



REPORT

QUARTERLY MONITORING REPORT FOURTH QUARTER 2024 RESERVE SILICA RECLAMATION SITE

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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 fourth quarter of 2024. The Site is located at 26000 Black Diamond Ravensdale 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. Groundwater and surface water 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 fourth quarter monitoring event was conducted in December 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 Black Diamond Ravensdale 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 Interim Remedial Actions

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 (CO₂) 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 monitoring wells were installed near the LDA in July 2005 and are monitored to assess the shallow 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. The Still Well is a 2-inch-diameter flush-mount well located within the high pH seepage zone west of the LDA.

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.

The LDA surface water sampling locations evaluate the high pH seepage that occurs 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 from the southern and southeast end of the LDA. The interceptor trench is approximately 220 feet and 20 feet, it is filled with gravel with a perforated drainage pipe in the bottom that discharges from the hillside to the south of 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 shallow monitoring wells at the Site during the period of December 9 to 12, 2024. Table 1 presents depth to water measurements and elevations. Groundwater elevation contour map is provided in Figure 3.

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 December 9 to 12, 2024, WSP sampled groundwater from shallow 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-10A, and Still Well).

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, and MW-10A 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.
- Grab water sample was collected from the Still Well using dedicated sample tubing connected to a peristaltic pump. Field parameters of pH, conductivity, temperature, DO, ORP, and turbidity were measured and recorded at the time of sample collection.
- 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 is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2. To meet this requirement, the pH of the LDA groundwater samples collected for metals analysis was checked at the time of sample receipt at the laboratory and additional nitric acid was added until the pH was less than 2 if necessary.

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 December 9, 2024, WSP collected samples at the South Pond and Weir surface water monitoring locations. On December 11, 2024, WSP collected a sample from the Infiltration Ponds surface water monitoring location. 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 the LDA surface water samples is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2. To meet this requirement, the pH of the LDA surface water samples collected for metals analysis was checked at the time of sample receipt at the laboratory and additional nitric acid was added until the pH was less than 2 if necessary.

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 LDA Interceptor Trench Sampling

On December 9, 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 3.

5.0 RESULTS

Analytical results from the December 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 start-up operations 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.

Ecology's Water Quality Program has indicated that discharges from the treatment system to the Infiltration Ponds should be regulated under an individual State Waste Discharge Permit (SWDP). Reserve Silica submitted an application to obtain a SWDP in December 2024. State Waste Discharge Permit No. ST0501373 was issued as a temporary permit effective February 14, 2025. Ecology anticipates finalizing the State Waste Discharge Permit in the summer of 2025.

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 (CO₂) sparge unit, which continuously monitors the water pH and activates CO₂ sparging when the water pH exceeds 8.5. CO₂ 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 CO₂ 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. Monitoring of the metals concentrations along the treatments system process was inadvertently not conducted during the fourth quarter of 2024.

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.

8.0 REFERENCES

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TABLES

Table 1: Fourth 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 Groundwater	MW-1A	12/11/2024	44	28-43	2-26	2	613.44	31.09	582.35
	MW-2A	12/11/2024	40	25-40	2-23	2	607.21	24.96	582.25
	MW-3A	12/9/2024	20	4-20	2-4	2	689.11	5.06	684.05
	MW-4A	12/12/2024	20	5-20	2-4	2	705.45	3.67	701.78
	MW-5A	12/11/2024	40	25-40	2-23	2	611.23	28.94	582.29
	MW-6A	12/11/2024	39	24-39	2-22	2	608.95	26.68	582.27
	MW-7A	12/12/2024	20	10-20	2-7	2	592.69	10.61	582.08
	MW-8A	12/12/2024	26	16-26	2-13	2	601.49	19.62	581.87
	MW-9A	12/12/2024	13	8-13	2-5	2	697.29	2.62	694.67
	MW-10A	12/9/2024	29	9-29	2-6	2	698.02	5.87	692.15

-

feet bgs

feet bmp

feet NAVD88

TOC

Not measured or not available

Feet below ground surface

Feet below measuring point

Feet in NAVD88 datum

Top of casing

Table 2: Fourth 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 (umhos/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 ^a			-	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.5	80
LDA - Shallow Groundwater	MW-1A	12/11/2024	613.44	31.09	582.35	9.0	491.7	8.26	122.5	0.78	6.65	285	0.726	1.09	12300	0.0680 U	0.583
	MW-2A	12/11/2024	607.21	24.96	582.25	9.8	688.0	5.59	196.3	2.81	6.75	408	1.51	1.28	38000	0.0680 U	1.09
	MW-2A Duplicate (MW-45A)	12/11/2024	-	-	-	-	-	-	-	-	-	393	1.42	1.28	36900	0.136 U	0.886
	MW-3A	12/9/2024	689.11	5.06	684.05	8.6	939.0	59.60	50.6	2.65	7.10	592	6.83	3.39	125000	0.146	0.676
	MW-4A	12/12/2024	705.45	3.67	701.78	9.5	583.0	0.59	153.2	0.95	6.35	341	0.150 U	0.338	1180	0.0680 U	0.864
	MW-5A	12/11/2024	611.23	28.94	582.29	9.7	1717.0	3.17	194.8	3.04	7.15	1090	5.52	2.66	317000	0.165	1.60
	MW-6A	12/11/2024	608.95	26.68	582.27	10.4	2032.0	4.94	164.9	1.75	7.50	1360	8.89	2.23	444000	0.176	0.898
	MW-7A	12/12/2024	592.69	10.61	582.08	7.3	655.0	3.88	196.9	1.13	7.09	376	1.02	1.14	16100	0.0680 U	0.670
	MW-8A	12/12/2024	601.49	19.62	581.87	10.5	997.0	2.83	207.2	1.32	7.03	596	3.30	4.23	156000	0.0680 U	3.13
	MW-9A	12/12/2024	697.29	2.62	694.67	9.1	525.0	4.29	183.0	1.40	6.79	311	0.150 U	0.430	1450	0.0830 J	0.774
LDA- Surface Water	MW-10A	12/9/2024	698.02	5.87	692.15	9.7	199.4	19.79	44.1	2.45	7.00	136	0.150 U	0.435	841	0.0680 U	0.890
	Still Well	12/9/2024	-	-	-	8.5	6405.0	58.07	14.8	7.24	12.33	1310	24.2	45.7	404000	3.47	2.68
	South Pond	12/9/2024	-	-	-	3.40	1407.00	43.39	122.10	7.18	8.68	929	2.99	10.9	300000	6.18	19.3
	Weir	12/9/2024	-	-	-	6.60	823.00	40.22	58.40	1.07	7.36	542	5.42	3.70	99800	0.136 U	0.670
	Infiltration Ponds	12/11/2024	-	-	-	3.7	2497.0	7.95	153.9	7.10	8.50	1610	14.9	22.0	556000	2.82	2.14
	Infiltration Ponds Duplicate (MW-35A)	12/11/2024	-	-	-	-	-	-	-	-	-	1630	13.9	20.3	571000	2.63	1.96

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 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

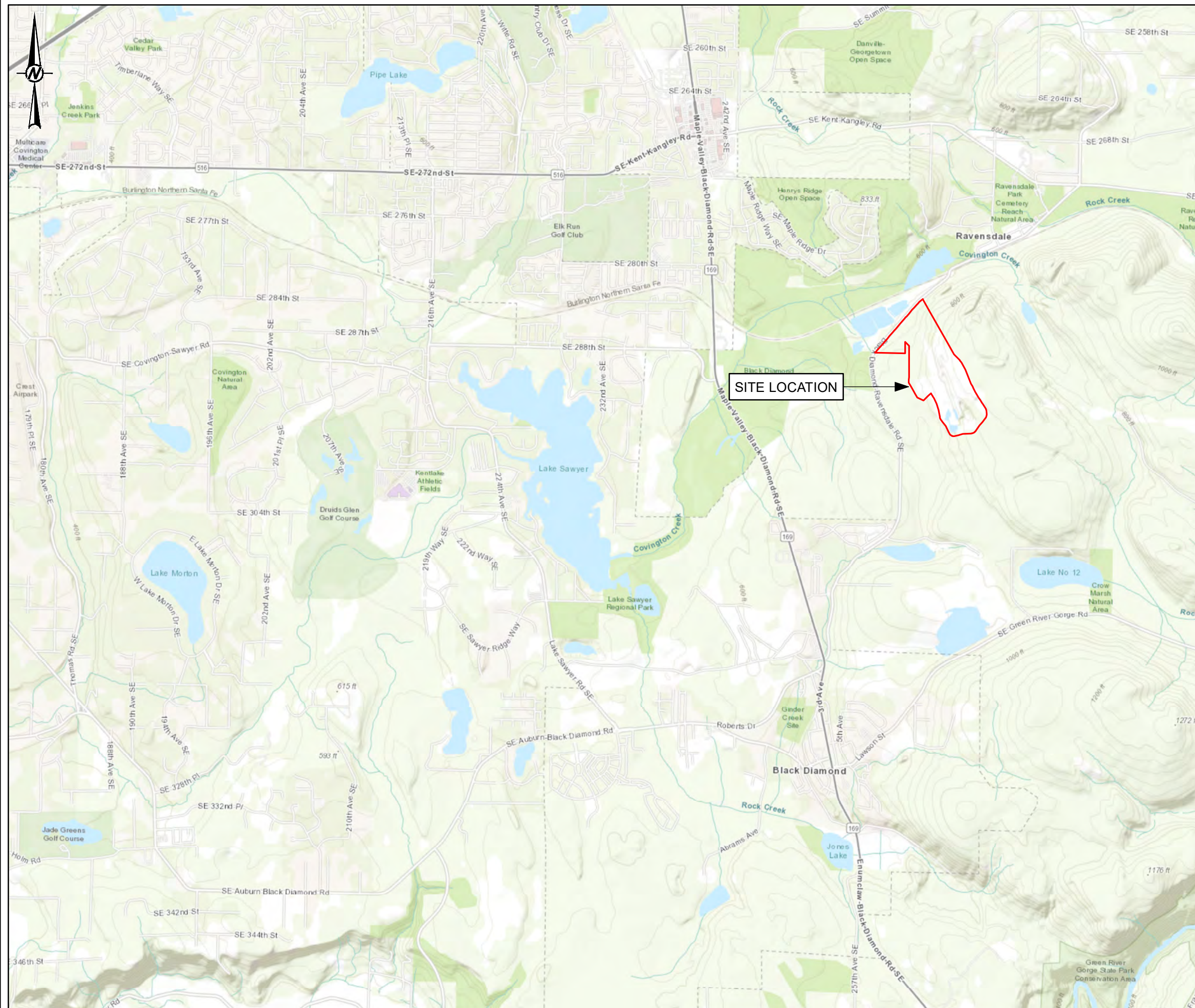
Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
19-Oct-13	8:45	0.3	7.47	-	-
19-Nov-13	9:25	0.7	7.52	-	-
23-Dec-13	15:25	1.2	7.27	-	-
20-Jan-14	11:15	0.8	7.58	1	277
-	-	-	-	-	-
31-Mar-14	11:12	1	7.22	1.6	257
22-Apr-14	16:05	3.6	6.85	474	214
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 ¹	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^	3.24	368
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

Table 3: Interceptor Trench Discharge Monitoring

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
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
17-Jun-24	15:40	1.98	7.04	8.04	448
16-Sep-24	14:15	0.15	8.02	2.53	328
9-Dec-24	14:40	1.59	9.77	1.32	277

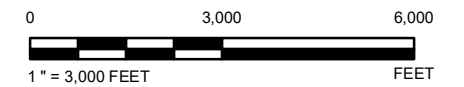
- Not measured or not available
 ^ pH values error, due to faulty pH probe.
 gpm Gallons per minute
 NTU Nephelometric Turbidity Unit
 mg/L Milligrams per liter

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

GROUNDWATER MONITORING
RAVENSDALE, WA

TITLE

SITE LOCATION MAP

CONSULTANT



YYYY-MM-DD 2025-03-05

DESIGNED	TL
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PREPARED	TL/KAS
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REVIEWED JX

APPROVED GZ

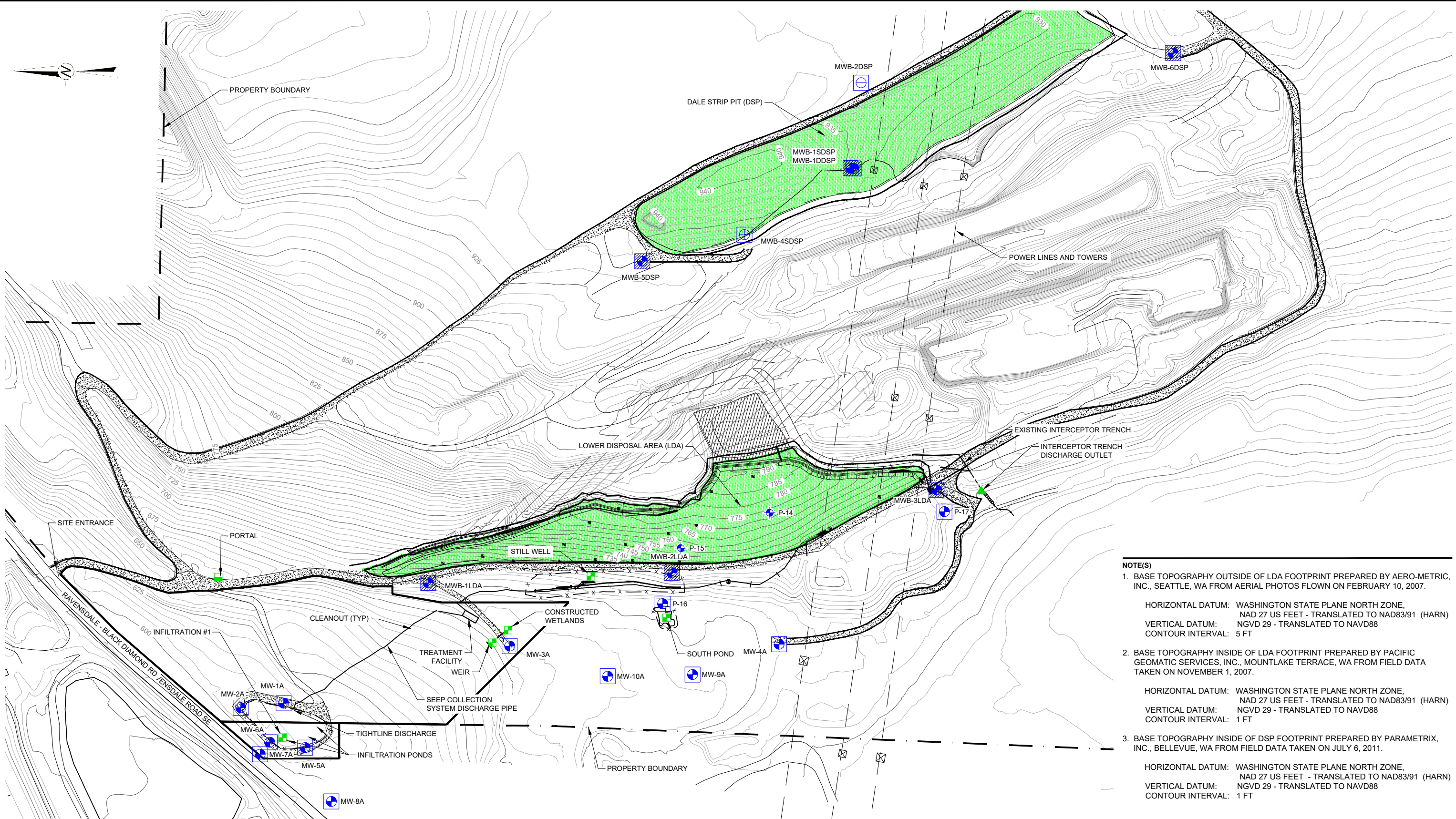
PROJECT NO.	PHASE
31406578.8318	300

PHASE	
3	300

REV.
0

FIGURE 1

Path: \\wsp-pblan-net\US-CentralData\USX_C300\geomatics\HOLCIM\Ravensdale09_PROJECTS\152030429_20200402_PRODUCTION\DWG_1 File Name: 152030429_004_001.dwg | Last Edited By: usah130706 Date: 2025-03-05 Time: 2:41:18 PM | Printed By: USBH130706 Date: 2025-03-05 Time: 2:43:47 PM



