



WORK ORDER

24C0209

Samples will be discarded 90 days after submission of a final report unless other instructions are received

<b>Client:</b> WSP USA, Inc.	<b>Project Manager:</b> Kelly Bottem
<b>Project:</b> Ravensdale	<b>Project Number:</b> GL152030402.001

24C0209-17 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-18 A	HDPE NM, 1000 mL		
24C0209-18 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-19 A	HDPE NM, 1000 mL		
24C0209-19 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-20 A	HDPE NM, 1000 mL		
24C0209-20 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-21 A	HDPE NM, 1000 mL		
24C0209-21 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-22 A	HDPE NM, 1000 mL		
24C0209-22 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-23 A	HDPE NM, 1000 mL		
24C0209-23 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-24 A	HDPE NM, 1000 mL		
24C0209-24 B	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail
24C0209-25 A	HDPE NM, 1000 mL		
24C0209-25 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-26 A	HDPE NM, 1000 mL		
24C0209-26 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-27 A	HDPE NM, 1000 mL		
24C0209-27 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-28 A	HDPE NM, 1000 mL		
24C0209-28 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-29 A	HDPE NM, 1000 mL		
24C0209-29 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-30 A	HDPE NM, 1000 mL		
24C0209-30 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-31 A	HDPE NM, 1000 mL		
24C0209-31 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-32 A	HDPE NM, 1000 mL		
24C0209-32 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-33 A	HDPE NM, 1000 mL		
24C0209-33 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-34 A	HDPE NM, 1000 mL		
24C0209-34 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P



WORK ORDER

24C0209

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: WSP USA, Inc.

Project Manager: Kelly Bottem

Project: Ravensdale

Project Number: GL152030402.001

PIB

Preservation Confirmed By

3/12/24

Date



# Cooler Receipt Form

ARI Client: WSP

Project Name: Ravensdale 2024 Q1

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No: 24C0209

Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? ..... YES YES NO

Were custody papers properly filled out (ink, signed, etc.) ..... YES YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)  
Time 14:30 3.1 2.7 0.4 3.2 3.0

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 5099208

Cooler Accepted by: PIB Date: 3/8/24 Time: 19:30

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? ..... YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? ..... NA YES NO

How were bottles sealed in plastic bags? ..... Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? ..... YES NO

Were all bottle labels complete and legible? ..... YES NO

Did the number of containers listed on COC match with the number of containers received? ..... YES NO

Did all bottle labels and tags agree with custody papers? ..... YES NO

Were all bottles used correct for the requested analyses? ..... YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? ..... NA YES NO

Was sufficient amount of sample sent in each bottle? ..... NA YES NO

Date VOC Trip Blank was made at ARI ..... NA

Were the sample(s) split by ARI? NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: MD + PIB Date: 3/12/24 Time: 9:38 Labels checked by: PIB

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

By: \_\_\_\_\_ Date: \_\_\_\_\_



WORK ORDER

24C0209

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: WSP USA, Inc.

Project Manager: Kelly Bottem

Project: Ravensdale

Project Number: GL152030402.001

Preservation Confirmation

Container ID	Container Type	pH	
24C0209-01 A	HDPE NM, 1000 mL		
24C0209-01 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	PASS (P)
24C0209-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ	P
24C0209-03 A	HDPE NM, 1000 mL		
24C0209-03 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ	P
24C0209-05 A	HDPE NM, 1000 mL		
24C0209-05 B	HDPE NM, 1000 mL		
24C0209-05 C	HDPE NM, 1000 mL		
24C0209-05 D	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-05 E	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-05 F	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-06 A	HDPE NM, 1000 mL		
24C0209-06 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-07 A	HDPE NM, 1000 mL		
24C0209-07 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-08 A	HDPE NM, 1000 mL		
24C0209-09 A	HDPE NM, 1000 mL		
24C0209-09 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-10 A	HDPE NM, 1000 mL		
24C0209-10 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-11 A	HDPE NM, 1000 mL		
24C0209-11 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-12 A	HDPE NM, 1000 mL		
24C0209-12 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-13 A	HDPE NM, 1000 mL		
24C0209-13 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-14 A	HDPE NM, 1000 mL		
24C0209-14 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-15 A	HDPE NM, 1000 mL		
24C0209-15 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-16 A	HDPE NM, 1000 mL		
24C0209-16 B	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
24C0209-17 A	HDPE NM, 1000 mL		



WORK ORDER

24C0209

Samples will be discarded 90 days after submission of a final report unless other instructions are received

<b>Client:</b> WSP USA, Inc.	<b>Project Manager:</b> Kelly Bottem
<b>Project:</b> Ravensdale	<b>Project Number:</b> GL152030402.001

24C0209-17 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-18 A	HDPE NM, 1000 mL		
24C0209-18 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-19 A	HDPE NM, 1000 mL		
24C0209-19 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-20 A	HDPE NM, 1000 mL		
24C0209-20 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-21 A	HDPE NM, 1000 mL		
24C0209-21 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-22 A	HDPE NM, 1000 mL		
24C0209-22 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-23 A	HDPE NM, 1000 mL		
24C0209-23 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-24 A	HDPE NM, 1000 mL		
24C0209-24 B	HDPE NM, 500 mL, 1:1 HNO3	>2	Fail (1)
24C0209-25 A	HDPE NM, 1000 mL		
24C0209-25 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-26 A	HDPE NM, 1000 mL		
24C0209-26 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-27 A	HDPE NM, 1000 mL		
24C0209-27 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-28 A	HDPE NM, 1000 mL		
24C0209-28 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-29 A	HDPE NM, 1000 mL		
24C0209-29 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-30 A	HDPE NM, 1000 mL		
24C0209-30 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-31 A	HDPE NM, 1000 mL		
24C0209-31 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-32 A	HDPE NM, 1000 mL		
24C0209-32 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-33 A	HDPE NM, 1000 mL		
24C0209-33 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P
24C0209-34 A	HDPE NM, 1000 mL		
24C0209-34 B	HDPE NM, 500 mL, 1:1 HNO3	L2	P



WORK ORDER

24C0209

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: WSP USA, Inc.

Project Manager: Kelly Bottem

Project: Ravensdale

Project Number: GL152030402.001

PIB

3/12/24

Preservation Confirmed By

Date

① preserved to PHCC with  
1.25ml concentrated HNO<sub>3</sub>.  
(M2232) 03/12/24 AS



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/04/2024 13:05
Instrument: ICPMS2 Analyst: DOE	Analyzed: 03/18/2024 22:13
Sample Preparation:	Extract ID: 24C0209-01 B 02
Preparation Method: REN - EPA 3010A M	
Preparation Batch: BMC0447	Sample Size: 25 mL
Prepared: 03/18/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	21.8	ug/L	D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/04/2024 13:05
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Analyzed: 03/18/2024 22:13
	Sample Size: 25 mL Final Volume: 25 mL	Extract ID: 24C0209-01 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	13.3	ug/L	D
Lead	7439-92-1	2	0.103	0.200	2.86	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	3.16	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-01 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/04/2024 13:05
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:07
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-01 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	471	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-01 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11	Sampled: 03/04/2024 13:05
Instrument: BAL2 Analyst: CDE	Analyzed: 03/12/2024 19:19
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 24C0209-01
Preparation Batch: BMC0290	Sample Size: 50 mL
Prepared: 03/12/2024	Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1370	mg/L	H



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 03/04/2024 13:05
Instrument: ICPMS2 Analyst: DOE	Analyzed: 03/15/2024 20:44
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-02 A 01
Preparation Batch: BMC0403	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	21.0	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Sampled: 03/04/2024 13:05
Instrument: ICPMS1 Analyst: DOE	Analyzed: 03/18/2024 19:43
Sample Preparation: Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0403 Prepared: 03/15/2024	Extract ID: 24C0209-02 A 01
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	2.64	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: DOE	Sampled: 03/04/2024 13:05	Analyzed: 03/15/2024 20:44
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0403	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/15/2024		Extract ID: 24C0209-02 A 01	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	2	0.202	0.400	12.7	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InfiltrationPonds-0324**  
**24C0209-02 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 03/04/2024 13:05
Instrument: ICP3 Analyst: DOE	Analyzed: 03/22/2024 10:16
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 24C0209-02 A 02
Preparation Batch: BMC0424	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	2	0.214	1.00	460	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-35A-0324**  
**24C0209-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/04/2024 13:10 Analyzed: 03/18/2024 22:17
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-03 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	22.4	ug/L	D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-35A-0324**  
**24C0209-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: DOE	Sampled: 03/04/2024 13:10	Analyzed: 03/18/2024 22:17
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0447	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/18/2024		Extract ID: 24C0209-03 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	13.6	ug/L	D
Lead	7439-92-1	2	0.103	0.200	2.73	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	3.10	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-35A-0324**  
**24C0209-03 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/04/2024 13:10
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:53
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-03 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	463	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-35A-0324**  
**24C0209-03 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/04/2024 13:10  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-03  
Preparation Batch: BMC0290 Sample Size: 50 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1380	mg/L	H