NOTE(S)

1. 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

2. 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

3. 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 SHALLOW MONITORING WELL

MWB-1DDSP BEDROCK MONITORING WELL

MWB-2DDSP 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

**FOR REVIEW
DRAFT**

0 150 300
1" = 150' FEET

CLIENT
HOLCIM

CONSULTANT



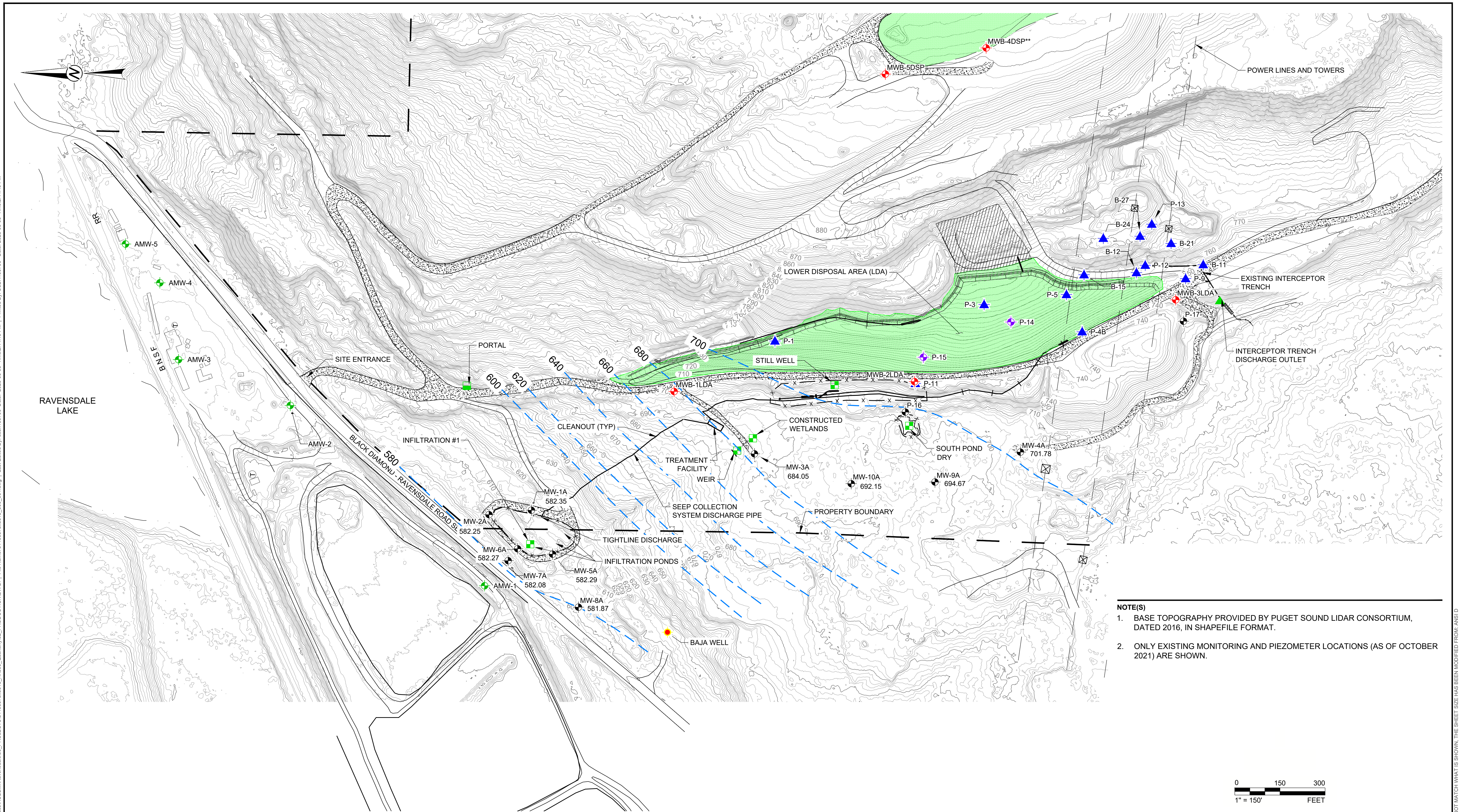
YYYY-MM-DD	2025-03-05
DESIGNED	TK
PREPARED	TR
REVIEWED	DE
APPROVED	GZ

PROJECT
DECEMBER 2024 GROUNDWATER MONITORING
RAVENSDALE, WA

TITLE
SITE PLAN

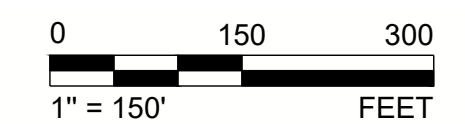
PROJECT NO.	TASK	REV.	FIGURE
31406578.8318	300	0	2

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3 AND 1 in



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		PRIVATE WELL
	MW-1A	SHALLOW MONITORING WELL		LDA SURFACE WATER SAMPLING LOCATION		CONCEPTUAL GROUNDWATER FLOW DIRECTION	
	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	2025-03-05
DESIGNED	TK
PREPARED	TR
REVIEWED	DE
APPROVED	GZ

PROJECT
DECEMBER 9-12, 2024 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
SHALLOW GROUNDWATER ELEVATIONS

PROJECT NO.	TASK	REV.	FIGURE
31406578.8318	300	0	3

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 Infiltration Ponds
Table A-1B Weir
Table A-1C South Pond

**Table A-1a: 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 ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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 ^a	23.56	1276	-	-	94.40	9.30	1100	-	92.5	4.14	-	-
15-Jul-05 ^b	-	-	-	-	-	-	874	-	99.9	3.82	-	-
9-Aug-05 ^a	19.05	1744	-	-	57.20	9.44	1000	-	123	5.1	-	-
9-Aug-05 ^b	-	-	-	-	-	-	1030	-	140	6.12	-	-
14-Sept-05 ^a	13.59	1154	-	-	99.80	8.97	790	-	110	3.54	-	-
14-Sept-05 ^b	-	-	-	-	-	-	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	-

Table A-1a: 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 ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
2-May-16 ^d	-	-	-	-	-	-	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
18-Jun-24	15.80	3495.00	10.86	173.00	4.69	8.41	1370 J	9.87	9.58	0.162 J	775000	0.716
16-Sep-24	17.40	2932.00	8.39	228.90	24.30	8.30	2080	14.4	16.3	15.6	708000	2.63
11-Dec-24	3.70	2497.00	7.95	153.90	7.10	8.50	1610	14.9	22.0	2.82	556000	2.14

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 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

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-1b: 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 ^a	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	80
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 ^a	20.38	3184	-	-	8.91	10.36	0.94	3200	-	192	9.98	-	-
15-Jul-05 ^b	-	-	-	-	-	-	-	1990	-	189	10.8	-	-
9-Aug-05 ^a	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-
9-Aug-05 ^b	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	-	-
14-Sept-05 ^a	15.60	3792	-	-	14.50	9.92	0.07	2800	-	208	57.8	-	-
14-Sept-05 ^b	-	-	-	-	-	-	-	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	-

**Table A-1b: 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 ^a	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.5	-	80
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	-
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
17-Jun-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
16-Sep-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
9-Dec-24	6.6	823	40.22	58.4	1.07	7.36	-	542	5.42	3.70	0.136 U	99800	0.67

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 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-1c: 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 ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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 ^a	18.34	6937	-	-	6.89	11.69	5000	-	281	31.8	-	-
15-Jul-05 ^b	-	-	-	-	-	-	4260	-	237	34.2	-	-
9-Aug-05 ^a	23.53	7654	-	-	17.1	10.26	6600	-	322	44.5	-	-
9-Aug-05 ^b	-	-	-	-	-	-	5580	-	340	37.1	-	-
14-Sept-05 ^a	18.55	6730	-	-	10.00	10.51	5100	-	235	19.3	-	-
14-Sept-05 ^b	-	-	-	-	-	-	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	-

**Table A-1c: 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 ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
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	33000 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
17-Jun-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
16-Sep-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
9-Dec-24	3.4	1407	43.39	122.1	7.18	8.68	929	2.99	10.9	6.18	300000	19.3

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 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 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 Still Well

**Table A-2a: Summary of Lower Disposal Area - Shallow 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	Test Trench Drain Line Installed													
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	-

**Table A-2a: Summary of Lower Disposal Area - Shallow 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
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
18-Jun-24	32.56	580.88	8.8	700	12.5	119.2	0.39	6.64	335	0.87	1.14	0.103 U	13900	0.684
16-Sep-24	36.11	577.33	9.5	366.8	9.72	174.4	0.64	6.51	205	0.668	0.996	0.103 U	10700	0.585 J
11-Dec-24	31.08	582.36	9	491.7	8.26	122.5	0.78	6.65	285	0.726	1.09	0.0680 U	12300	0.583

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 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-2b: Summary of Lower Disposal Area - Shallow 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-

**Table A-2b: Summary of Lower Disposal Area - Shallow 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	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
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
18-Jun-24	26.42	580.79	8.9	763	11.61	137.9	0.56	6.8	389	1.13	0.978	0.103 U	20500	0.954
16-Sep-24	30.4	576.81	10	667	9.64	200.7	2.02	6.67	396	0.934	1.28	0.103 U	19700	1.04
11-Dec-24	24.96	582.25	9.8	688	5.59	196.3	2.81	6.75	408	1.51	1.28	0.0680 U	38000	1.09

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 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 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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
17-Jun-24	5.61	683.5	10.6	983	5.34	-34.5	0.58	7.06	544	1.16	9.66	0.134 J	118000	0.454
17-Sep-24	11.40	677.71	11.9	1206	6.77	199.9	9.95	6.6	779	1.09	11	0.286	90500	0.785 J
9-Dec-24	5.06	684.05	8.6	939	59.6	50.6	2.65	7.1	592	6.83	3.39	0.146	125000	0.676

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 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-2d: Summary of Lower Disposal Area - Shallow 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 (umhos/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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-

Table A-2d: Summary of Lower Disposal Area - Shallow 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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 UJ	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	-
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
17-Jun-24	4.00	701.45	10.8	451.3	6.22	77.4	0.62	6.26	226	0.202 U	0.18 J	0.103 U	452 J	0.85
17-Sep-24	8.33	697.12	12.2	576	6.2	132	1.9	6.38	304	0.202 U	0.482	0.103 U	931	2.42 J
12-Dec-24	3.67	701.78	9.5	583	0.59	153.2	0.95	6.35	341	0.150 U	0.338	0.0680 U	1180	0.864

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 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 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	863000 J+	-

**Table A-2e: Summary of Lower Disposal Area - Shallow 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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
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
18-Jun-24	30.41	580.82	9.9	2586	8.65	176.1	0.88	7.51	1430	7.1	3.91	0.103 U	456000	1.81
16-Sep-24	34.45	576.78	10.8	1940	7.65	228.6	4.82	7.54	1340	6.16	4.56	0.244	986000	1.82
11-Dec-24	28.94	582.29	9.7	1717	3.17	194.8	3.04	7.15	1090	5.52	2.66	0.165	317000	1.6

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 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 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	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80	
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	Test Trench Drain Line Installed														-
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+	-	

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btpc)	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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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	-
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
18-Jun-24	28.14	580.81	7.72	1515	11.01	176	0.49	7.72	784	5.06	1.49	0.103 U	270000	0.458
16-Sep-24	32.34	576.61	11.4	2433	8.03	235.6	2.04	7.74	1830	6.33	3.87	0.103 U	495000	1.76
11-Dec-24	26.68	582.27	10.4	2032	4.94	164.9	1.75	7.5	1360	8.89	2.23	0.176	444000	0.898

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 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 Groundwater Sampling Results - Well MW-7A
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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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
17-Jun-24	12.25	580.44	11.8	810	6.53	154.4	0.35	6.83	405	0.924	1.44	0.103 U	29800	0.996
17-Sep-24	16.38	576.31	15.2	762	7.57	175.9	2.53	6.97	445	1.29	1.7	0.103 U	28100	1.31
12-Dec-24	10.61	582.08	7.3	655	3.88	196.9	1.13	7.09	376	1.02	1.14	0.0680 U	16100	0.67

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 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 Groundwater Sampling Results - Well MW-8A
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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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
17-Jun-24	21.53	579.96	10.1	1378	8.54	167.8	0.83	7.14	719	4.28	5.97	0.103 U	195000	3.38
17-Sep-24	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12-Dec-24	19.62	581.87	10.5	997	2.83	207.20	1.32	7.03	596	3.3	4.23	0.0680 U	156000	3.13

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 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 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 (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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
17-Sep-24	7.55	689.74	13.2	593	7.28	161.8	1.02	6.96	321	0.234 J	0.54	0.103 U	2350	1
12-Dec-24	2.62	694.67	9.1	525	4.29	183	1.40	6.79	311	0.150 U	0.43	0.0830 J	1450	0.774

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 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 Groundwater Sampling Results - Well MW-10A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet bfp)	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 ^a	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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
17-Jun-24	7.15	690.87	9.8	197.4	12.65	198.6	3.18	6.4	115	0.202 U	0.548	0.104 J	883	0.806
17-Sep-24	15.56	682.46	10.7	287.2	8.25	153	0.87	6.7	182	0.202 U	1.2	0.103 U	1770	1.34
9-Dec-24	5.86	692.16	9.7	199.4	19.79	44.1	2.45	7	136	0.150 U	0.435	0.0680 U	841	0.89

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 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-2k: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Still Well
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 ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
1-Feb-05	8.1	10658	-	-	6.59	12.87	2860	-	49.9	5.52	-	-
9-Mar-05	13.23	7393	-	-	7.42	12.51	2860	-	115	14.7	-	-
5-Apr-05	9.5	11310	-	-	10.9	12.44	2900	-	55.6	11.6	-	-
10-May-05	13.99	11871	-	-	3.6	12.53	2810	-	55.4	12.5	-	-
7-Jun-05	13.83	10888	-	-	22.6	12.54	2490	-	5 U	5 U	-	-
15-Jul-05 ^a	18.21	11331	-	-	14.8	12.5	3800	-	2.72	6.07	-	-
15-Jul-05 ^b	-	-	-	-	-	-	2540	-	39.8	7.57	-	-
9-Aug-05 ^a	21.45	12087	-	-	17.9	11.78	3500	-	120	10.9	-	-
9-Aug-05 ^b	-	-	-	-	-	-	2820	-	91.5	9.53	-	-
14-Sept-05 ^a	17.38	9507	-	-	14	12.36	3600	-	118	11.2	-	-
14-Sept-05 ^b	-	-	-	-	-	-	2830	-	115	14.4	-	-
5-Oct-05	13.31	11481	-	-	62.7	12.47	3020	-	85.2	11.9	-	-
9-Nov-05	9.58	14417	-	-	11	12.34	3400	-	74	10 U	-	-
9-Dec-05	6.18	7138	-	-	12.5	12.82	2800	-	14.5	1.07	-	-
19-Jan-06	8.66	8265	1.74	-	11.8	13.06	1900 J	-	15.2 J	1 U	-	-
16-Feb-06	8.13	9019	2.81	195.6	6.16	12.27	3200 J	-	13.4 J	1.89	-	-
15-Mar-06	7.98	9033	0.79	114.8	8.93	12.6	3300 J	-	2.36	2.5 J	-	-
7-Apr-06	9.98	10450	0.57	34.8	6.08	12.51	3400	-	15.2	2.83	-	-
16-May-06	12.79	11060	0.14	45.4	9.28	12.4	3500	-	4.04	1.59	-	-
23-Jun-06	13.29	11680	0.44	-	14.6	12.9	3600	-	52.6	16.5	-	-
20-Jul-06	16.2	12240	0.14	-217.8	10.4	12.47	4300	-	19.3	3.57	-	-
22-Aug-06	17.14	10920	1.22	-146	13.3	12.66	3800	-	144	9.14 J	-	-
26-Sep-06	15.72	9599	0.42	-263.3	61.4	12.59	3800	-	123	4.63	-	-
26-Oct-06	10.99	9955	0.88	-207.5	82.3	12.93	3600	-	161	19.5	-	-
15-Nov-06	10.58	12040	1.82	149.2	188	12.87	3400	-	30.6 J	4.5	-	-
20-Dec-06	8.85	10990	0.71	-152	32.8	13.02	2600 J	-	52.6	13	-	-
24-Jan-07	8.29	10440	0.97	-139.8	13.7	13.05	2500 J	-	58.6	13.1	-	-
12-Feb-07	8.88	10590	0.86	-125.8	56.4	13.06	3400	-	61.3	14	-	-
27-Mar-07	9.45	9163	1.25	-42.4	18.4	11.53	2900 J	-	44.1	1.81	-	-
18-Apr-07	8.9	8155	2.63	2.3	37.2	12.77	3300 J	-	29.3	1.98	-	-
31-May-07	20.12	11050	5.3	-153.9	9.31	11.59	2800 J	-	48.5	15.1 J	-	-
20-Jun-07	18.28	12000	5.41	-122.5	16.1	12.04	4300 J	-	26.8	2.33	-	-
31-Jul-07	16.53	12200	1.7	-151.6	24.8	12.48	6000	-	87.6	1.03	-	-
29-Aug-07	17	9570	1.12	-183.1	268	12.78	4600 J	-	106	9.46	-	-
27-Sep-07	14.49	8263	52.4	-183	211	12.42	2800	-	125	15.4	-	-
26-Oct-07	9.49	6144	4.88	-147.2	92.4	12.85	3300 J	-	124	24.9	-	-
30-Nov-07	5.53	7703	2.13	-122.6	127	12.67	2200	-	174	14.1	-	-
12-Dec-07	5.24	11609	3.43	-144.8	116	12.6	4100	-	110	11.3	-	-
24-Jan-08	3.73	9649	13.81	-138	-	10.74	2500	-	101	9.74	-	-
28-Feb-08	-	-	-	-	51.2	-	2900	-	58.5	12.6	-	-
25-Mar-08	7.06	8623	5.52	-11.2	17.4	11.26	3400	-	74.3	10.4	-	-
29-Apr-08	9.74	11332	4.29	-1.3	27.7	12.82	3000 J	-	76.6	13.3	-	-
20-May-08	14.53	11955	1.74	-35.8	72.7	12.82	3400	-	87.3	15.1	-	-
18-Jun-08	12.77	10267	3.34	-27	34	12.86	3200 J	-	63.2	16.9	-	-
26-Aug-08	15.86	7703	1.06	-72.8	38.3	12.67	2600 J	-	430	35	759000	-
20-Nov-08	9.59	8762	0.91	-65.6	74.1	13.32	3500	-	70	16.8	848000	-
12-Feb-09	3.25	554	14.29	-	108	13.03	550	-	47.2	13.7	551000	-
19-May-09	11.53	276	8.8	26	43.4	9.83	2500 J	-	37.8	15	689000	-
22-Sep-09	12.47	9760	1.5	159.1	625	12.47	3000	-	160	37	990000	-
15-Dec-09	5.2	11650	1.9	237	26.3	12.85	3000	-	86	21	900000 J	-

**Table A-2k: Summary of Lower Disposal Area - Shallow Groundwater 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	Lead	Potassium	Vanadium
Preliminary Cleanup Level ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
22-Mar-10	9.7	1035	-	182	19.4	12.58	3000	-	73	17	870000	-
17-Jun-10	11.7	9610	0.08	-	6.59	12.48	2700	-	66	15	780000	-
21-Sep-10	15	6710	1.26	152.6	140	12.29	2400	-	300	39	570000	-
8-Dec-10	8.3	10110	1	-	5.44	12.63	2600	-	64	10	860000	-
30-Mar-11	8.6	4810	0.46	136.3	13.7	14.31	2500 J	-	65	9.6	720000	-
21-Jun-11	16.6	10420	1.63	111.9	3.4	12.36	5200	-	60	9.1	770000	-
28-Sep-11	14.8	5270	2.34	70	66.7	12.17	2200	-	220	11	1000000	-
15-Dec-11	6	7330	2.47	104.2	18.3	13.09	2800	-	83	2.9	880000	-
21-Mar-12	5.5	11040	3.15	294.2	12	12.39	2600	-	67	4.7	760000	-
19-Jun-12	5.5	11040	3.15	294.2	12	12.39	2600	-	58	6.7	690000	-
20-Sep-12	16.1	9560	3.27	76	10.7	12.35	2900	-	84	3	830000	-
19-Dec-12	4.1	1320	10.11	303.1	5.86	9.69	700	-	75	4.3	250000	-
26-Feb-13	7.3	9950	1.77	161.8	25.5	12.66	2000	-	70	0.29 J	720000	-
23-May-13	11.5	8040	2.23	266.8	22.7	12.47	2500	-	57	3.4	690000	-
22-Aug-13	17.4	8810	2.42	10.8	38.5	12.79	2590	-	57.8	1.5	863000	-
19-Nov-13	9	7090	2.47	79	62.8	12.54	2720	-	52.5	4.2	909000	-
1-Apr-14	10.3	6080	0.55	128.2	37.1	6.08	1890	-	54.6	1.1	687000	-
22-May-14	13.6	7360	1.22	34.4	-	11.75	2330	-	60.9	2	689000	-
13-Aug-14	18.26	7844	0.33	1.2	7.3	12.53	2770	-	70	2.1	849000	-
12-Nov-14	9	585	3.17	-47.8	17.5	12.93	2450	-	83.2	3.9	837000	-
12-Feb-15	10.7	7540	2.68	-18.6	9.64	12.71	2150	-	51.6	0.3	690000	-
4-May-15	12.9	9140	2.73	110.4	26.8	13.02	2520	-	54.6	0.22 J	734000	-
5-Aug-15	19.5	8060	2.58	-29.8	61.1	12.62	2980	-	63.9	1.7	898000	-
3-Nov-15	11.1	5150	0.37	38.6	171	8.93	1840	-	109	21.7	747000	-
9-Feb-16	9.7	7390	0.78	80.8	7.79	13.07	2170	-	53.6	1.2	601000	-
3-May-16	14.7	7530	1.4	358.1	2.65	12.98	2480	-	54.2	1.7 J	711000	-
22-Aug-16	20.5	7.91	2.1	-	59	12.95	2780	-	91.3	5.87	831000	-
1-Nov-16	12.3	2884	2.66	-72.1	19.1	13.17	2620	-	46.2	9.64	841000	-
31-Jan-17	7.4	8510	2.37	-167	7.35	13.17	2050	-	52.5	1.19	582000	-
31-May-17	14.6	7500	2.44	-	4.17	12.89	1900	-	45.4	0.68 J+	615000	-
17-Aug-17	18.3	8460	3.35	-84	15.9	12.79	2680	-	56.8	2.14	750000	-
9-Nov-17	8.2	7215	3.48	90.9	18.2	12.65	2360	-	62.1	3.52	822000	-
27-Feb-18	6.6	5312	3.75	2.3	2.49	12.11	1970	-	50.2	7.53	521000	-
2-May-18	11.1	8260	1.7	-	13	12.92	2360	-	43.4	21.7 J+	552000	-
21-Aug-18	20.22	6260	4.71	-42.1	5.84	12.58	2100	-	52.2	0.138	629000	-
7-Nov-18	9.7	995	6.72	126.8	20.6	9.15	1880	-	644	80.2	502000 J+	-
11-Mar-19	10.6	1354	5.93	-18.7	7.19	10.31	1710	-	52.8	21.2	501000	-
9-May-19	13.8	6973	6.4	18.1	16.7	12.36	1980	-	41.6	13.4	521000	-
26-Aug-19	17.8	6405	3.91	Note 1	5.15	12.56	2570	-	42.5	15.4	722000	-
14-Nov-19	9.7	6065	0.41	-53.3	12	12.67	1750	-	167	23.9	563000	-
13-Feb-20	7.6	4936	0.37	-139	2.56	12.66	1630	-	48.6	6.08	490000	-
13-Aug-20	15	6817	2.55	-42.8	2.02	12.39	2620	-	41.9	0.86	659000	-
10-Dec-20	8.8	4534	0.55	-26.2	5.87	12.79	1670	-	82.7	11.1	510000	-
4-Mar-21	7.7	4728	0.05	-42	0.85	11.94	1470	-	61.8	1.49	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

**Table A-2k: Summary of Lower Disposal Area - Shallow Groundwater Sampling Results - Still Well
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 ^c	-	-	-	-	-	6.5-8.5	-	5.6	8	2.5	-	80
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
18-Jun-24	13.4	5636	10.88	95	3.5	12.21	1700	16.8	48.5	5.82	408000	2.88
17-Sep-24	14.6	3389	8	165.4	18.6	12.49	1640	65.7	35.9	5.94	453000	4.82
9-Dec-24	8.5	6405	58.07	14.8	7.24	12.33	1310	24.2	45.7	3.47	404000	2.68

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 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