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-35A-0324**  
**24C0209-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8 UCT-KED	Sampled: 03/04/2024 13:10
Instrument: ICPMS1 Analyst: HAL	Analyzed: 03/15/2024 23:22
Sample Preparation: Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0403 Prepared: 03/15/2024	Extract ID: 24C0209-04 A
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	21.6	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-35A-0324**  
**24C0209-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: HAL	Sampled: 03/04/2024 13:10	Analyzed: 03/15/2024 23:22
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0403	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/15/2024		Extract ID: 24C0209-04 A	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	2	0.202	0.400	12.5	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	ND	ug/L	U
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	2.73	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-35A-0324**  
**24C0209-04 (Water)**

**Metals and Metallic Compounds (dissolved)**

Method: EPA 6010D	Sampled: 03/04/2024 13:10
Instrument: ICP3 Analyst: DOE	Analyzed: 03/22/2024 10:13
Sample Preparation: Preparation Method: WMN (No Prep)	Extract ID: 24C0209-04 A 02
Preparation Batch: BMC0424	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	2	0.214	1.00	470	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**WEIR-0324**  
**24C0209-05 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/05/2024 09:50 Analyzed: 03/18/2024 22:37
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-05 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	4.74	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**WEIR-0324**  
**24C0209-05 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/05/2024 09:50 Analyzed: 03/18/2024 22:37
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-05 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	5.28	ug/L	D
Lead	7439-92-1	2	0.103	0.200	2.23	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	1.16	ug/L	D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**WEIR-0324**  
**24C0209-05 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/05/2024 09:50
Instrument: ICP3 Analyst: SH	Analyzed: 03/18/2024 14:43
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-05 F 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	76.8	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**WEIR-0324**  
**24C0209-05 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11	Sampled: 03/05/2024 09:50
Instrument: BAL2 Analyst: CDE	Analyzed: 03/12/2024 19:19
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 24C0209-05
Preparation Batch: BMC0290	Sample Size: 100 mL
Prepared: 03/12/2024	Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	445	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**SouthPond-0324**  
**24C0209-06 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/05/2024 13:40
Instrument: ICPMS2 Analyst: DOE	Analyzed: 03/18/2024 21:33
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-06 B 02
Preparation Batch: BMC0447	Sample Size: 25 mL
Prepared: 03/18/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	21.6	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**SouthPond-0324**  
**24C0209-06 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: DOE	Sampled: 03/05/2024 13:40	Analyzed: 03/18/2024 21:33
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0447	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/18/2024		Extract ID: 24C0209-06 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	3.99	ug/L	D
Lead	7439-92-1	10	0.513	1.00	15.2	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	75.1	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**SouthPond-0324**  
**24C0209-06 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Instrument: ICP3 Analyst: SH	Sampled: 03/05/2024 13:40 Analyzed: 03/19/2024 16:56
Sample Preparation:	Preparation Method: TWC EPA 3010A Preparation Batch: BMC0305 Prepared: 03/13/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-06 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	435	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**SouthPond-0324**  
**24C0209-06 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/05/2024 13:40  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-06  
Preparation Batch: BMC0290 Sample Size: 50 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1220	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**StillWell-0324**  
**24C0209-07 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/05/2024 14:10
Instrument: ICPMS2 Analyst: DOE	Analyzed: 03/18/2024 22:23
Sample Preparation: Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Extract ID: 24C0209-07 B 02
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	50.1	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**StillWell-0324**  
**24C0209-07 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: DOE	Sampled: 03/05/2024 14:10	Analyzed: 03/18/2024 22:23
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0447	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/18/2024		Extract ID: 24C0209-07 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	7.25	ug/L	D
Lead	7439-92-1	2	0.103	0.200	4.70	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	2.90	ug/L	D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**StillWell-0324**  
**24C0209-07 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/05/2024 14:10
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:58
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-07 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	434	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**StillWell-0324**  
**24C0209-07 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11	Sampled: 03/05/2024 14:10
Instrument: BAL2 Analyst: CDE	Analyzed: 03/12/2024 19:19
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 24C0209-07
Preparation Batch: BMC0290	Sample Size: 10 mL
Prepared: 03/12/2024	Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	100	100	1700	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**InterceptorTrench-0324**  
**24C0209-08 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/06/2024 14:30  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-08  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	359	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1LDA-0324**  
**24C0209-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/04/2024 14:50
Instrument: ICPMS2 Analyst: DOE	Analyzed: 03/18/2024 22:28
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-09 B 02
Preparation Batch: BMC0447	Sample Size: 25 mL
Prepared: 03/18/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	9.13	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1LDA-0324**  
**24C0209-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/04/2024 14:50	Analyzed: 03/21/2024 20:41
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0447	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/18/2024		Extract ID: 24C0209-09 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1LDA-0324**  
**24C0209-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: DOE	Sampled: 03/04/2024 14:50	Analyzed: 03/18/2024 22:28
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0447	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/18/2024		Extract ID: 24C0209-09 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1LDA-0324**  
**24C0209-09 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Instrument: ICP3 Analyst: SH	Sampled: 03/04/2024 14:50 Analyzed: 03/19/2024 16:17
Sample Preparation:	Preparation Method: TWC EPA 3010A Preparation Batch: BMC0305 Prepared: 03/13/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-09 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.857	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1LDA-0324**  
**24C0209-09 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/04/2024 14:50  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-09  
Preparation Batch: BMC0290 Sample Size: 100 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	243	mg/L	H





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-2LDA-0324**  
**24C0209-10 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/06/2024 12:50 Analyzed: 03/18/2024 23:15
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-10 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	5.24	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-2LDA-0324**  
**24C0209-10 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/06/2024 12:50 Analyzed: 03/18/2024 23:15
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-10 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-2LDA-0324**  
**24C0209-10 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/06/2024 12:50
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:35
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-10 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.952	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-2LDA-0324**  
**24C0209-10 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/06/2024 12:50  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-10  
Preparation Batch: BMC0313 Sample Size: 200 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	218	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-3LDA-0324**  
**24C0209-11 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/07/2024 12:35
Instrument: ICPMS2 Analyst: DOE	Analyzed: 03/18/2024 23:20
Sample Preparation: Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Extract ID: 24C0209-11 B 02
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	6.36	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-3LDA-0324**  
**24C0209-11 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/07/2024 12:35 Analyzed: 03/18/2024 23:20
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-11 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	0.174	ug/L	J, D
Vanadium	7440-62-2	5	0.278	1.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-3LDA-0324**  
**24C0209-11 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/07/2024 12:35
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:38
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-11 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.796	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-3LDA-0324**  
**24C0209-11 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/07/2024 12:35  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-11  
Preparation Batch: BMC0313 Sample Size: 200 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	138	mg/L	





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-1A-0324**  
**24C0209-12 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/04/2024 09:40 Analyzed: 03/18/2024 23:25
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-12 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.02	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-1A-0324**  
**24C0209-12 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/04/2024 09:40 Analyzed: 03/18/2024 23:25
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-12 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	0.830	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	0.614	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-1A-0324**  
**24C0209-12 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/04/2024 09:40
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:41
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-12 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	13.4	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-1A-0324**  
**24C0209-12 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/04/2024 09:40  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-12  
Preparation Batch: BMC0290 Sample Size: 100 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	274	mg/L	H



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-2A-0324**  
**24C0209-13 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/04/2024 10:45 Analyzed: 03/18/2024 23:30
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Extract ID: 24C0209-13 B 02
	Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.39	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-2A-0324**  
**24C0209-13 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: DOE	Sampled: 03/04/2024 10:45	Analyzed: 03/18/2024 23:30
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0447	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/18/2024		Extract ID: 24C0209-13 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	2.27	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	0.970	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-2A-0324**  
**24C0209-13 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/04/2024 10:45
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:44
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-13 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	71.9	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-2A-0324**  
**24C0209-13 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/04/2024 10:45  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-13  
Preparation Batch: BMC0290 Sample Size: 100 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	360	mg/L	H





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-45A-0324**  
**24C0209-14 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/04/2024 10:50 Analyzed: 03/18/2024 23:40
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-14 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	1.41	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-45A-0324**  
**24C0209-14 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/04/2024 10:50 Analyzed: 03/18/2024 23:40
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-14 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	2.29	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	0.998	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-45A-0324**  
**24C0209-14 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/04/2024 10:50
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:47
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-14 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	75.1	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-45A-0324**  
**24C0209-14 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/04/2024 10:50  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-14  
Preparation Batch: BMC0290 Sample Size: 100 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	334	mg/L	H



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-3A-0324**  
**24C0209-15 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/05/2024 09:40 Analyzed: 03/18/2024 23:45
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-15 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	4.65	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-3A-0324**  
**24C0209-15 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/05/2024 09:40 Analyzed: 03/18/2024 23:45
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-15 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.55	ug/L	D
Lead	7439-92-1	2	0.103	0.200	0.336	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	0.604	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-3A-0324**  
**24C0209-15 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Instrument: ICP3 Analyst: SH	Sampled: 03/05/2024 09:40 Analyzed: 03/19/2024 16:50
Sample Preparation:	Preparation Method: TWC EPA 3010A Preparation Batch: BMC0305 Prepared: 03/13/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-15 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	66.2	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-3A-0324**  
**24C0209-15 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/05/2024 09:40  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-15  
Preparation Batch: BMC0290 Sample Size: 100 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	356	mg/L	