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 mg/L

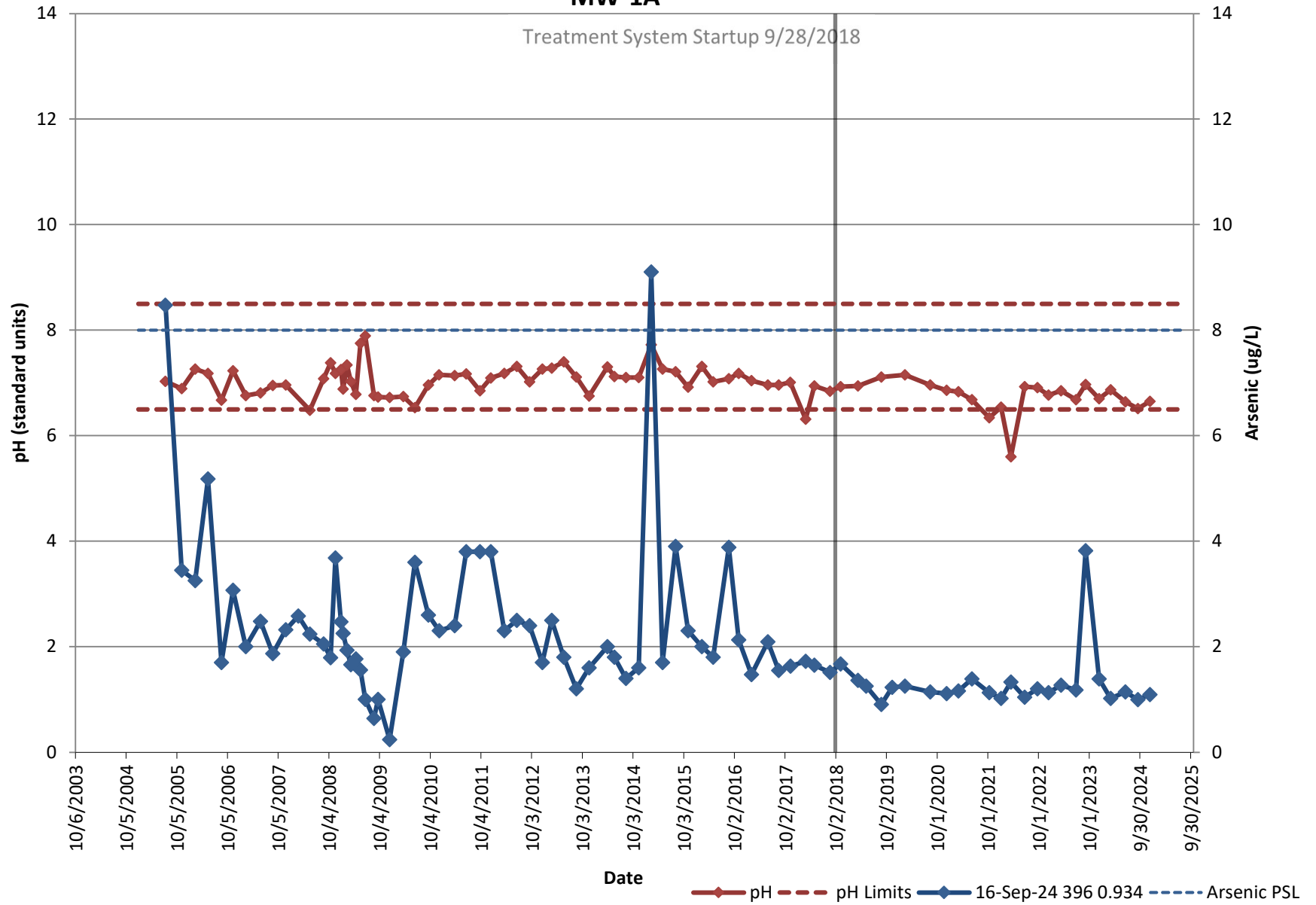
feet bmp Feet below measuring point mV

feet NAVD88 Feet NAVD88 Datum NTU

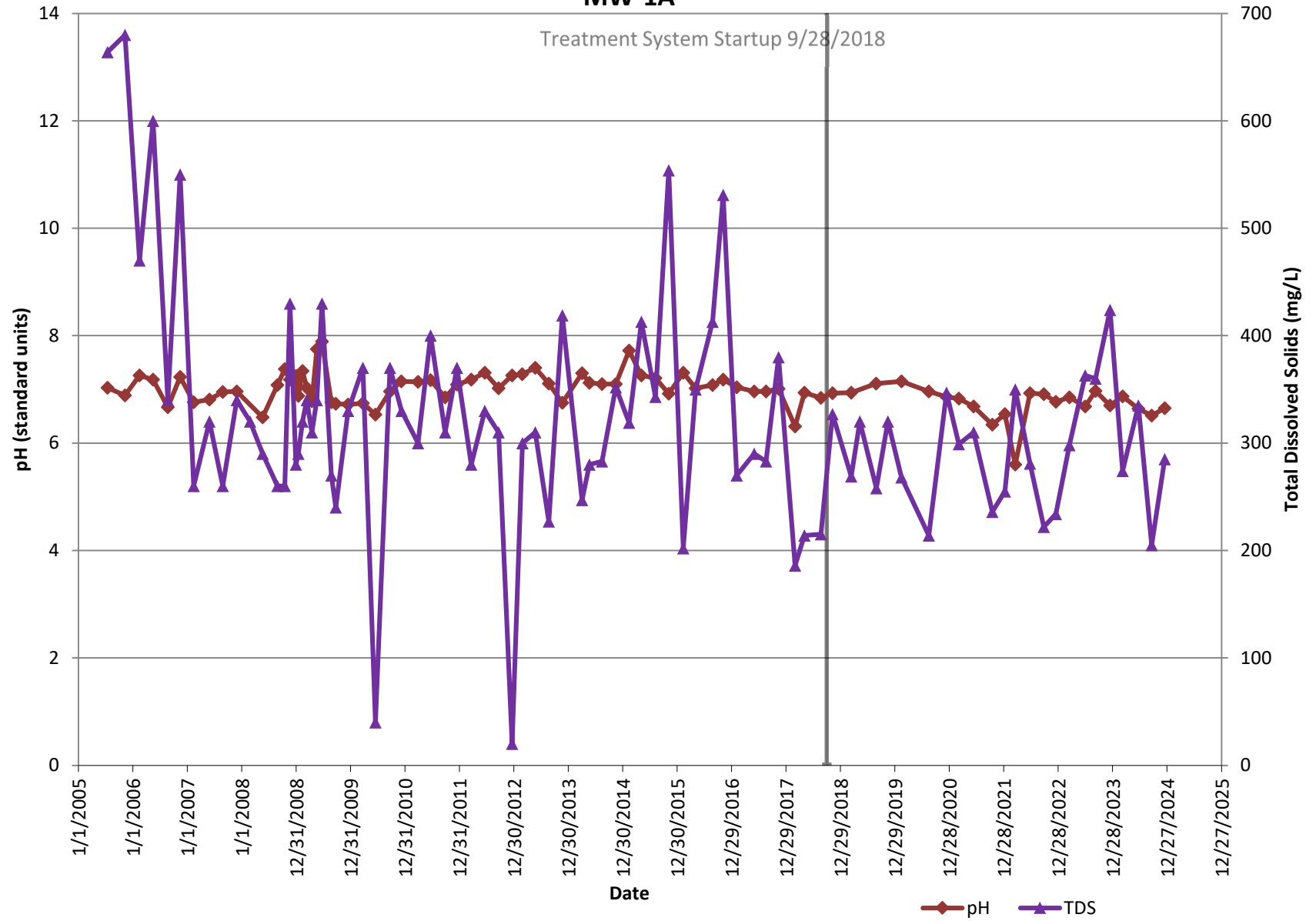
APPENDIX B

LDA Shallow Monitoring Wells Data Graphs

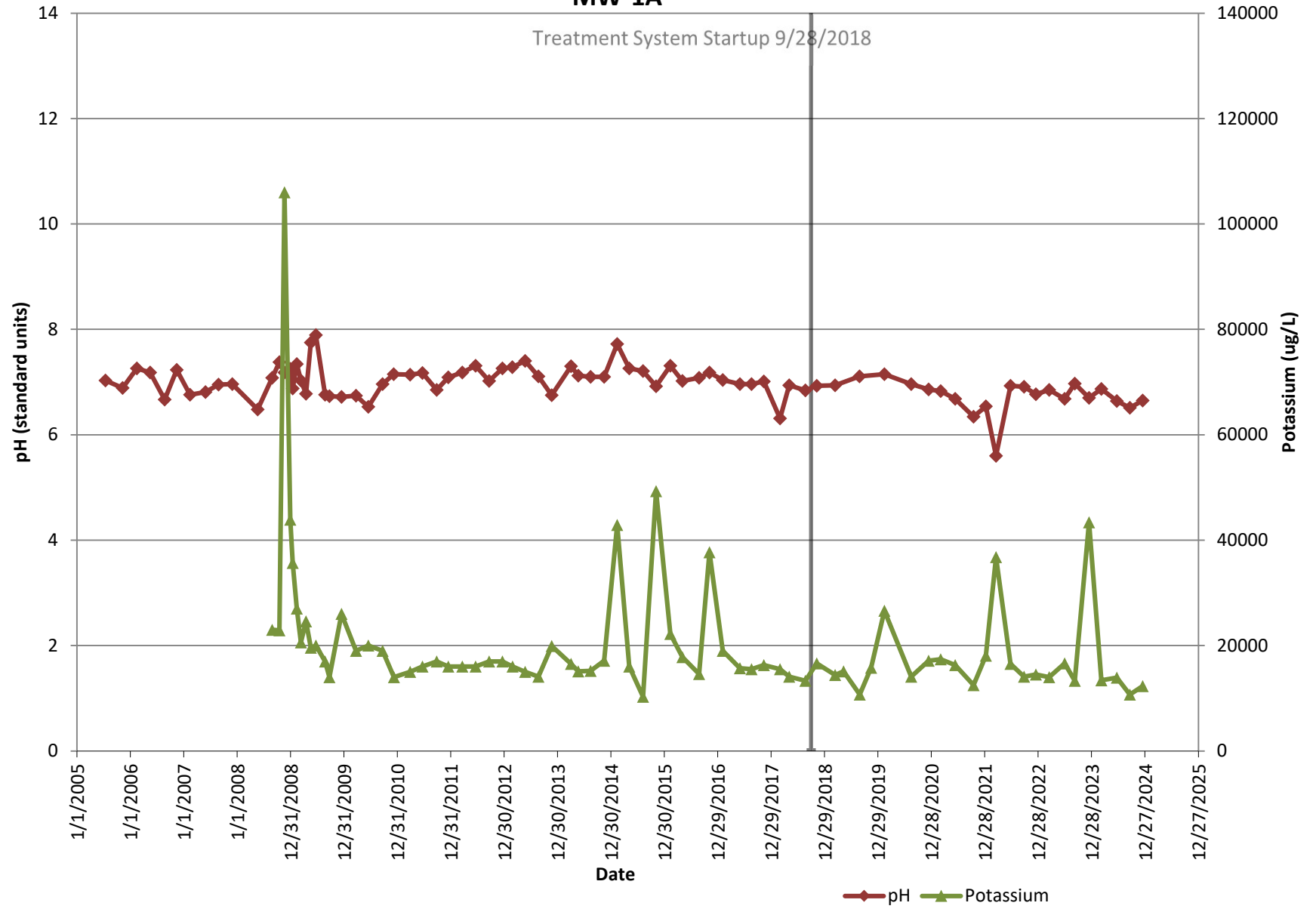
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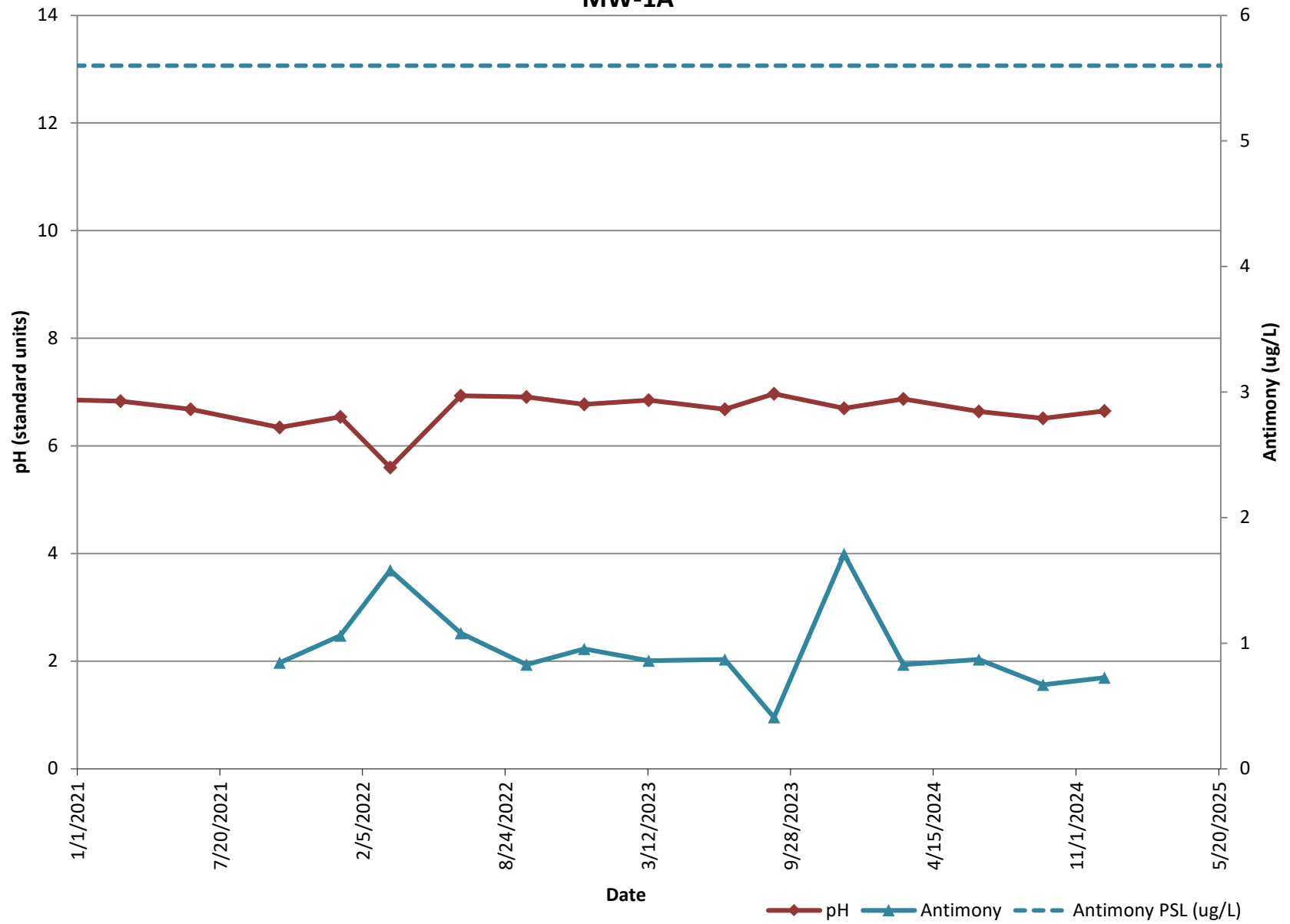
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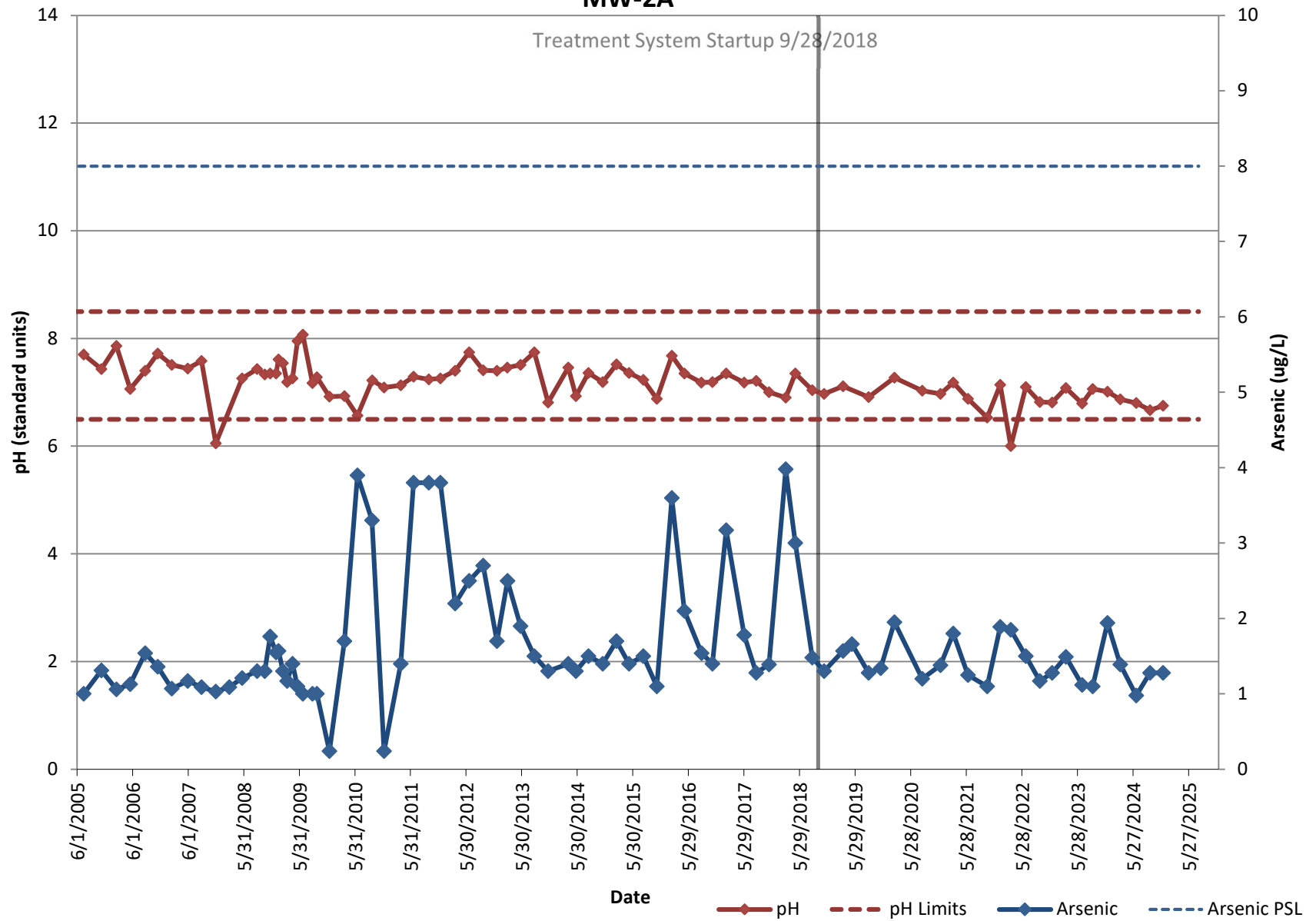
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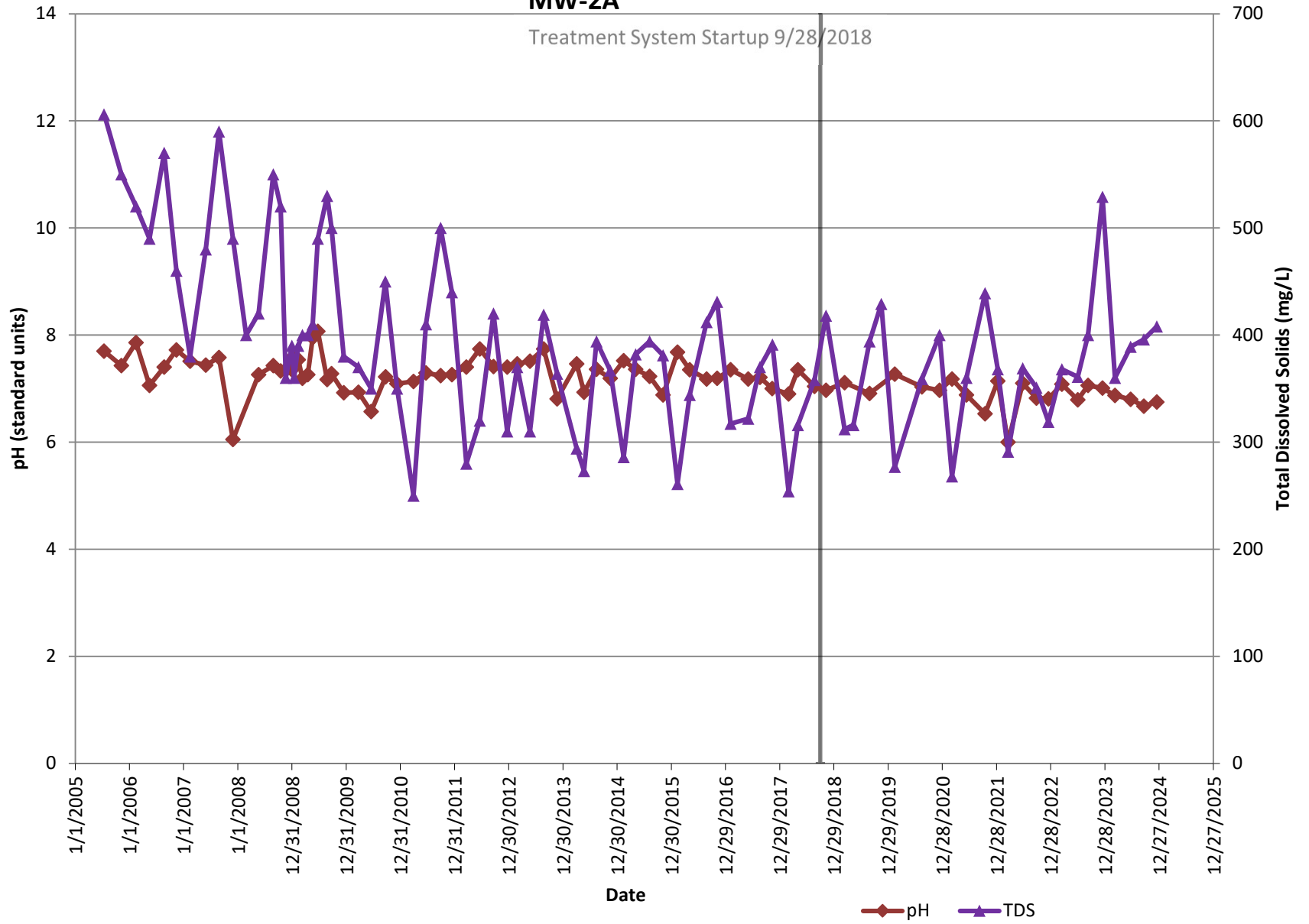
LDA Shallow Monitoring Wells MW-1A