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-4A-0324**  
**24C0209-16 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/07/2024 14:45 Analyzed: 03/18/2024 23:50
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-16 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.150	ug/L	J, D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-4A-0324**  
**24C0209-16 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: DOE	Sampled: 03/07/2024 14:45 Analyzed: 03/18/2024 23:50
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0447 Prepared: 03/18/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-16 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	5	0.278	1.00	1.18	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-4A-0324**  
**24C0209-16 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/07/2024 14:45
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 15:34
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-16 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.708	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-4A-0324**  
**24C0209-16 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/07/2024 14:45  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-16  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	320	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-5A-0324**  
**24C0209-17 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/04/2024 12:50 Analyzed: 03/21/2024 00:12
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-17 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	4.28	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-5A-0324**  
**24C0209-17 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/04/2024 12:50 Analyzed: 03/21/2024 00:12
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-17 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	6.37	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	1.62	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-5A-0324**  
**24C0209-17 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/04/2024 12:50
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 15:37
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-17 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	294	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-5A-0324**  
**24C0209-17 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/04/2024 12:50  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-17  
Preparation Batch: BMC0313 Sample Size: 75 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	984	mg/L	H





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-6A-0324**  
**24C0209-18 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/04/2024 11:40
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/20/2024 23:57
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-18 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	2.83	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-6A-0324**  
**24C0209-18 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/04/2024 11:40 Analyzed: 03/20/2024 23:57
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-18 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	7.92	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	0.928	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-6A-0324**  
**24C0209-18 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Instrument: ICP3 Analyst: SH	Sampled: 03/04/2024 11:40 Analyzed: 03/19/2024 15:51
Sample Preparation:	Preparation Method: TWC EPA 3010A Preparation Batch: BMC0305 Prepared: 03/13/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-18 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	359	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-6A-0324**  
**24C0209-18 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/04/2024 11:40  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-18  
Preparation Batch: BMC0313 Sample Size: 75 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1070	mg/L	H



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-7A-0324**  
**24C0209-19 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/06/2024 10:55
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 00:02
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-19 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	2.14	ug/L	D



WSP USA, Inc.  
840 HOWE STREET, #1000  
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale  
Project Number: GL152030402.001  
Project Manager: Accounts Payable

**Reported:**  
02-Apr-2024 10:59

**MW-7A-0324**  
**24C0209-19 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8

Sampled: 03/06/2024 10:55

Instrument: ICPMS2 Analyst: HAL

Analyzed: 03/21/2024 00:02

Sample Preparation: Preparation Method: REN - EPA 3010A M  
Preparation Batch: BMC0476  
Prepared: 03/19/2024

Sample Size: 25 mL  
Final Volume: 25 mL

Extract ID: 24C0209-19 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	3.01	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	0.970	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-7A-0324**  
**24C0209-19 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/06/2024 10:55
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 15:54
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-19 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	111	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-7A-0324**  
**24C0209-19 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/06/2024 10:55  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-19  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	588	mg/L	





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-8A-0324**  
**24C0209-20 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/06/2024 10:05	Analyzed: 03/21/2024 00:49
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL	Extract ID: 24C0209-20 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	6.67	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-8A-0324**  
**24C0209-20 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Sampled: 03/06/2024 10:05
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 00:49
Sample Preparation: Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Extract ID: 24C0209-20 B
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	4.93	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	3.44	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-8A-0324**  
**24C0209-20 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/06/2024 10:05
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 15:57
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-20 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	159	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-8A-0324**  
**24C0209-20 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/06/2024 10:05  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-20  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	622	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-9A-0324**  
**24C0209-21 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/07/2024 15:25
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 00:54
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-21 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.436	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-9A-0324**  
**24C0209-21 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/07/2024 15:25	Analyzed: 03/21/2024 20:27
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-21 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	5	0.278	1.00	0.640	ug/L	J, D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-9A-0324**  
**24C0209-21 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/07/2024 15:25	Analyzed: 03/21/2024 00:54
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL	Extract ID: 24C0209-21 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-9A-0324**  
**24C0209-21 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/07/2024 15:25
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:02
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-21 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	1.79	mg/L	





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-9A-0324**  
**24C0209-21 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/07/2024 15:25  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-21  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	360	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-10A-0324**  
**24C0209-22 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/05/2024 11:00
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 00:59
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-22 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.440	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-10A-0324**  
**24C0209-22 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/05/2024 11:00	Analyzed: 03/21/2024 20:42
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-22 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-10A-0324**  
**24C0209-22 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/05/2024 11:00 Analyzed: 03/21/2024 00:59
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-22 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-10A-0324**  
**24C0209-22 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/05/2024 11:00
Instrument: ICP3 Analyst: SH	Analyzed: 03/19/2024 16:05
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-22 B 01
Preparation Batch: BMC0305	Sample Size: 25 mL
Prepared: 03/13/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	0.777	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-10A-0324**  
**24C0209-22 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/05/2024 11:00  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-22  
Preparation Batch: BMC0290 Sample Size: 200 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	106	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-14-0324**  
**24C0209-23 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/07/2024 10:50
Instrument: ICPMS1 Analyst: MCB	Analyzed: 03/21/2024 23:25
Sample Preparation: Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Extract ID: 24C0209-23 B 02
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.746	4.00	188	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-14-0324**  
**24C0209-23 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/07/2024 10:50	Analyzed: 03/21/2024 23:25
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-23 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	2.02	4.00	120	ug/L	D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-14-0324**  
**24C0209-23 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: HAL	Sampled: 03/07/2024 10:50	Analyzed: 03/21/2024 01:04
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-23 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead	7439-92-1	2	0.103	0.200	4.54	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	11.7	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-14-0324**  
**24C0209-23 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/07/2024 10:50
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:01
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-23 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	10	1.07	5.00	2010	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-14-0324**  
**24C0209-23 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/07/2024 10:50  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-23  
Preparation Batch: BMC0313 Sample Size: 5 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	200	200	5660	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-15-0324**  
**24C0209-24 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/06/2024 14:00
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 01:14
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-24 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	5.83	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-15-0324**  
**24C0209-24 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/06/2024 14:00 Analyzed: 03/21/2024 01:14
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-24 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	3.54	ug/L	D
Lead	7439-92-1	2	0.103	0.200	106	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	0.464	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-15-0324**  
**24C0209-24 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/06/2024 14:00
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:04
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-24 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	965	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-15-0324**  
**24C0209-24 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/06/2024 14:00  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-24  
Preparation Batch: BMC0313 Sample Size: 5 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	200	200	3520	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-16-0324**  
**24C0209-25 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/05/2024 12:45
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/20/2024 23:52
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-25 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	139	ug/L	D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-16-0324**  
**24C0209-25 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: HAL	Sampled: 03/05/2024 12:45	Analyzed: 03/20/2024 23:52
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-25 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	8.51	ug/L	D
Lead	7439-92-1	10	0.513	1.00	9.09	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	288	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-16-0324**  
**24C0209-25 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/05/2024 12:45
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:44
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-25 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	818	mg/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-16-0324**  
**24C0209-25 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/05/2024 12:45  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-25  
Preparation Batch: BMC0290 Sample Size: 20 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	50	50	2350	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-17-0324**  
**24C0209-26 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/07/2024 13:40
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 01:19
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-26 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	3.92	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-17-0324**  
**24C0209-26 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/07/2024 13:40	Analyzed: 03/21/2024 20:28
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-26 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	5	0.278	1.00	1.38	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-17-0324**  
**24C0209-26 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: HAL	Sampled: 03/07/2024 13:40	Analyzed: 03/21/2024 01:19
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-26 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	1.33	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-17-0324**  
**24C0209-26 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/07/2024 13:40
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 15:49
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-26 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	7.73	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**P-17-0324**  
**24C0209-26 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/07/2024 13:40  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-26  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	315	mg/L	





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1SDSP-0324**  
**24C0209-27 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/08/2024 10:30
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 01:24
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-27 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	16.5	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1SDSP-0324**  
**24C0209-27 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/08/2024 10:30	Analyzed: 03/21/2024 20:44
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-27 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1SDSP-0324**  
**24C0209-27 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2	Analyst: HAL	Sampled: 03/08/2024 10:30	Analyzed: 03/21/2024 01:24
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-27 B	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1SDSP-0324**  
**24C0209-27 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/08/2024 10:30
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 15:52
Sample Preparation: Preparation Method: TWC EPA 3010A Preparation Batch: BMC0384 Prepared: 03/15/2024	Extract ID: 24C0209-27 B 01
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	5.59	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1SDSP-0324**  
**24C0209-27 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/08/2024 10:30  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-27  
Preparation Batch: BMC0313 Sample Size: 75 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1270	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1DDSP-0324**  
**24C0209-28 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/08/2024 11:30
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 01:29
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-28 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	4.74	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1DDSP-0324**  
**24C0209-28 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/08/2024 11:30	Analyzed: 03/21/2024 20:45
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-28 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1DDSP-0324**  
**24C0209-28 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/08/2024 11:30 Analyzed: 03/21/2024 01:29
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-28 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	0.132	ug/L	J, D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1DDSP-0324**  
**24C0209-28 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/08/2024 11:30
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 15:56
Sample Preparation: Preparation Method: TWC EPA 3010A Preparation Batch: BMC0384 Prepared: 03/15/2024	Extract ID: 24C0209-28 B 01
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	3.99	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-1DDSP-0324**  
**24C0209-28 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11	Sampled: 03/08/2024 11:30
Instrument: BAL2 Analyst: CDE	Analyzed: 03/13/2024 12:24
Sample Preparation: Preparation Method: No Prep Wet Chem	Extract ID: 24C0209-28
Preparation Batch: BMC0313	Sample Size: 75 mL
Prepared: 03/13/2024	Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	767	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-5DSP-0324**  
**24C0209-29 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/08/2024 09:25
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 01:52
Sample Preparation: Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Extract ID: 24C0209-29 B
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	4.95	ug/L	D



WSP USA, Inc.  
840 HOWE STREET, #1000  
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale  
Project Number: GL152030402.001  
Project Manager: Accounts Payable

**Reported:**  
02-Apr-2024 10:59

**MWB-5DSP-0324**  
**24C0209-29 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8		Sampled: 03/08/2024 09:25
Instrument: ICPMS1 Analyst: MCB		Analyzed: 03/21/2024 20:47
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-29 B 02
	Preparation Batch: BMC0476	Sample Size: 25 mL
	Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-5DSP-0324**  
**24C0209-29 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/08/2024 09:25
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Analyzed: 03/21/2024 01:52
	Sample Size: 25 mL Final Volume: 25 mL	Extract ID: 24C0209-29 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-5DSP-0324**  
**24C0209-29 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/08/2024 09:25
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 15:59
Sample Preparation: Preparation Method: TWC EPA 3010A Preparation Batch: BMC0384 Prepared: 03/15/2024	Extract ID: 24C0209-29 B 01
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	2.40	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-5DSP-0324**  
**24C0209-29 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/08/2024 09:25  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-29  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	500	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-6DSP-0324**  
**24C0209-30 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/08/2024 12:25
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 01:56
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-30 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.966	ug/L	D





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-6DSP-0324**  
**24C0209-30 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Sampled: 03/08/2024 12:25
Instrument: ICPMS1 Analyst: MCB	Analyzed: 03/21/2024 20:53
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-30 B 02
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-6DSP-0324**  
**24C0209-30 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/08/2024 12:25 Analyzed: 03/21/2024 01:56
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-30 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-6DSP-0324**  
**24C0209-30 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/08/2024 12:25
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:30
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-30 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	1.07	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MWB-6DSP-0324**  
**24C0209-30 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/08/2024 12:25  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-30  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	264	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-55A-0324**  
**24C0209-31 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/08/2024 12:30
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 02:02
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-31 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.900	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-55A-0324**  
**24C0209-31 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/08/2024 12:30	Analyzed: 03/21/2024 20:50
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-31 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-55A-0324**  
**24C0209-31 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/08/2024 12:30 Analyzed: 03/21/2024 02:02
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-31 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-55A-0324**  
**24C0209-31 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/08/2024 12:30
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:33
Sample Preparation: Preparation Method: TWC EPA 3010A Preparation Batch: BMC0384 Prepared: 03/15/2024	Extract ID: 24C0209-31 B 01
Sample Size: 25 mL Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	1.13	mg/L	





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-55A-0324**  
**24C0209-31 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/08/2024 12:30  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-31  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	255	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Portal-0324**  
**24C0209-32 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/08/2024 13:02
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 02:11
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-32 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	5.51	ug/L	D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Portal-0324**  
**24C0209-32 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS1	Analyst: MCB	Sampled: 03/08/2024 13:02	Analyzed: 03/21/2024 20:51
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMC0476	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 03/19/2024		Extract ID: 24C0209-32 B 02	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	10	0.556	2.00	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Portal-0324**  
**24C0209-32 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Sampled: 03/08/2024 13:02
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 02:11
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-32 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Portal-0324**  
**24C0209-32 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/08/2024 13:02
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:36
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-32 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	22.8	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Portal-0324**  
**24C0209-32 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/08/2024 13:02  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-32  
Preparation Batch: BMC0313 Sample Size: 100 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	359	mg/L	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-1-0324**  
**24C0209-33 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/05/2024 15:25
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 02:16
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-33 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	0.0920	ug/L	J, D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-1-0324**  
**24C0209-33 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/05/2024 15:25 Analyzed: 03/21/2024 02:16
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-33 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	ND	ug/L	U





WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-1-0324**  
**24C0209-33 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/05/2024 15:25
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:39
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-33 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	ND	mg/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-1-0324**  
**24C0209-33 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/05/2024 15:25  
Instrument: BAL2 Analyst: CDE Analyzed: 03/12/2024 19:19

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-33  
Preparation Batch: BMC0290 Sample Size: 200 mL  
Prepared: 03/12/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	ND	mg/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-2-0324**  
**24C0209-34 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8 UCT-KED	Sampled: 03/08/2024 10:35
Instrument: ICPMS2 Analyst: HAL	Analyzed: 03/21/2024 02:22
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 24C0209-34 B
Preparation Batch: BMC0476	Sample Size: 25 mL
Prepared: 03/19/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-2-0324**  
**24C0209-34 (Water)**

**Metals and Metallic Compounds**

Method: EPA 200.8	Instrument: ICPMS2 Analyst: HAL	Sampled: 03/08/2024 10:35 Analyzed: 03/21/2024 02:22
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BMC0476 Prepared: 03/19/2024	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 24C0209-34 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	ND	ug/L	U
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.111	0.400	ND	ug/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-2-0324**  
**24C0209-34 (Water)**

**Metals and Metallic Compounds**

Method: EPA 6010D	Sampled: 03/08/2024 10:35
Instrument: ICP3 Analyst: SH	Analyzed: 03/21/2024 17:41
Sample Preparation: Preparation Method: TWC EPA 3010A	Extract ID: 24C0209-34 B 01
Preparation Batch: BMC0384	Sample Size: 25 mL
Prepared: 03/15/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	ND	mg/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**MW-99-2-0324**  
**24C0209-34 (Water)**

**Wet Chemistry**

Method: SM 2540 C-11 Sampled: 03/08/2024 10:35  
Instrument: BAL2 Analyst: CDE Analyzed: 03/13/2024 12:24

Sample Preparation: Preparation Method: No Prep Wet Chem Extract ID: 24C0209-34  
Preparation Batch: BMC0313 Sample Size: 200 mL  
Prepared: 03/13/2024 Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	ND	mg/L	U



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BMC0305 - EPA 6010D**

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0305-BLK1)</b>						Prepared: 13-Mar-2024 Analyzed: 18-Mar-2024 13:52					
Potassium	ND	0.107	0.500	mg/L							U
<b>LCS (BMC0305-BS1)</b>						Prepared: 13-Mar-2024 Analyzed: 18-Mar-2024 13:54					
Potassium	10.3	0.107	0.500	mg/L	10.0		103	80-120			
<b>Duplicate (BMC0305-DUP1)</b>						Source: 24C0209-05 Prepared: 13-Mar-2024 Analyzed: 18-Mar-2024 14:46					
Potassium	82.1	0.107	0.500	mg/L		76.8			6.66	20	
<b>Matrix Spike (BMC0305-MS1)</b>						Source: 24C0209-05 Prepared: 13-Mar-2024 Analyzed: 18-Mar-2024 14:49					
Potassium	90.6	0.107	0.500	mg/L	10.0	76.8	138	75-125			HC

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BMC0305-MSD1)</b>						Source: 24C0209-05 Prepared: 13-Mar-2024 Analyzed: 18-Mar-2024 14:52					
Potassium	89.0	0.107	0.500	mg/L	10.0	76.8	122	75-125	1.73	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BMC0384 - EPA 6010D**

Instrument: ICP3 Analyst: SH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0384-BLK1)</b>						Prepared: 15-Mar-2024 Analyzed: 21-Mar-2024 15:14					
Potassium	ND	0.107	0.500	mg/L							U
<b>LCS (BMC0384-BS1)</b>						Prepared: 15-Mar-2024 Analyzed: 21-Mar-2024 16:52					
Potassium	9.86	0.107	0.500	mg/L	10.0		98.6	80-120			
<b>Duplicate (BMC0384-DUP1)</b>						Source: 24C0209-01 Prepared: 15-Mar-2024 Analyzed: 21-Mar-2024 17:10					
Potassium	488	0.214	1.00	mg/L		471			3.46	20	D
<b>Matrix Spike (BMC0384-MS1)</b>						Source: 24C0209-01 Prepared: 15-Mar-2024 Analyzed: 21-Mar-2024 17:13					
Potassium	491	0.214	1.00	mg/L	10.0	471	195	75-125			HC, D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BMC0384-MSD1)</b>						Source: 24C0209-01 Prepared: 15-Mar-2024 Analyzed: 21-Mar-2024 17:16					
Potassium	486	0.214	1.00	mg/L	10.0	471	151	75-125	0.90	20	HC, D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.