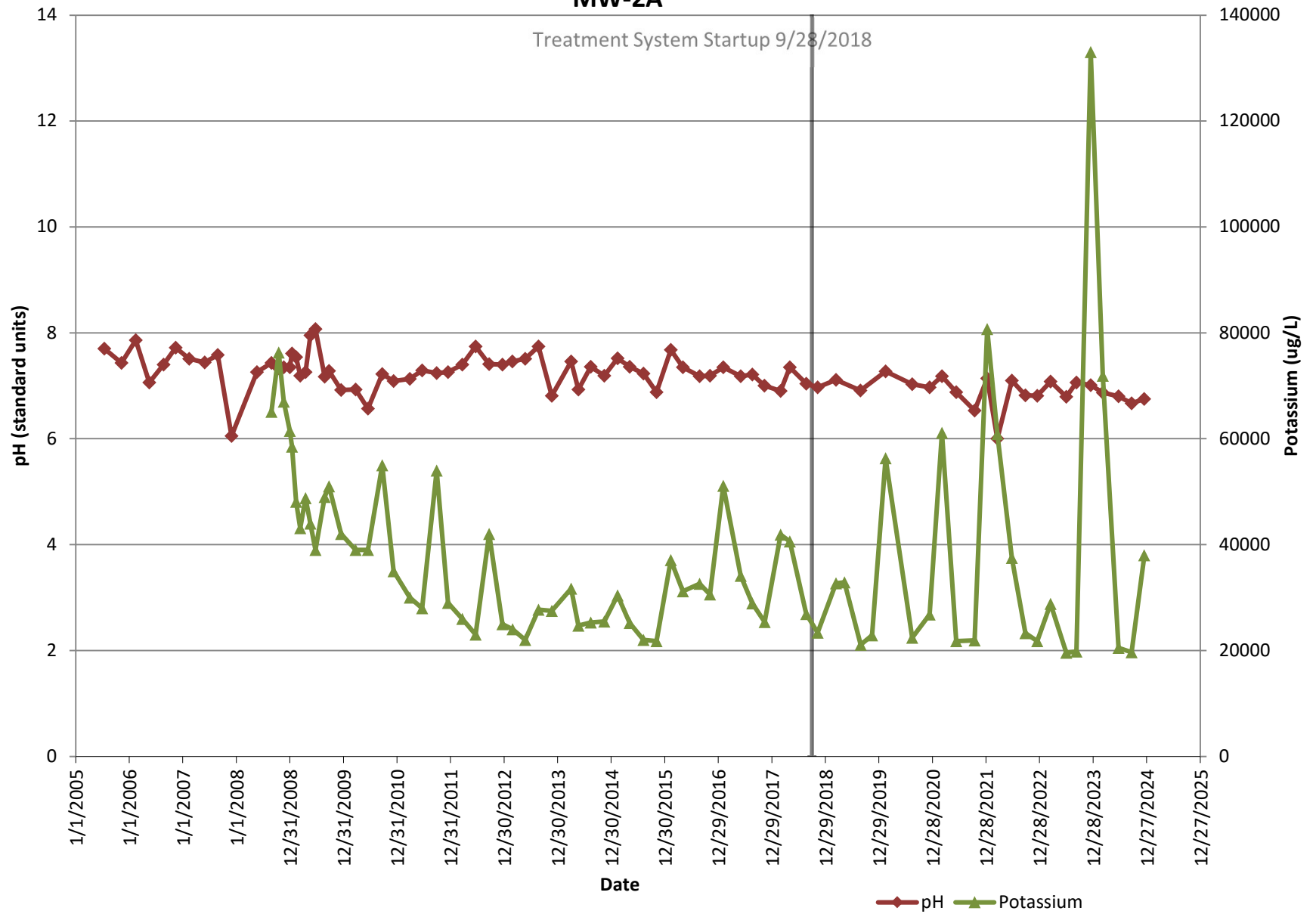
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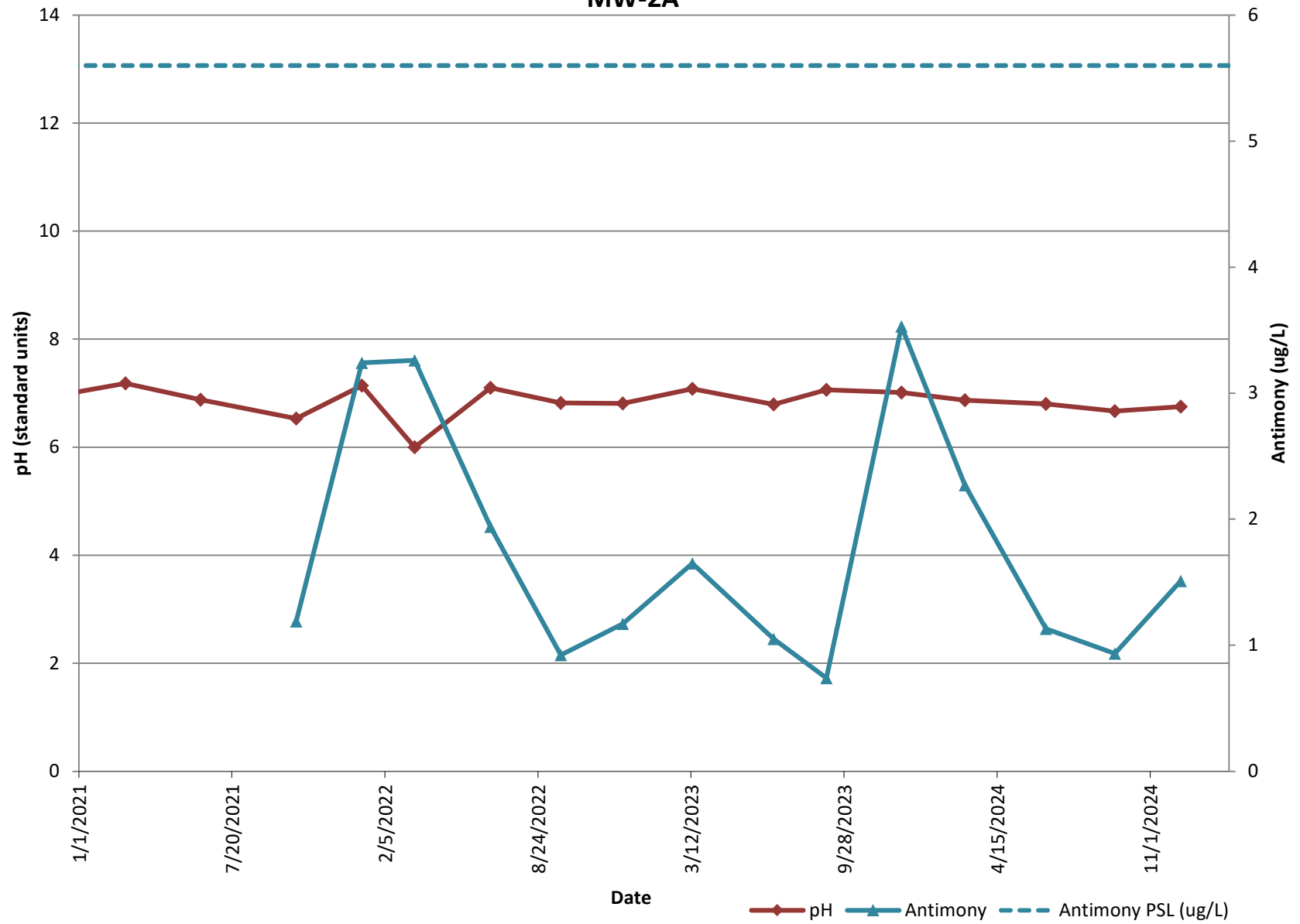
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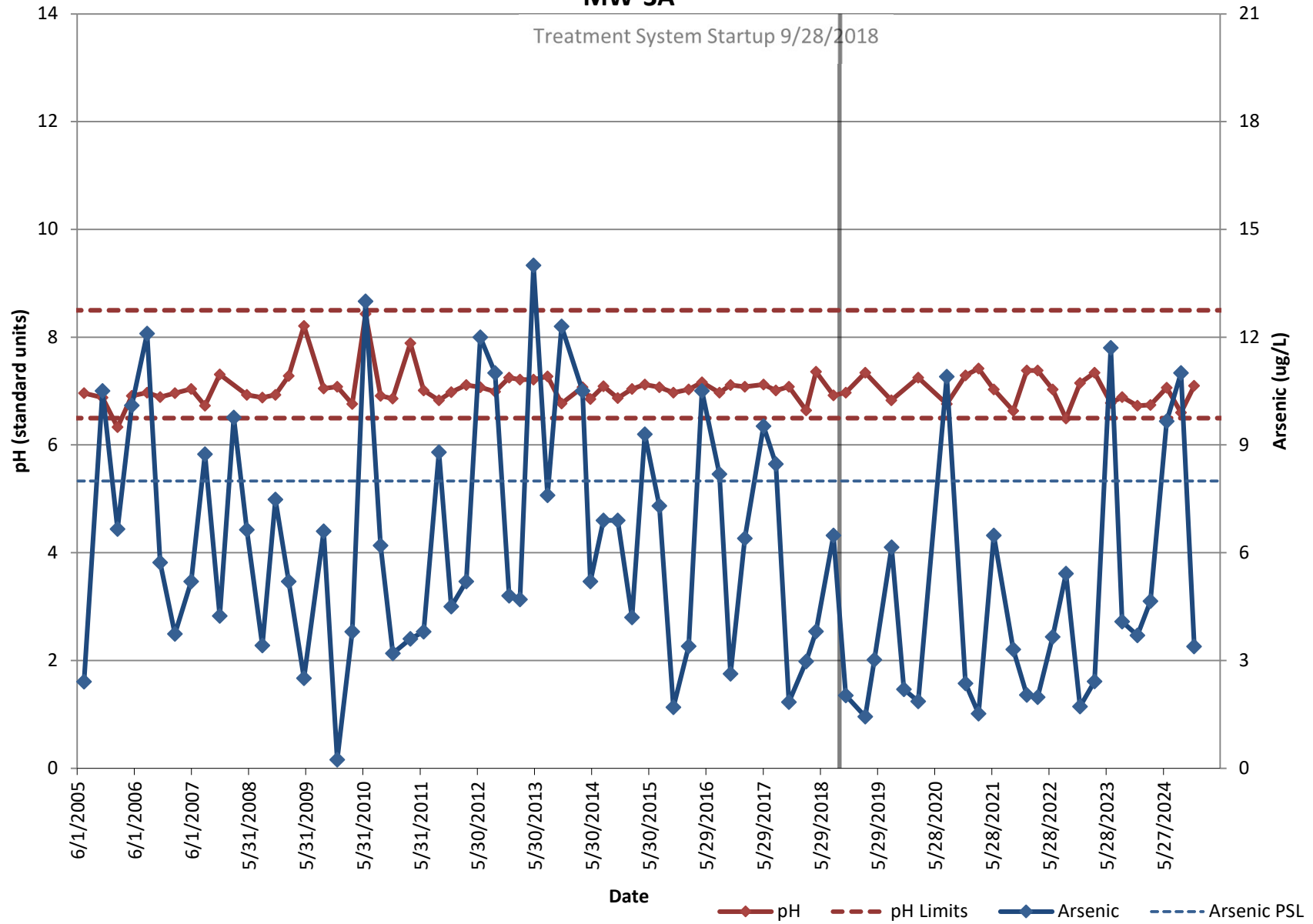
LDA Shallow Monitoring Wells MW-2A



LDA Shallow Monitoring Wells MW-2A

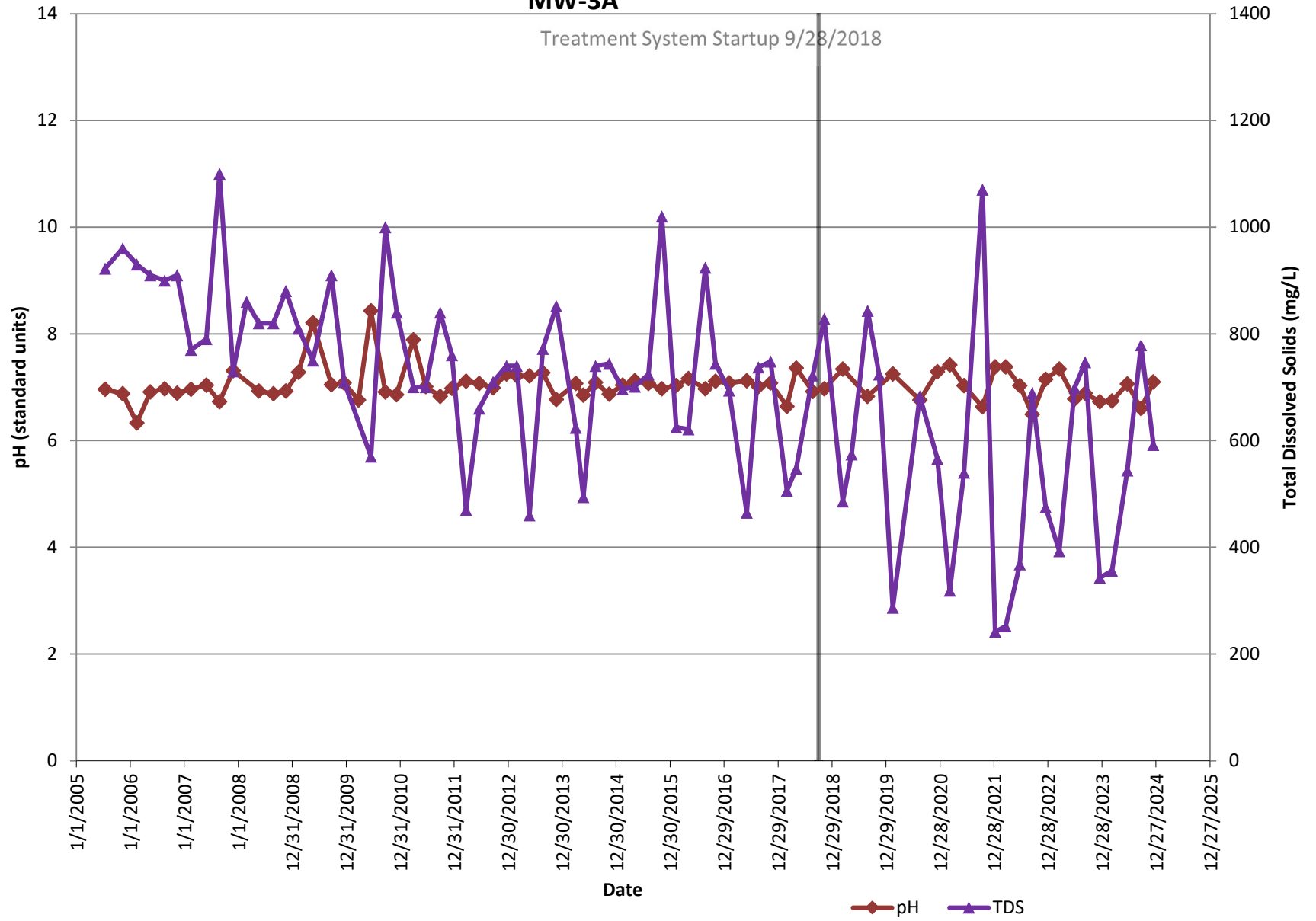


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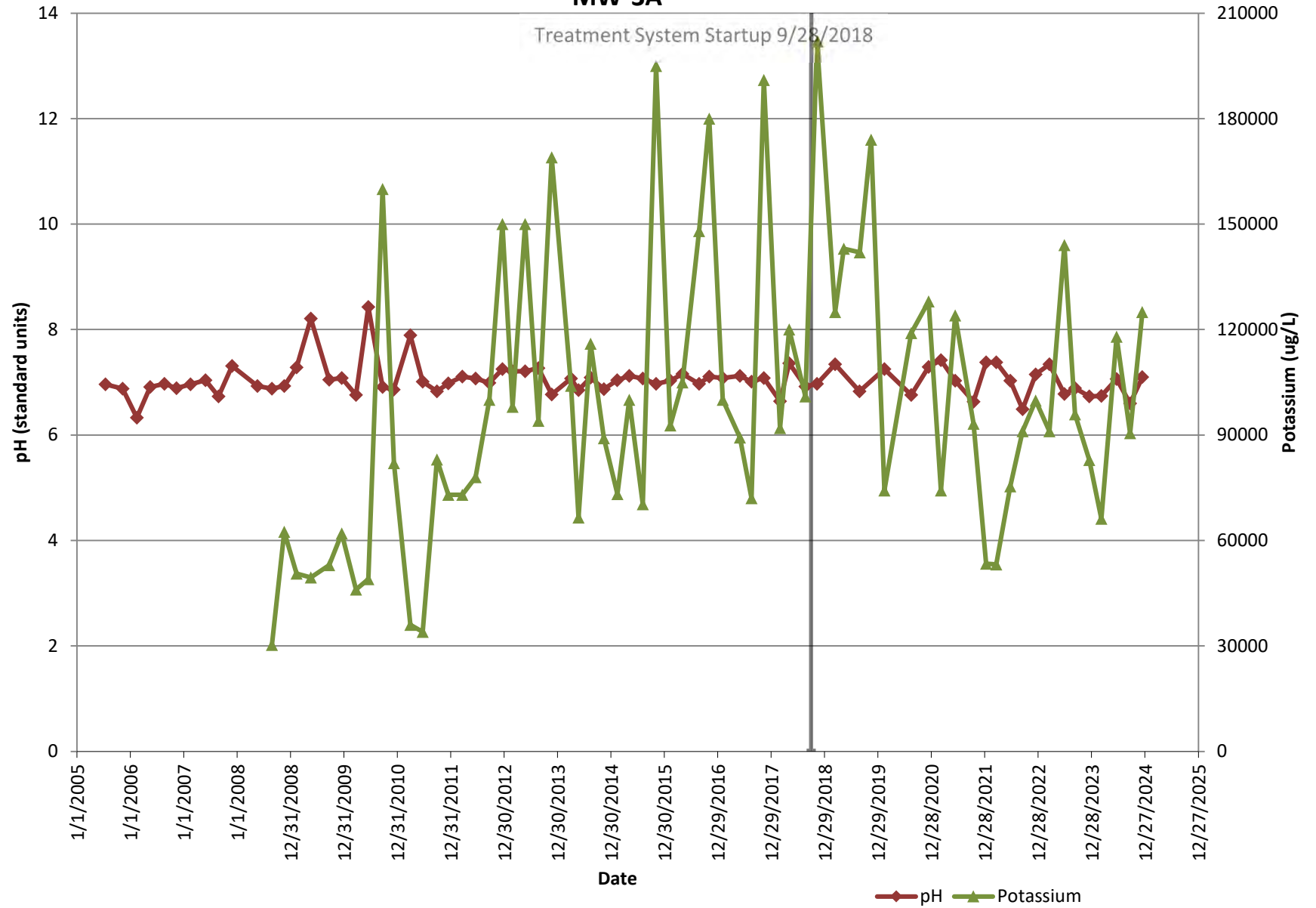
LDA Shallow Monitoring Wells