WSP USA, Inc.  
840 HOWE STREET, #1000  
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale  
Project Number: GL152030402.001  
Project Manager: Accounts Payable

**Reported:**  
02-Apr-2024 10:59

**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BMC0447 - EPA 200.8**

Instrument: ICPMS2 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0447-BLK1)</b>						Prepared: 18-Mar-2024 Analyzed: 18-Mar-2024 19:03						
Antimony	121	ND	0.101	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Vanadium	51a	ND	0.0556	0.200	ug/L							U
Arsenic	75a	0.123	0.0373	0.200	ug/L							J
<b>Blank (BMC0447-BLK2)</b>						Prepared: 18-Mar-2024 Analyzed: 20-Mar-2024 18:19						
Arsenic	75a	ND	0.0373	0.200	ug/L							U
<b>LCS (BMC0447-BS1)</b>						Prepared: 18-Mar-2024 Analyzed: 18-Mar-2024 19:08						
Antimony	121	26.9	0.101	0.200	ug/L	25.0		107	80-120			
Lead	208	28.3	0.0513	0.100	ug/L	25.0		113	80-120			
Vanadium	51a	27.1	0.0556	0.200	ug/L	25.0		108	80-120			
Arsenic	75a	27.3	0.0373	0.200	ug/L	25.0		109	80-120			
<b>Duplicate (BMC0447-DUP1)</b>						Source: 24C0209-05 Prepared: 18-Mar-2024 Analyzed: 18-Mar-2024 22:42						
Antimony	121	5.39	0.202	0.400	ug/L		5.28			2.06	20	D
Lead	208	2.29	0.103	0.200	ug/L		2.23			2.66	20	D
Vanadium	51a	1.17	0.111	0.400	ug/L		1.16			0.52	20	D
Arsenic	75a	4.78	0.0746	0.400	ug/L		4.74			0.80	20	D
<b>Matrix Spike (BMC0447-MS1)</b>						Source: 24C0209-05 Prepared: 18-Mar-2024 Analyzed: 18-Mar-2024 22:48						
Antimony	121	31.5	0.202	0.400	ug/L	25.0	5.28	105	75-125			D
Lead	208	28.7	0.103	0.200	ug/L	25.0	2.23	106	75-125			D
Vanadium	51a	26.2	0.111	0.400	ug/L	25.0	1.16	100	75-125			D
Arsenic	75a	33.4	0.0746	0.400	ug/L	25.0	4.74	115	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
<b>Matrix Spike Dup (BMC0447-MSD1)</b>						Source: 24C0209-05 Prepared: 18-Mar-2024 Analyzed: 18-Mar-2024 22:52						
Antimony	121	31.4	0.202	0.400	ug/L	25.0	5.28	105	75-125	0.12	20	D
Lead	208	27.5	0.103	0.200	ug/L	25.0	2.23	101	75-125	4.17	20	D
Vanadium	51a	25.6	0.111	0.400	ug/L	25.0	1.16	97.9	75-125	1.96	20	D
Arsenic	75a	31.0	0.0746	0.400	ug/L	25.0	4.74	105	75-125	7.50	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												



WSP USA, Inc.  
840 HOWE STREET, #1000  
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale  
Project Number: GL152030402.001  
Project Manager: Accounts Payable

**Reported:**  
02-Apr-2024 10:59

**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds - Quality Control**

**Batch BMC0476 - EPA 200.8**

Instrument: ICPMS2 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0476-BLK1)</b>						Prepared: 19-Mar-2024 Analyzed: 20-Mar-2024 18:05						
Antimony	121	ND	0.101	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Vanadium	51a	ND	0.0556	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
<b>LCS (BMC0476-BS1)</b>						Prepared: 19-Mar-2024 Analyzed: 20-Mar-2024 18:10						
Antimony	121	25.6	0.101	0.200	ug/L	25.0		103	80-120			
Lead	208	28.1	0.0513	0.100	ug/L	25.0		112	80-120			
Vanadium	51a	26.9	0.0556	0.200	ug/L	25.0		107	80-120			
Arsenic	75a	27.2	0.0373	0.200	ug/L	25.0		109	80-120			
<b>Duplicate (BMC0476-DUP1)</b>						Source: 24C0209-17 Prepared: 19-Mar-2024 Analyzed: 21-Mar-2024 00:17						
Antimony	121	6.36	0.202	0.400	ug/L		6.37			0.13	20	D
Lead	208	ND	0.103	0.200	ug/L		ND					U
Vanadium	51a	1.61	0.111	0.400	ug/L		1.62			0.62	20	D
Arsenic	75a	4.17	0.0746	0.400	ug/L		4.28			2.41	20	D
<b>Matrix Spike (BMC0476-MS1)</b>						Source: 24C0209-17 Prepared: 19-Mar-2024 Analyzed: 21-Mar-2024 00:22						
Antimony	121	33.3	0.202	0.400	ug/L	25.0	6.37	108	75-125			D
Lead	208	25.1	0.103	0.200	ug/L	25.0	ND	100	75-125			D
Vanadium	51a	26.0	0.111	0.400	ug/L	25.0	1.62	97.5	75-125			D
Arsenic	75a	32.4	0.0746	0.400	ug/L	25.0	4.28	113	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
<b>Matrix Spike Dup (BMC0476-MSD1)</b>						Source: 24C0209-17 Prepared: 19-Mar-2024 Analyzed: 21-Mar-2024 00:27						
Antimony	121	33.4	0.202	0.400	ug/L	25.0	6.37	108	75-125	0.46	20	D
Lead	208	24.9	0.103	0.200	ug/L	25.0	ND	99.4	75-125	0.91	20	D
Vanadium	51a	26.1	0.111	0.400	ug/L	25.0	1.62	97.9	75-125	0.40	20	D
Arsenic	75a	31.8	0.0746	0.400	ug/L	25.0	4.28	110	75-125	1.91	20	D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												



WSP USA, Inc.  
840 HOWE STREET, #1000  
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale  
Project Number: GL152030402.001  
Project Manager: Accounts Payable

Reported:  
02-Apr-2024 10:59

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BMC0403 - EPA 200.8

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0403-BLK2)</b>						Prepared: 15-Mar-2024 Analyzed: 18-Mar-2024 17:41						
Vanadium, Dissolved	51a	ND	0.0556	0.200	ug/L							U
<b>LCS (BMC0403-BS2)</b>						Prepared: 15-Mar-2024 Analyzed: 18-Mar-2024 17:46						
Vanadium, Dissolved	51a	23.6	0.0556	0.200	ug/L	25.0		94.3	80-120			
<b>Duplicate (BMC0403-DUP2)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 18-Mar-2024 19:48						
Vanadium, Dissolved	51a	2.74	0.111	0.400	ug/L		2.64			3.72	20	D
<b>Matrix Spike (BMC0403-MS2)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 18-Mar-2024 19:52						
Vanadium, Dissolved	51a	26.6	0.111	0.400	ug/L	25.0	2.64	95.9	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BMC0403-MSD2)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 18-Mar-2024 19:57						
Vanadium, Dissolved	51a	26.1	0.111	0.400	ug/L	25.0	2.64	93.8	75-125	2.03	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0403-BLK1)</b>						Prepared: 15-Mar-2024 Analyzed: 15-Mar-2024 16:51						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
<b>LCS (BMC0403-BS1)</b>						Prepared: 15-Mar-2024 Analyzed: 15-Mar-2024 16:56						
Antimony, Dissolved	121	25.3	0.101	0.200	ug/L	25.0		101	80-120			
Lead, Dissolved	208	26.6	0.0513	0.100	ug/L	25.0		106	80-120			
Arsenic, Dissolved	75a	26.1	0.0373	0.200	ug/L	25.0		105	80-120			
<b>Duplicate (BMC0403-DUP1)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 15-Mar-2024 20:49						
Antimony, Dissolved	121	12.7	0.202	0.400	ug/L		12.7			0.38	20	D
Lead, Dissolved	208	ND	0.103	0.200	ug/L		ND					U
Arsenic, Dissolved	75a	21.7	0.0746	0.400	ug/L		21.0			3.48	20	D
<b>Matrix Spike (BMC0403-MS1)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 15-Mar-2024 20:54						
Antimony, Dissolved	121	38.8	0.202	0.400	ug/L	25.0	12.7	104	75-125			D
Lead, Dissolved	208	21.9	0.103	0.200	ug/L	25.0	ND	87.6	75-125			D



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BMC0403 - EPA 200.8 UCT-KED**

Instrument: ICPMS2 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Matrix Spike (BMC0403-MS1)</b>		<b>Source: 24C0209-02</b>		Prepared: 15-Mar-2024		Analyzed: 15-Mar-2024 20:54						
Arsenic, Dissolved	75a	48.7	0.0746	0.400	ug/L	25.0	21.0	111	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

<b>Matrix Spike Dup (BMC0403-MSD1)</b>		<b>Source: 24C0209-02</b>		Prepared: 15-Mar-2024		Analyzed: 15-Mar-2024 20:59						
Antimony, Dissolved	121	38.5	0.202	0.400	ug/L	25.0	12.7	103	75-125	0.82	20	D
Lead, Dissolved	208	21.9	0.103	0.200	ug/L	25.0	ND	87.4	75-125	0.20	20	D
Arsenic, Dissolved	75a	49.9	0.0746	0.400	ug/L	25.0	21.0	116	75-125	2.55	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Analysis by: Analytical Resources, LLC**

**Metals and Metallic Compounds (dissolved) - Quality Control**

**Batch BMC0424 - EPA 6010D**

Instrument: ICP3 Analyst: DOE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0424-BLK1)</b>						Prepared: 15-Mar-2024 Analyzed: 22-Mar-2024 08:49					
Potassium, Dissolved	ND	0.107	0.500	mg/L							U
<b>LCS (BMC0424-BS1)</b>						Prepared: 15-Mar-2024 Analyzed: 22-Mar-2024 08:52					
Potassium, Dissolved	9.46	0.108	0.505	mg/L	10.0		94.6	80-120			
<b>Duplicate (BMC0424-DUP1)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 22-Mar-2024 10:18					
Potassium, Dissolved	472	0.214	1.00	mg/L		460			2.68	20	D
<b>Matrix Spike (BMC0424-MS1)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 22-Mar-2024 10:21					
Potassium, Dissolved	481	0.216	1.01	mg/L	10.0	460	209	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
<b>Matrix Spike Dup (BMC0424-MSD1)</b>						Source: 24C0209-02 Prepared: 15-Mar-2024 Analyzed: 22-Mar-2024 10:24					
Potassium, Dissolved	489	0.216	1.01	mg/L	10.0	460	290	75-125	1.66	20	HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMC0290 - SM 2540 C-11**

Instrument: BAL2 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0290-BLK1)</b>						Prepared: 12-Mar-2024 Analyzed: 12-Mar-2024 19:19					
Dissolved Solids	ND	5	5	mg/L							U
<b>LCS (BMC0290-BS1)</b>						Prepared: 12-Mar-2024 Analyzed: 12-Mar-2024 19:19					
Dissolved Solids	500	10	10	mg/L	500		100	90-110			
<b>Duplicate (BMC0290-DUP1)</b>						Source: 24C0209-05 Prepared: 12-Mar-2024 Analyzed: 12-Mar-2024 19:19					
Dissolved Solids	454	10	10	mg/L		445			2.00	20	



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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**Analysis by: Analytical Resources, LLC**

**Wet Chemistry - Quality Control**

**Batch BMC0313 - SM 2540 C-11**

Instrument: BAL2 Analyst: CDE

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (BMC0313-BLK1)</b>						Prepared: 13-Mar-2024 Analyzed: 13-Mar-2024 12:24					
Dissolved Solids	ND	5	5	mg/L							U
<b>LCS (BMC0313-BS1)</b>						Prepared: 13-Mar-2024 Analyzed: 13-Mar-2024 12:24					
Dissolved Solids	495	10	10	mg/L	500		99.0	90-110			
<b>Duplicate (BMC0313-DUP1)</b>						Source: 24C0209-08 Prepared: 13-Mar-2024 Analyzed: 13-Mar-2024 12:24					
Dissolved Solids	365	10	10	mg/L		359			1.66	20	







WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51a	DoD-ELAP,NELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51a	DoD-ELAP,NELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	DoD-ELAP,NELAP,WADOE
Vanadium-51a	NELAP,DoD-ELAP,WADOE

**EPA 200.8 UCT-KED in Water**

Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

**EPA 6010D in Water**

Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP
Potassium	WADOE,NELAP,DoD-ELAP

**SM 2540 C-11 in Water**



WSP USA, Inc. 840 HOWE STREET, #1000 VANCOUVER BRITISH COLUMBIA, V6Z 2M1	Project: Ravensdale Project Number: GL152030402.001 Project Manager: Accounts Payable	<b>Reported:</b> 02-Apr-2024 10:59
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Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2024
WADOE	WA Dept of Ecology	C558	06/30/2024
WA-DW	Ecology - Drinking Water	C558	06/30/2024



WSP USA, Inc.

840 HOWE STREET, #1000

VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale

Project Number: GL152030402.001

Project Manager: Accounts Payable

Reported:

02-Apr-2024 10:59

### Notes and Definitions

- \* Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- H Hold time violation - Hold time was exceeded.
- HC The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is  $\leq 5$  times the reporting limit and the replicate control limit defaults to +/- RL instead of 20% RPD
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.

**APPENDIX D**

## Sample Integrity Data Sheets

## SAMPLE INTEGRITY DATA SHEET

**ImPlant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-1LDA - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 4, 2024 **Time** 14:50

**Media** Groundwater **Station** MWB-1LDA

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 21.68 ft BTOC (March 4, 2024 1:42 PM); Well total depth at 135' BGS

Screen Interval: 115'- 135' BGS

Pump Intake: ~ 125' BGS

**Sample Description** Clean, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3



## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** Infiltration Ponds / MW-35A - 0324

**Sampling Location** Surface Water Monitoring Point

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 4, 2024 **Time** 13:05

**Media** Surface Water **Station** Infiltration Ponds / MW-35A

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

**Sample Description** Slight tan tin and odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
2-1000 mL	Total Dissolved Solids	HDPE	N/A
2-500 mL	Total Metals	HDPE	HNO3
2-500 mL	Dissolved Metals	HDPE	HNO3 (Field Filtered)

# SAMPLE INTEGRITY DATA SHEET

Well ID Infiltration Ponds / MW-35A

Date 03/04/2024

Time Begin Purge \_\_\_\_\_

Time Collect Sample 13:05

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
-	13:00	8.17	1,477	6.8	7.24	237.4	9.5

Comments:

Flow Rate: \_\_\_\_\_ mL/min

Duplicate collected at 13:10

Sampler  \_\_\_\_\_

Date March 4, 2024

Supervisor \_\_\_\_\_

Date \_\_\_\_\_



## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-5A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 4, 2024 **Time** 12:50

**Media** Groundwater **Station** MW-5A

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 24.62 ft BTOC (March 4, 2024 12:01 PM); Well total depth at 40' BGS

Screen Interval: 25'- 40' BGS

Pump Intake: ~ 38' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID     MW-5A    

Date     03/04/2024    

Time Begin Purge     12:02    

Time Collect Sample     12:50    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
24.62	12:10	7.24	1,039	8.5	7.24	238.0	1.39
24.61	12:15	7.26	1,496	8.3	6.39	237.9	0.91
24.62	12:20	7.33	1,418	8.2	6.13	236.4	0.83
24.62	12:25	7.31	1,331	8.2	5.9	235.4	0.89
24.62	12:30	7.32	1,279	8.2	5.8	235.1	1.11
24.61	12:35	7.34	1,242	8.3	5.84	235.0	0.81
24.61	12:40	7.35	1,210	8.3	5.94	235.5	0.94
24.61	12:45	7.35	1,201	8.4	6.01	236.0	1.01
24.61	12:50	7.35	1,191	8.4	6.08	237	0.63

Comments:

Flow Rate:     250     mL/min

Sampler  \_\_\_\_\_

Date     March 4, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-6A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 4, 2024 **Time** 11:40

**Media** Groundwater **Station** MW-6A

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 22.36 ft BTOC (March 4, 2024 11:06 AM); Well total depth at 39' BGS

Screen Interval: 24'- 39' BGS

Pump Intake: ~ 36' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID     MW-6A    

Date     03/04/2024    

Time Begin Purge     11:07    

Time Collect Sample     11:40    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
22.4	11:15	7.93	1,249	7.4	8.44	231.4	1.02
22.43	11:20	7.94	1,296	7.4	7.99	229.8	0.78
22.39	11:25	7.76	1,244	7.3	7.82	229.6	0.75
22.36	11:30	7.58	1,218	7.3	7.64	231.4	0.60
22.39	11:35	7.58	1,214	7.3	7.56	231.9	0.69
22.36	11:40	7.59	1,215	7.3	7.46	232.5	0.84

Comments:

Flow Rate:     425     mL/min

Sampler  \_\_\_\_\_

Date     March 4, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-2A / MW-45A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 4, 2024 **Time** 10:45

**Media** Groundwater **Station** MW-2A

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 20.65 ft BTOC (March 4, 2024 10:16 AM); Well total depth at 40' BGS

Screen Interval: 24'- 40' BGS

Pump Intake: ~ 30' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
2-1000 mL	Total Dissolved Solids	HDPE	N/A
2-500 mL	Total Metals	HDPE	HNO3



# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-1A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 4, 2024 **Time** 09:40

**Media** Groundwater **Station** MW-1A

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 26.79 ft BTOC (March 4, 2024 9:13 AM); Well total depth at 44' BGS

Screen Interval: 28' - 43' BGS

Pump Intake: ~ 39' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID     MW-1A    

Date     03/04/2024    

Time Begin Purge     09:14    

Time Collect Sample     09:40    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
26.79	09:20	6.53	499	8.4	8.58	185.6	3.91
26.79	09:25	6.5	453.2	8.4	8.47	188.4	0.91
26.79	09:30	6.52	447.8	8.4	8.39	190.1	0.56
26.79	09:35	6.54	442	8.3	8.3	192.9	0.54
26.79	09:40	6.56	437.2	8.4	8.26	194.8	0.42

Comments:

Flow Rate:     500     mL/min

Sampler  \_\_\_\_\_

Date     March 4, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_



# SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale Project No. 152030402

Site Location Ravensdale, WA

Sample ID MW-99-1 - 0324

Sampling Location QA/QC Blank

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Grab

Date March 5, 2024 Time 15:25

Media Other Station MW-3A

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (); Well total depth at

Screen Interval:

Pump Intake:

Sample Description Poured lab provided DI water over the end of the decontaminated water level tape into sample bottles

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID     MW-99-1    

Date     03/05/2024    

Time Begin Purge     n/a    

Time Collect Sample     15:25    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
-	-	-	-	-	-	-	-

Comments:

Flow Rate: \_\_\_\_\_ mL/min

Sampler  \_\_\_\_\_

Date     March 5, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** Still Well - 0324

**Sampling Location** Surface Water Monitoring Point

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 5, 2024 **Time** 14:10

**Media** Surface Water **Station** Still Well

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 0.00 ft BTOC (March 5, 2024 2:10 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