MW-3A

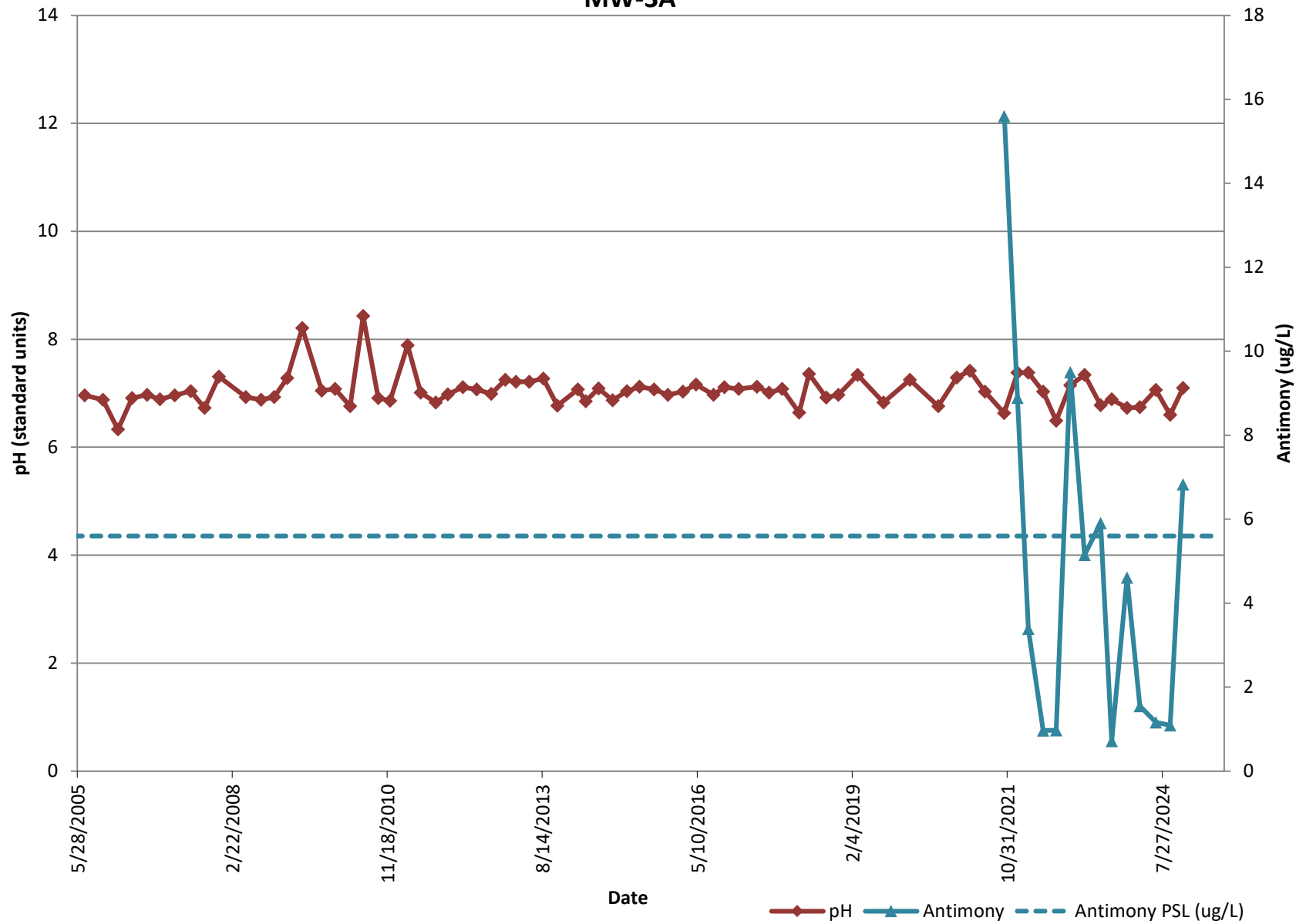


LDA Shallow Monitoring Wells

MW-3A

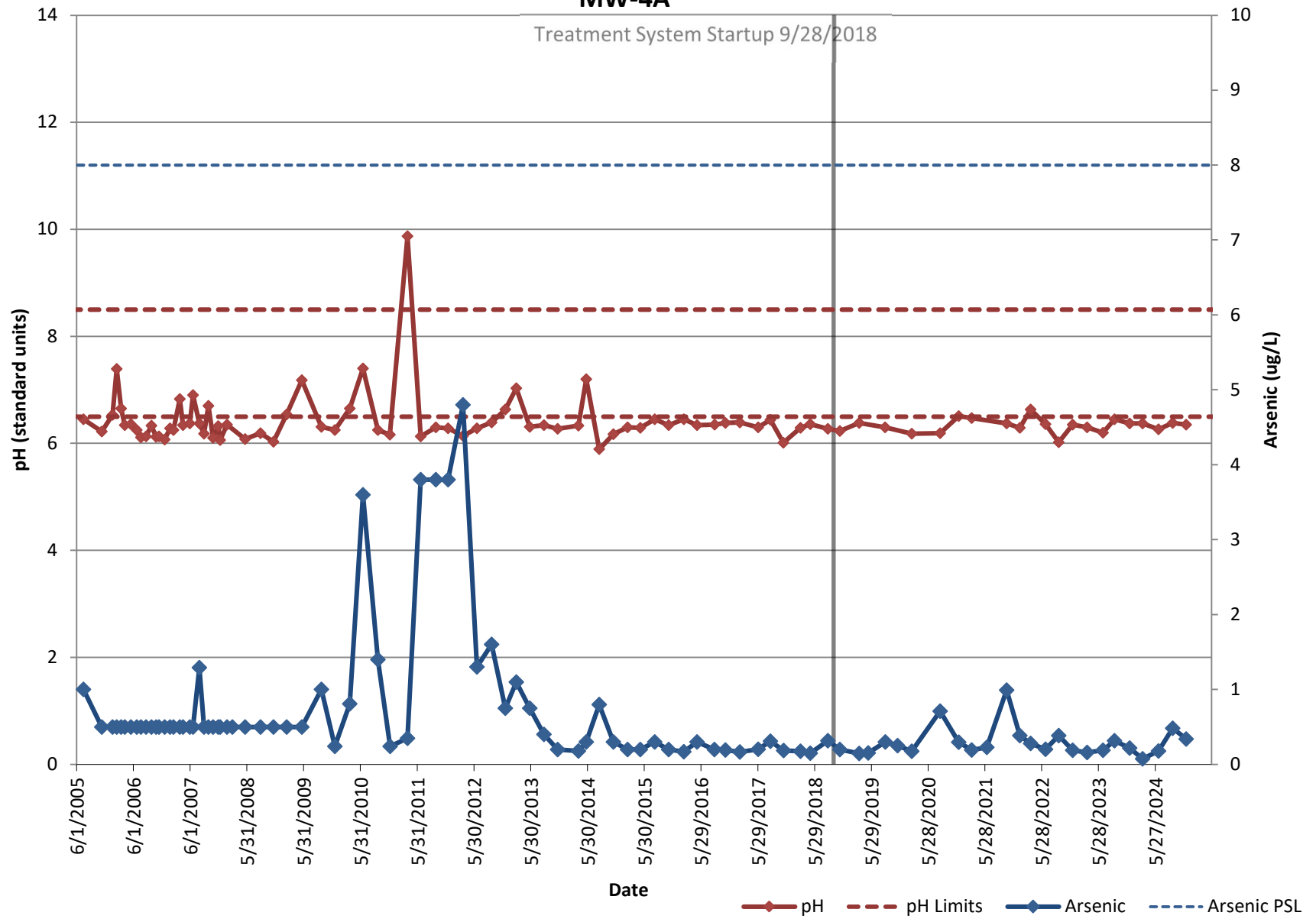


LDA Shallow Monitoring Wells MW-3A



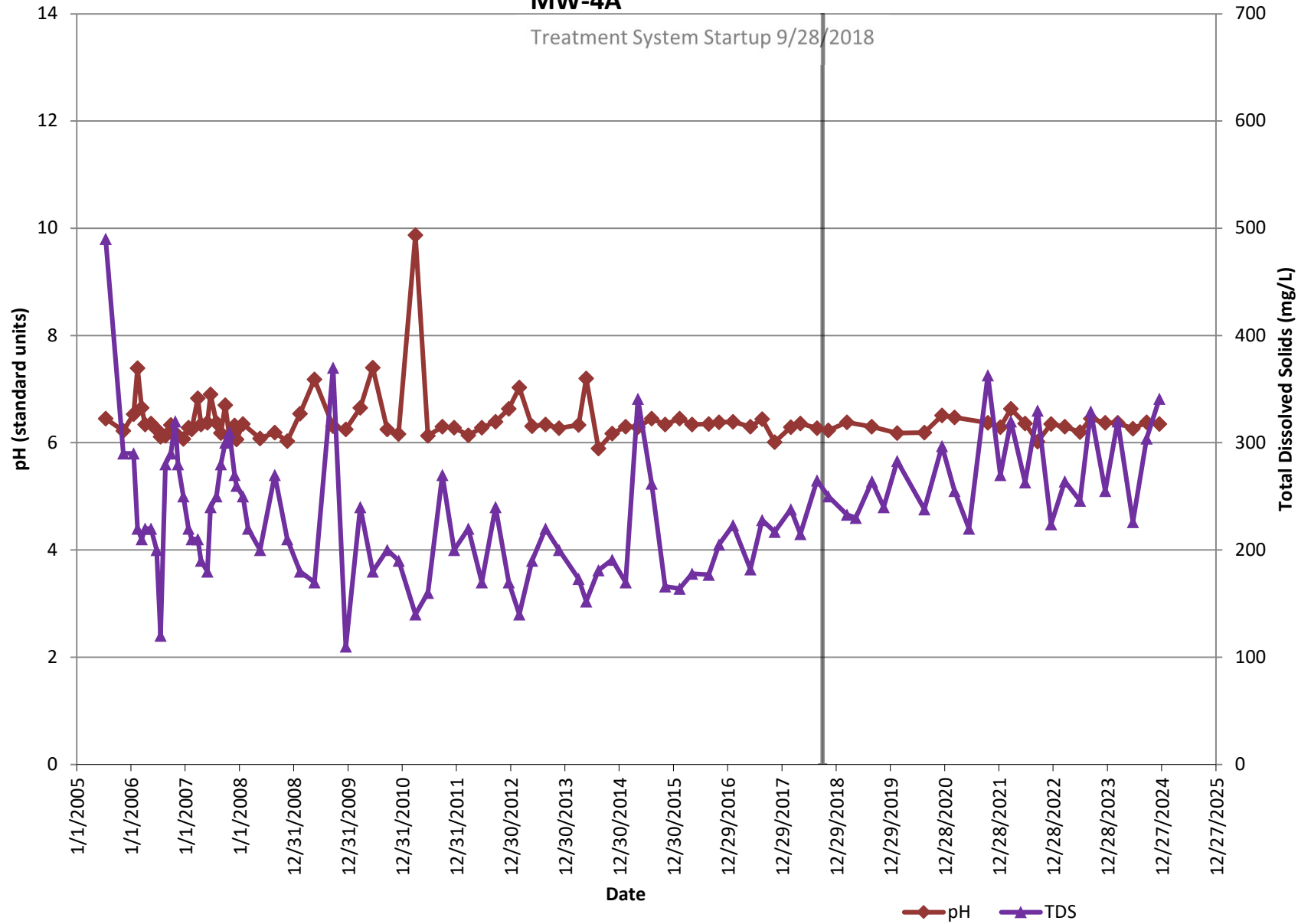
LDA Shallow Monitoring Wells

MW-4A



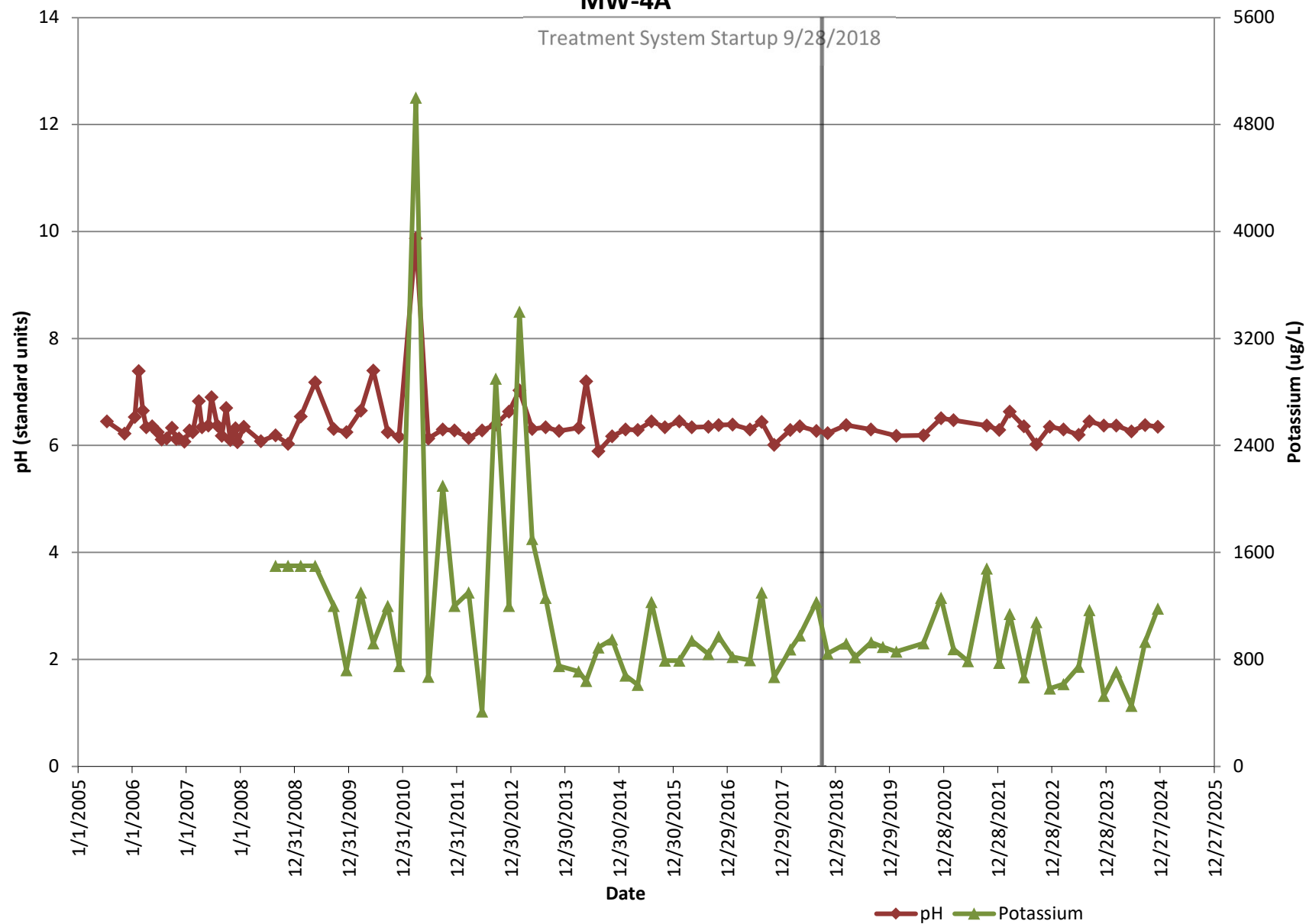
LDA Shallow Monitoring Wells