**Sample Description** Slight yellow tint, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID Still Well

Date 03/05/2024

Time Begin Purge 14:10

Time Collect Sample 14:10

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
0.00	14:10	12.39	7,467	8.3	8.51	-23	9.33

Comments:

Flow Rate: \_\_\_\_\_ mL/min

Sampler 

Date March 5, 2024

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** South Pond - 0324

**Sampling Location** Surface Water Monitoring Point

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 5, 2024 **Time** 13:40

**Media** Surface Water **Station** South Pond

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 0.19 ft BTOC (March 5, 2024 1:40 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

**Sample Description** Brown tint, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID South Pond

Date 03/05/2024

Time Begin Purge 13:40

Time Collect Sample 13:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
0.19	13:40	9.9	2,327	10.5	7.99	-12.1	6.72

Comments:

Flow Rate: \_\_\_\_\_ mL/min

Sampler 

Date March 5, 2024

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** P-16 - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 5, 2024 **Time** 12:45

**Media** Groundwater **Station** P-16

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 2.95 ft BTOC (March 5, 2024 11:18 AM); Well total depth at 10' BGS

Screen Interval: 5'- 10' BGS

Pump Intake: ~ 8' BGS

**Sample Description** Dark brown tint, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3





## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-10A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 5, 2024 **Time** 11:00

**Media** Groundwater **Station** MW-10A

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 5.33 ft BTOC (March 5, 2024 10:21 AM); Well total depth at 29' BGS

Screen Interval: 9' - 29' BGS

Pump Intake: ~ 25' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3



## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** Weir or Constructed Wetlands - 0324

**Sampling Location** Surface Water Monitoring Point

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Grab

**Date** March 5, 2024 **Time** 09:50

**Media** Surface Water **Station** Weir or Constructed Wetlands

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

**SWL:** Depth to water at ft BTOC (); Well total depth at N/A

**Screen Interval:** N/A

**Pump Intake:** N/A

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
3-1000 mL	Total Dissolved Solids	HDPE	N/A
3-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID \_\_\_\_\_ Weir or Constructed Wetlands \_\_\_\_\_

Date 03/05/2024

Time Begin Purge 09:50

Time Collect Sample 09:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	09:50	7.09	673	4.1	7.31	117.1	9.45

Comments:

Flow Rate: 6000 mL/min

Sampler  \_\_\_\_\_

Date March 5, 2024

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-3A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 5, 2024 **Time** 09:40

**Media** Groundwater **Station** MW-3A

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 5.05 ft BTOC (March 5, 2024 9:03 AM); Well total depth at 20' BGS

Screen Interval: 4' - 20' BGS

Pump Intake: ~ 12' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID     MW-3A    

Date     03/05/2024    

Time Begin Purge     09:05    

Time Collect Sample     09:40    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.18	09:10	6.56	816	7.9	8.32	115.2	34.3
5.17	09:15	6.6	799	7.4	7.39	97.8	24.9
5.17	09:20	6.68	715	7.3	6.77	89.1	13.4
5.16	09:25	6.71	685	7.3	6.52	88.9	8.85
5.15	09:30	6.72	631	7.1	6.08	91.4	10.7
5.16	09:35	6.72	625	7.2	5.88	92.2	6.5
5.16	09:40	6.74	620	7.5	5.62	93.3	4.58

Comments:

Flow Rate:     300     mL/min

Sampler  \_\_\_\_\_

Date     March 5, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-2DSP - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Disposable Bailer

**Date** March 6, 2024 **Time** 14:45

**Media** Groundwater **Station** MWB-2DSP

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 192.55 ft BTOC (March 6, 2024 2:45 PM); Well total depth at 258' BGS

Screen Interval: 236'- 256' BGS

Pump Intake: N/A

**Sample Description** \_\_\_\_\_

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
-	-	-	-





# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** Interceptor Trench - 0324

**Sampling Location** Surface Water Monitoring Point

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Grab

**Date** March 6, 2024 **Time** 14:30

**Media** Surface Water **Station** Interceptor Trench

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A



## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** P-15 - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 6, 2024 **Time** 14:00

**Media** Groundwater **Station** P-15

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 16.76 ft BTOC (March 6, 2024 1:07 PM); Well total depth at 34' BGS

Screen Interval: 24'- 34' BGS

Pump Intake: ~ 30' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID     P-15    

Date   03/06/2024  

Time Begin Purge   13:17  

Time Collect Sample   14:00  

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
17.27	13:25	12.7	7,286	11.1	6.58	-34.8	1.92
17.31	13:30	12.73	8,402	11.2	6.06	-55.4	1.29
17.33	13:35	12.78	9,378	11.1	5.51	-75.1	1.14
17.41	13:40	12.8	9,888	11.2	5.22	-84.2	0.45
17.34	13:45	12.82	10,430	11.2	4.85	-96.4	0.48
17.39	13:50	12.87	11,009	11.2	4.37	-112.1	0.57
17.36	13:55	12.88	11,127	11.2	4.27	-115.3	0.8

Comments:

Flow Rate:   300   mL/min

Sampler 

Date   March 6, 2024  

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-2LDA - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 6, 2024 **Time** 12:50

**Media** Groundwater **Station** MWB-2LDA

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 34.6 ft BTOC (March 6, 2024 11:57 PM); Well total depth at 125' BGS

Screen Interval: 110'- 125' BGS

Pump Intake: ~ 120' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3



## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-7A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 6, 2024 **Time** 10:55

**Media** Groundwater **Station** MW-7A

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 6.52 ft BTOC (March 6, 2024 10:27 AM); Well total depth at 20' BGS

Screen Interval: 10' - 20' BGS

Pump Intake: ~ 17' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID     MW-7A    

Date     03/06/2024    

Time Begin Purge     10:30    

Time Collect Sample     10:55    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
6.52	10:35	7.19	794	6.5	9.21	250.8	9.46
6.53	10:40	7.16	832	6.5	8.51	255	3.87
6.52	10:45	7.2	849	6.4	8.02	255.4	2.16
6.52	10:50	7.22	850	6.5	7.66	254.7	0.91
6.52	10:55	7.24	850	6.4	7.35	254.1	0.66

Comments:

Flow Rate:     400     mL/min

Sampler  \_\_\_\_\_

Date     March 6, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_



## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-8A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 6, 2024 **Time** 10:05

**Media** Groundwater **Station** MW-8A

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 15.41 ft BTOC (March 6, 2024 9:39 AM); Well total depth at 26' BGS

Screen Interval: 16' - 26' BGS

Pump Intake: ~ 22' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID     MW-8A    

Date     03/06/2024    

Time Begin Purge     09:41    

Time Collect Sample     10:05    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
15.42	9:45	7.03	955	8.3	9.22	316	1.25
15.42	9:50	7.06	933	8.3	8.74	309.6	1.43
15.42	9:55	7.05	930	8.3	8.38	307.1	0.78
15.42	10:00	7.06	926	8.3	8.1	304.5	0.74

Comments:

Flow Rate:     400     mL/min

Sampler  \_\_\_\_\_

Date     March 6, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-9A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 7, 2024 **Time** 15:25

**Media** Groundwater **Station** MW-9A

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 2.58 ft BTOC (March 7, 2024 2:57 PM); Well total depth at 13' BGS

Screen Interval: 8' - 13' BGS

Pump Intake: ~ 10' BGS

**Sample Description** No color, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID     MW-9A    

Date     03/07/2024    

Time Begin Purge     14:59    

Time Collect Sample     15:25    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
4.57	15:05	6.95	607	7.6	6.99	178	1.84
5.6	15:10	6.93	610	7.6	6.79	181.3	1.51
6.67	15:15	6.9	610	7.5	6.68	185	1.52
7.14	15:20	6.89	610	7.6	6.61	186.2	1.46

Comments:

Flow Rate:     200     mL/min

Sampler 

Date     March 7, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MW-4A - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 7, 2024 **Time** 14:45

**Media** Groundwater **Station** MW-4A

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 3.72 ft BTOC (March 7, 2024 1:52 PM); Well total depth at 20' BGS

Screen Interval: 5' - 20' BGS

Pump Intake: ~ 12' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3



# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** P-17 - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 7, 2024 **Time** 13:40

**Media** Groundwater **Station** P-17

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 4.8 ft BTOC (March 7, 2024 12:48 PM); Well total depth at 13' BGS

Screen Interval: 8'- 13' BGS

Pump Intake: ~ 10' BGS

**Sample Description** \_\_\_\_\_

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID     P-17    

Date     03/07/2024    

Time Begin Purge     12:49    

Time Collect Sample     13:40    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.85	12:55	6.35	865	8.3	6.75	-19.1	119
5.95	13:00	6.36	804	8.2	5.59	-21.4	58.9
5.89	13:05	6.4	808	8.3	42.7	-27.3	30.5
5.84	13:10	6.43	796	8.3	4.54	-30	19.2
5.89	13:15	6.44	789	8.3	4.23	-32.2	16
5.89	13:20	6.46	783	8.4	3.99	-33.7	16.3
5.94	13:25	6.47	781	8.4	3.8	-35.2	12.4
5.91	13:30	6.48	771	8.4	3.64	-36.1	8.31
5.9	13:33	6.48	770	8.4	3.56	-37.2	7.6
5.91	13:36	6.5	761	8.5	3.46	-38.2	6.54

Comments:

Flow Rate:     400     mL/min

Sampler  \_\_\_\_\_

Date     March 7, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_



## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-3LDA - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 7, 2024 **Time** 12:35

**Media** Groundwater **Station** MWB-3LDA

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 0.19 ft BTOC (March 7, 2024 11:20 AM); Well total depth at 145' BGS

Screen Interval: 125'- 145' BGS

Pump Intake: ~ 135' BGS

**Sample Description** Clear,no odor,no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID           MWB-3LDA          

Date           03/07/2024          

Time Begin Purge           11:23          

Time Collect Sample           12:35          

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
4.48	11:30	7.35	314.4	10.5	619	-76.3	5.85
5.43	11:35	7.16	298.2	10.2	5.42	-61	4.20
7.52	11:40	7.11	284.4	10.3	4.91	-58.3	4.82
9.25	11:45	7.05	276.4	10.5	4.43	-55.7	5.48
10.81	11:50	7.02	281.3	10.6	4.14	-48.1	6.15
12.1	11:55	6.99	272.9	10.6	3.9	-31.3	4.25
12.86	12:00	6.99	273.6	10.5	3.81	-18	3.09
13.02	12:05	6.98	277	10.3	3.7	-14.9	1.54
12.29	12:10	6.98	285.5	10.1	3.57	-16.8	1.14
10.73	12:15	6.98	298.3	9.8	3.44	-16.9	1.27
10.22	12:20	6.96	277.3	9.8	3.37	-17	.92
11.64	12:25	6.94	272.8	10.8	3.21	-26.4	.78
12.72	12:28	6.93	274.4	10.8	3.13	-29.6	1.03
13.59	12:31	6.93	272.7	10.8	3.09	-27.9	1.15

Comments:

Flow Rate:           400           mL/min

Sampler  \_\_\_\_\_

Date           March 7, 2024          

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** P-14 - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 7, 2024 **Time** 10:50

**Media** Groundwater **Station** P-14

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 27.82 ft BTOC (March 7, 2024 9:45 AM); Well total depth at 50' BGS

Screen Interval: 40'- 50' BGS

Pump Intake: ~ 45' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID     P-14    

Date     03/07/2024    

Time Begin Purge     09:45    

Time Collect Sample     10:50    

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
28.14	9:50	12.92	15,177	12.5	8.36	4.4	3.10
28.19	9:55	12.98	18,064	12.2	6.59	-43.8	1.15
28.16	10:00	13.02	19,258	12.2	6.28	-57.8	0.80
28.15	10:05	13.05	20,120	12.1	5.83	-74.9	0.65
28.19	10:10	13.1	21,390	12.1	5.28	-100.4	0.64
28.25	10:15	13.3	22,356	12.2	4.76	-121.6	0.47
28.25	10:20	13.14	22,623	12.2	4.58	-130	0.90
28.26	10:25	13.16	22,936	12.1	4.34	-142.6	0.51
28.17	10:30	13.17	23,146	12.1	4.12	-151.3	0.45
28.34	10:35	13.17	23,356	12.2	3.95	-159.8	0.41
28.22	10:40	13.18	23,696	12.1	3.74	-168.8	0.46
28.36	10:45	13.19	23,787	12.1	3.62	-172.8	0.33
28.34	10:48	13.19	23,887	12.1	3.5	-177.6	0.38

Comments:

Flow Rate:     300     mL/min

Sampler  \_\_\_\_\_

Date     March 7, 2024    

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

Plant/Site     Ravensdale    

Project No.     152030402

# SAMPLE INTEGRITY DATA SHEET

**Site Location** Ravensdale, WA

**Sample ID** Portal - 0324

**Sampling Location** Surface Water Monitoring Point

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Peristaltic Pump

**Date** March 8, 2024 **Time** 13:02

**Media** Surface Water **Station** Portal

**Sample Type:** **grab** time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

**SWL:** Depth to water at ft BTOC (March 8, 2024 1:02 PM); Well total depth at N/A

**Screen Interval:** N/A

**Pump Intake:** N/A

**Sample Description** Orange tint, bio sheen , slight odor

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Dissolved Metals	HDPE	HNO3

# SAMPLE INTEGRITY DATA SHEET

Well ID \_\_\_\_\_ Portal \_\_\_\_\_

Date 03/08/2024

Time Begin Purge 13:02

Time Collect Sample 13:02

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	13:02	6.83	470.6	10.5	8.59	84.0	7.64

Comments:

Flow Rate: n/a mL/min

Sampler  \_\_\_\_\_

Date March 8, 2024

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

# SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale Project No. 152030402

Site Location Ravensdale, WA

Sample ID MWB-6DSP / MW-55A - 0324

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Bladder Pump (dedicated)

Date March 8, 2024 Time 12:25

Media Groundwater Station MWB-6DSP / MW-55A

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 18.03 ft BTOC (March 8, 2024 11:53 AM); Well total depth at 195' BGS

Screen Interval: 120'- 195' BGS

Pump Intake: ~ 170' BGS

Sample Description Clear, no odor, no sheen

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
2-1000 mL	Total Dissolved Solids	HDPE	N/A
2-500 mL	Total Metals	HDPE	HNO3





## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-1DDSP - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 8, 2024 **Time** 11:30

**Media** Groundwater **Station** MWB-1DDSP

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 47.72 ft BTOC (March 8, 2024 10:43 AM); Well total depth at 265' BGS

Screen Interval: 255'- 265' BGS

Pump Intake: ~ 260' BGS

**Sample Description** Clear, no sheen, no odor

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

## SAMPLE INTEGRITY DATA SHEET

Well ID           MWB-1DDSP          

Date           03/08/2024          

Time Begin Purge           10:45          

Time Collect Sample           11:30          

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
49.59	10:50	7.84	708	10.1	8.17	55.5	2.96
51.95	10:55	7.18	762	11.2	6.98	-25	3.41
55.34	11:00	7.18	775	11.1	6	-41	2.56
58.27	11:05	7.18	773	11.1	5.36	-60.3	1.67
60.69	11:10	7.18	768	11.1	5.05	-70.5	.62
63.31	11:15	7.18	762	11.1	4.76	-81.9	.96
65.86	11:20	7.19	757	11.1	4.5	-90.6	.96
68.67	11:25	7.19	752	11	4.33	-95.7	1.62
71.12	11:30	7.19	746	11	4.16	-99.6	1.62

Comments:

Flow Rate:           400           mL/min

Sampler  \_\_\_\_\_

Date           March 8, 2024          

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-1SDSP - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 8, 2024 **Time** 10:30

**Media** Groundwater **Station** MWB-1SDSP

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 33.71 ft BTOC (March 8, 2024 9:55 AM); Well total depth at 160' BGS

Screen Interval: 73'- 83' BGS

Pump Intake: ~ 80' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3

### SAMPLE INTEGRITY DATA SHEET

Well ID MWB-1SDSP

Date 03/08/2024

Time Begin Purge 09:56

Time Collect Sample 10:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
35.94	10:00	6.84	1,034	10.8	8.41	64.5	1.86
37.51	10:05	6.8	1,067	11	7.6	28.2	1.57
40.67	10:10	6.8	1,075	11	6.59	16.2	0.99
42.72	10:15	6.8	1,065	11	6.06	12.6	2.68
46.28	10:20	6.81	1,052	11	5.54	14.2	2.18
48.2	10:25	6.8	1,043	11	5.22	8.2	1.22
50.55	10:30	6.81	1,032	11	4.94	4.9	2.34

Comments:

Flow Rate: 350 mL/min

Sampler 

Date March 8, 2024

Supervisor \_\_\_\_\_

Date \_\_\_\_\_

## SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-4DSP - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Disposable Bailer

**Date** March 8, 2024 **Time** 09:45

**Media** Groundwater **Station** MWB-4DSP

**Sample Type:**            grab    time composite    space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 15.77 ft BTOC (March 8, 2024 9:45 AM); Well total depth at 42.8' BGS

Screen Interval: 25'- 36' BGS

Pump Intake: N/A

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
-	-	-	-

# SAMPLE INTEGRITY DATA SHEET

Well ID           MWB-4DSP          

Date           3/8/2024          

Time Begin Purge           09:45          

Time Collect Sample                           

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
15.77	09:45	7.82	558	10.9	8.79	90.8	0.74

Comments:

Flow Rate:            mL/min

No sample taken, measured field parameters only

Sampler 

Date           March 8, 2024          

Supervisor   

Date

# SAMPLE INTEGRITY DATA SHEET

**Plant/Site** Ravensdale **Project No.** 152030402

**Site Location** Ravensdale, WA

**Sample ID** MWB-5DSP - 0324

**Sampling Location** Monitoring Well

**Technical Procedure Reference(s)** Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

**Type of Sampler** Bladder Pump (dedicated)

**Date** March 8, 2024 **Time** 09:25

**Media** Groundwater **Station** MWB-5DSP

**Sample Type:** grab time composite space composite

**Sample Acquisition Measurements** (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 17.79 ft BTOC (March 8, 2024 8:32 AM); Well total depth at 83' BGS

Screen Interval: 73'- 83' BGS

Pump Intake: ~ 80' BGS

**Sample Description** Clear, no odor, no sheen

**Field Measurements on Sample** (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-1000 mL	Total Dissolved Solids	HDPE	N/A
1-500 mL	Total Metals	HDPE	HNO3





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