MW-4A

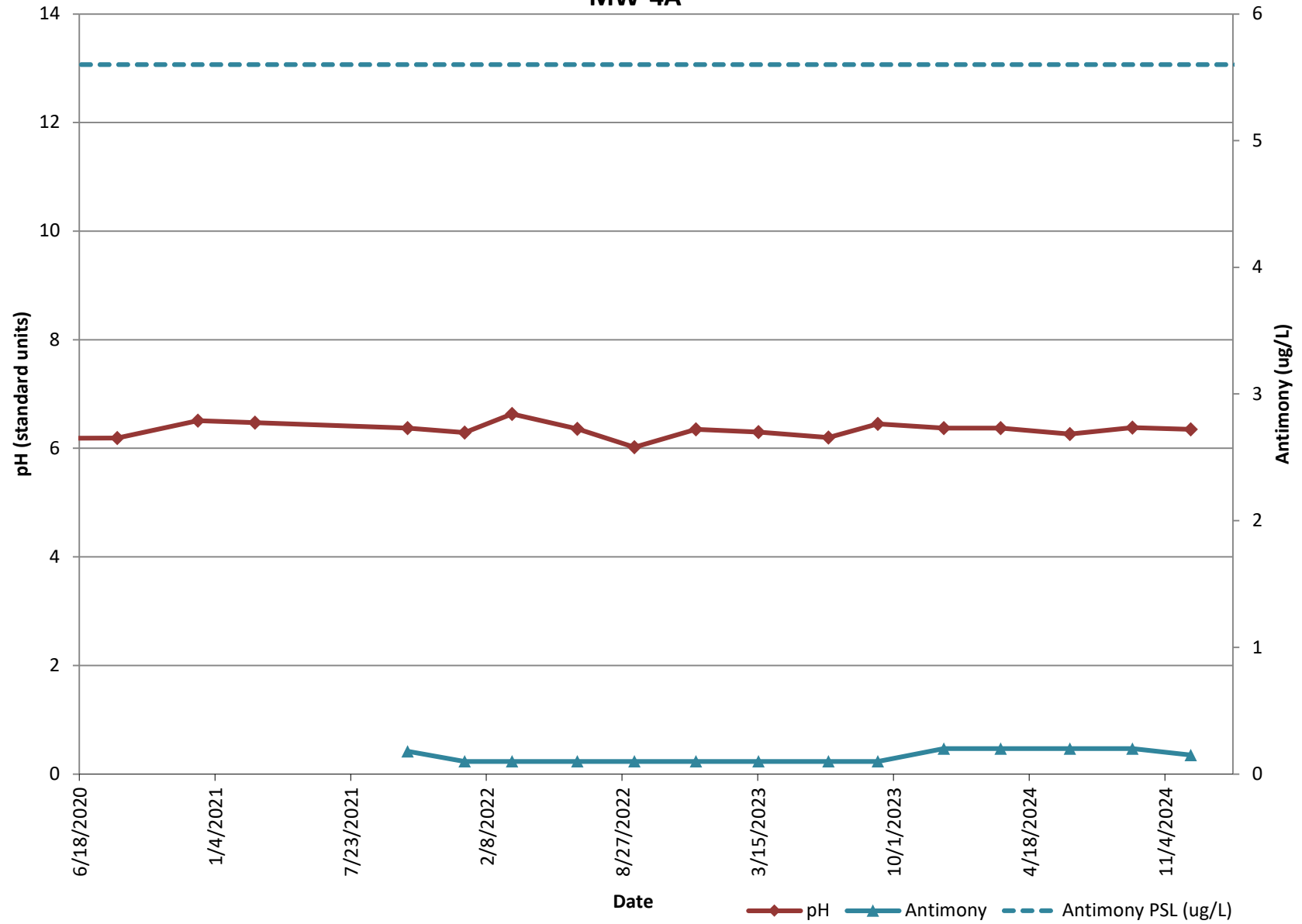


LDA Shallow Monitoring Wells

MW-4A

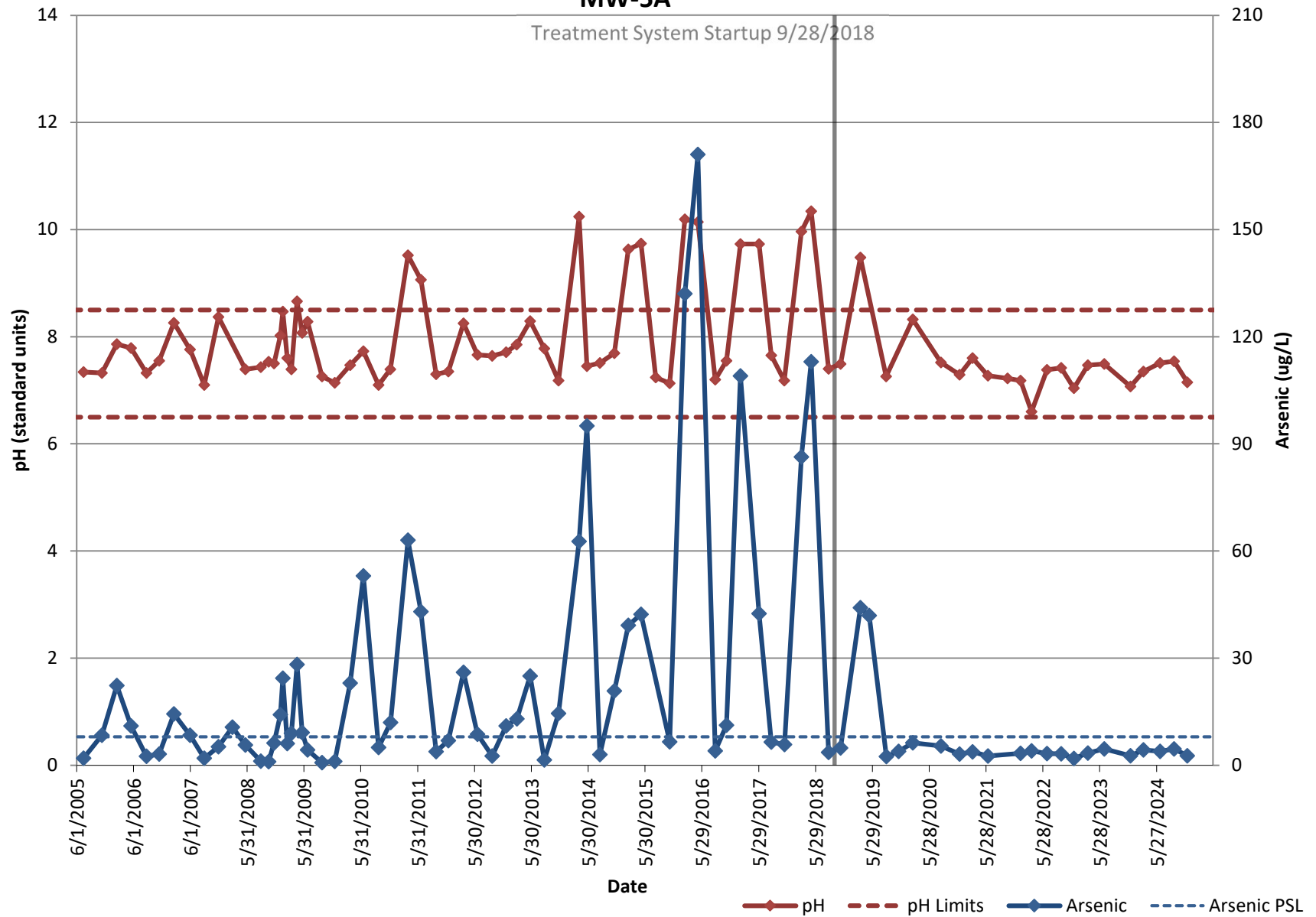


LDA Shallow Monitoring Wells MW-4A

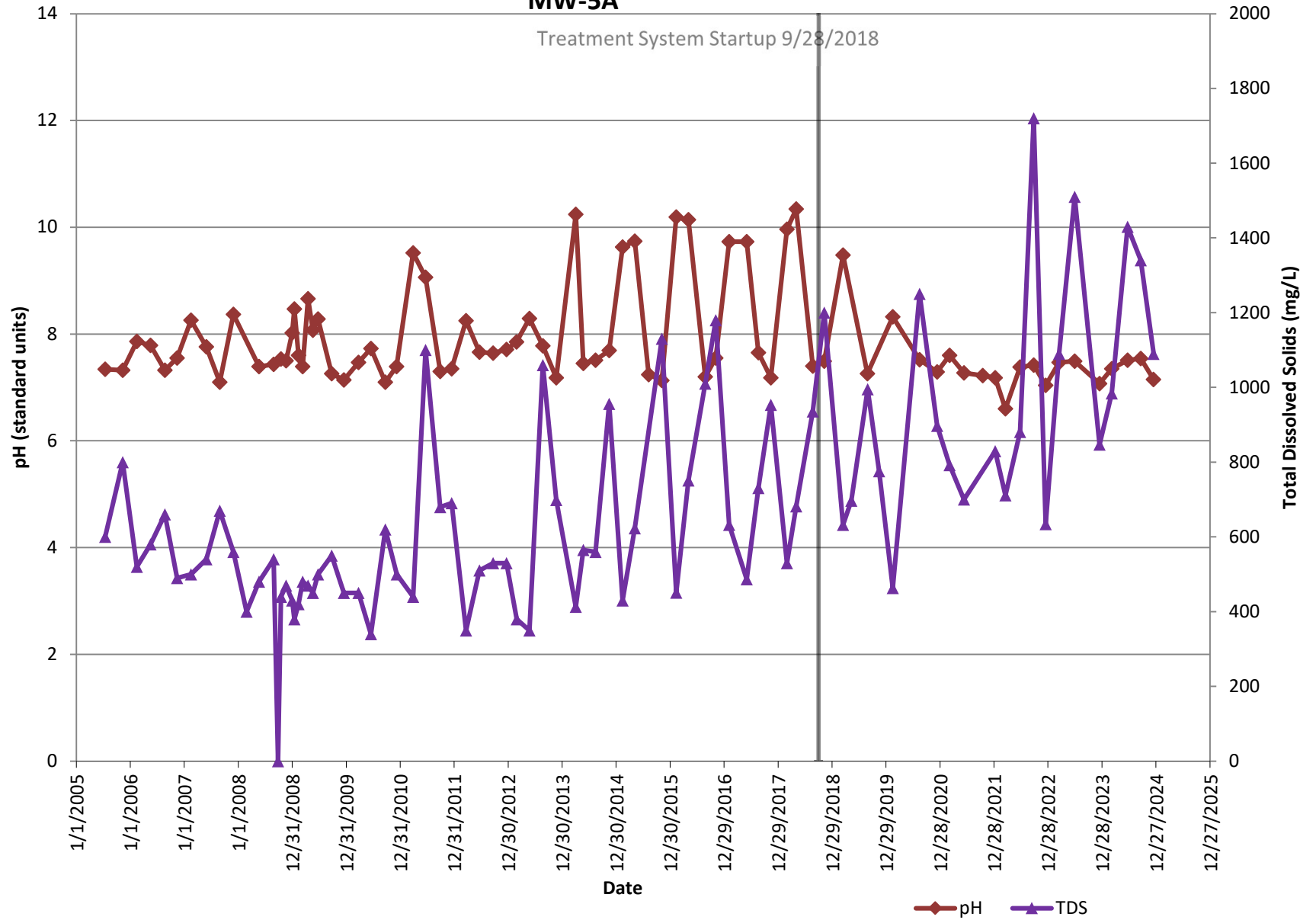


LDA Shallow Monitoring Wells

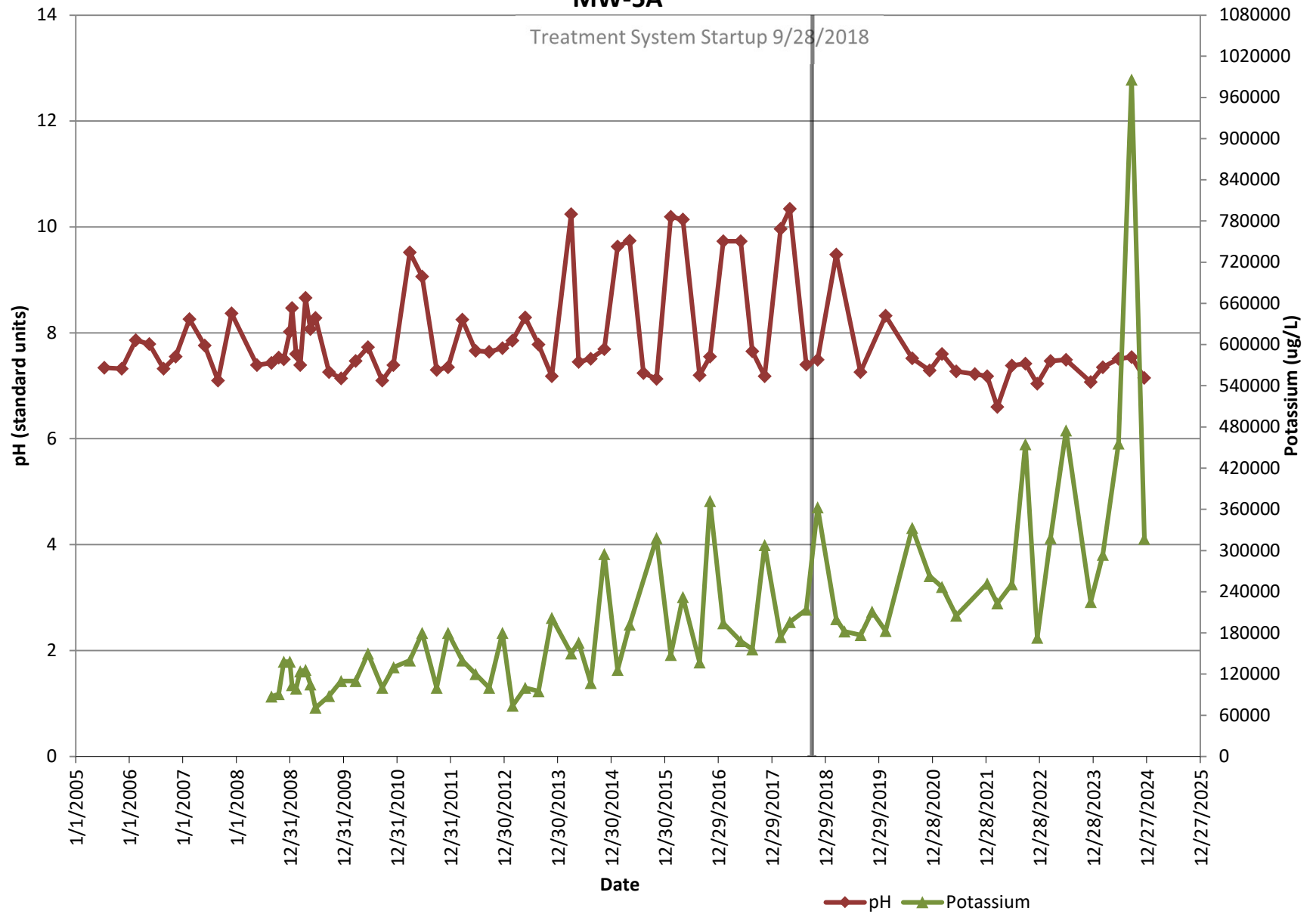
MW-5A



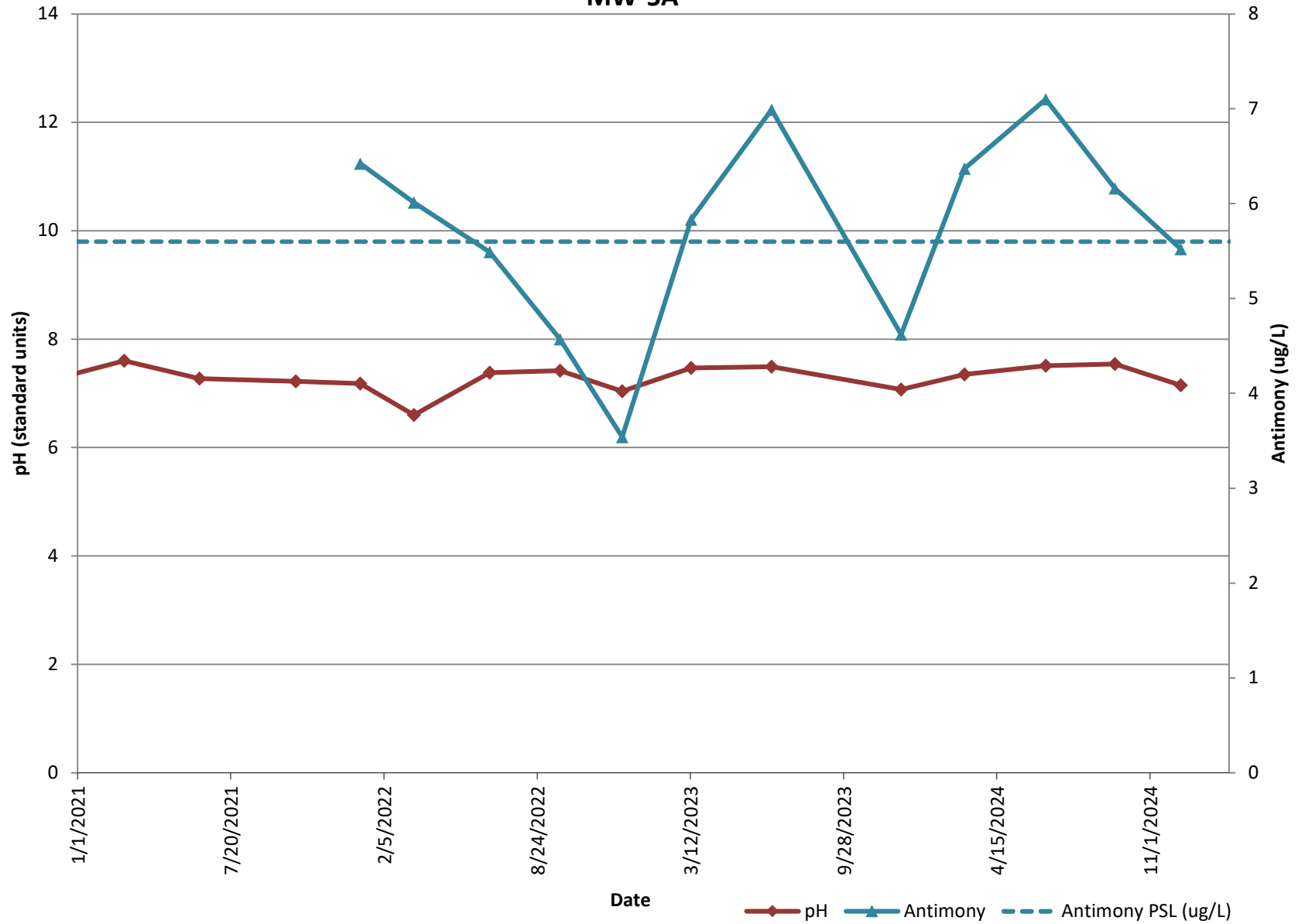
LDA Shallow Monitoring Wells MW-5A



LDA Shallow Monitoring Wells MW-5A

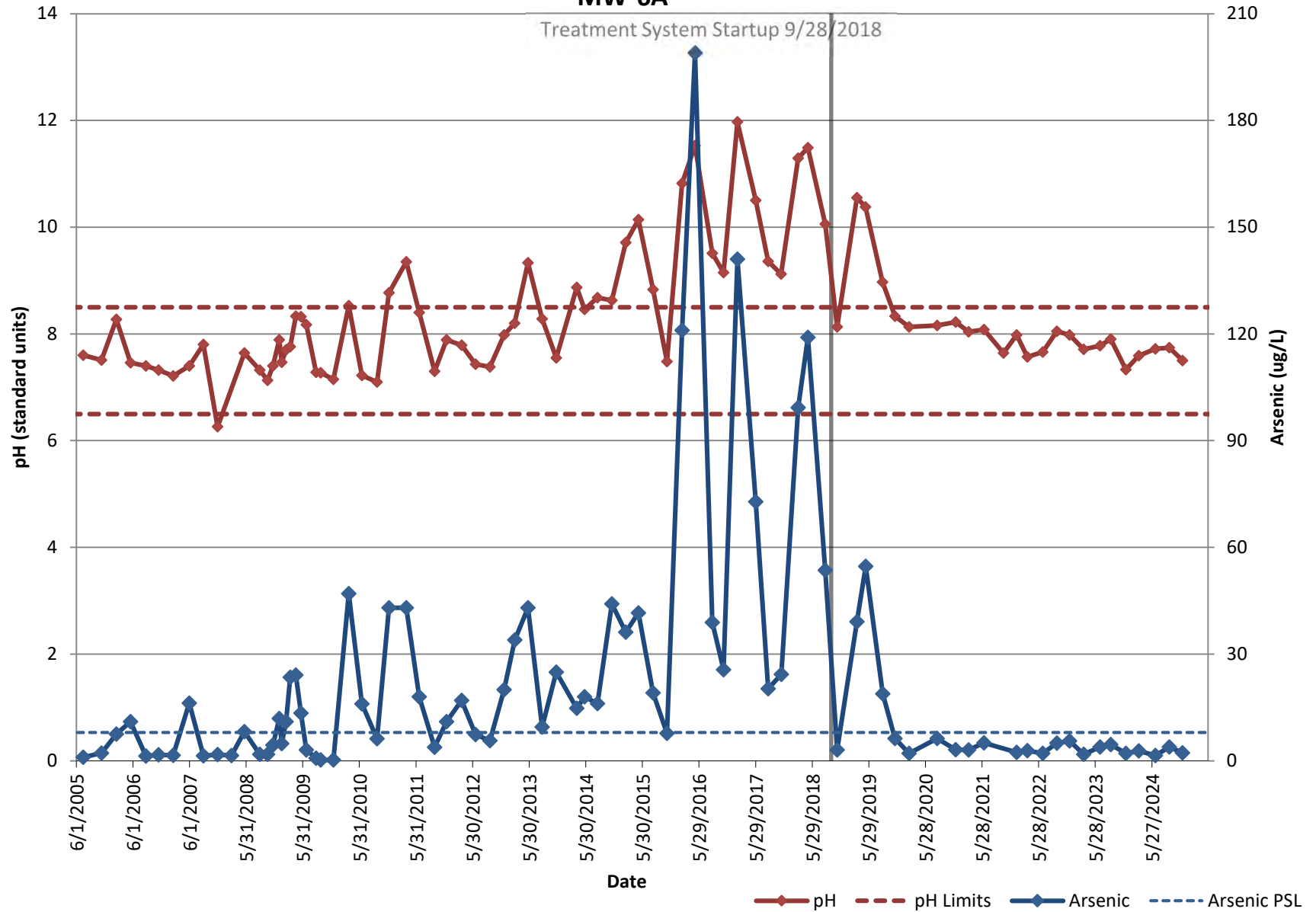


LDA Shallow Monitoring Wells MW-5A

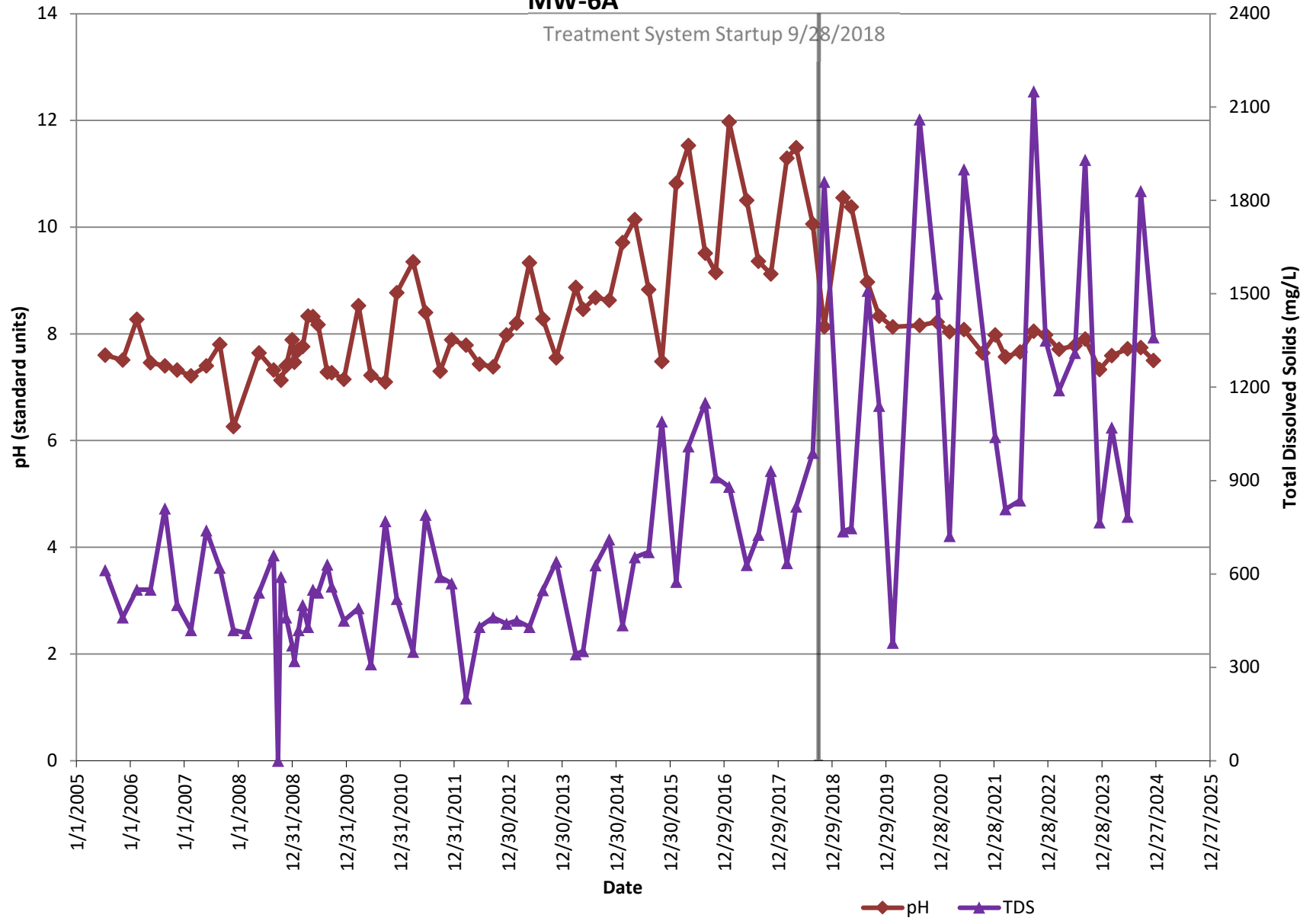


LDA Shallow Monitoring Wells

MW-6A

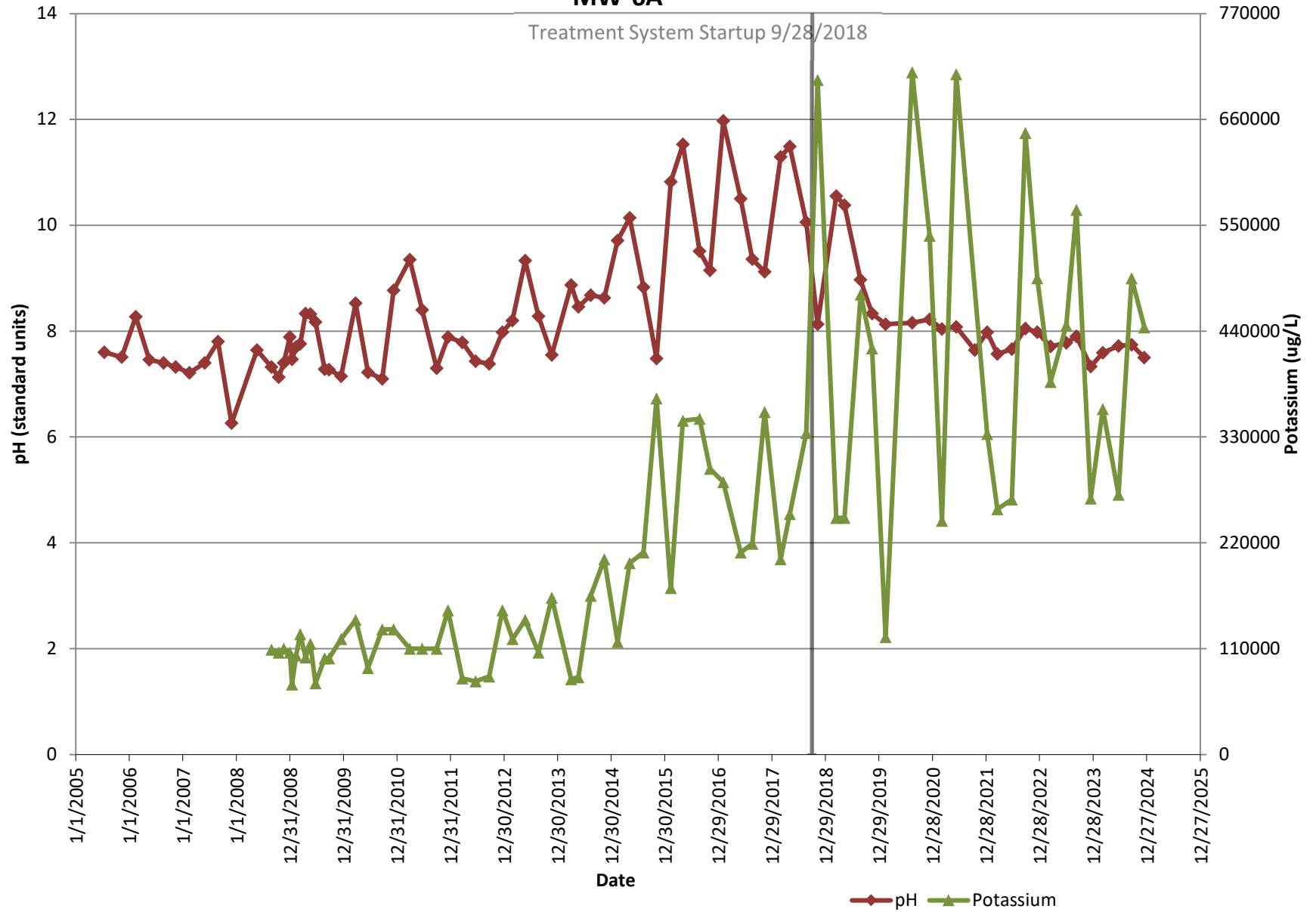


LDA Shallow Monitoring Wells MW-6A

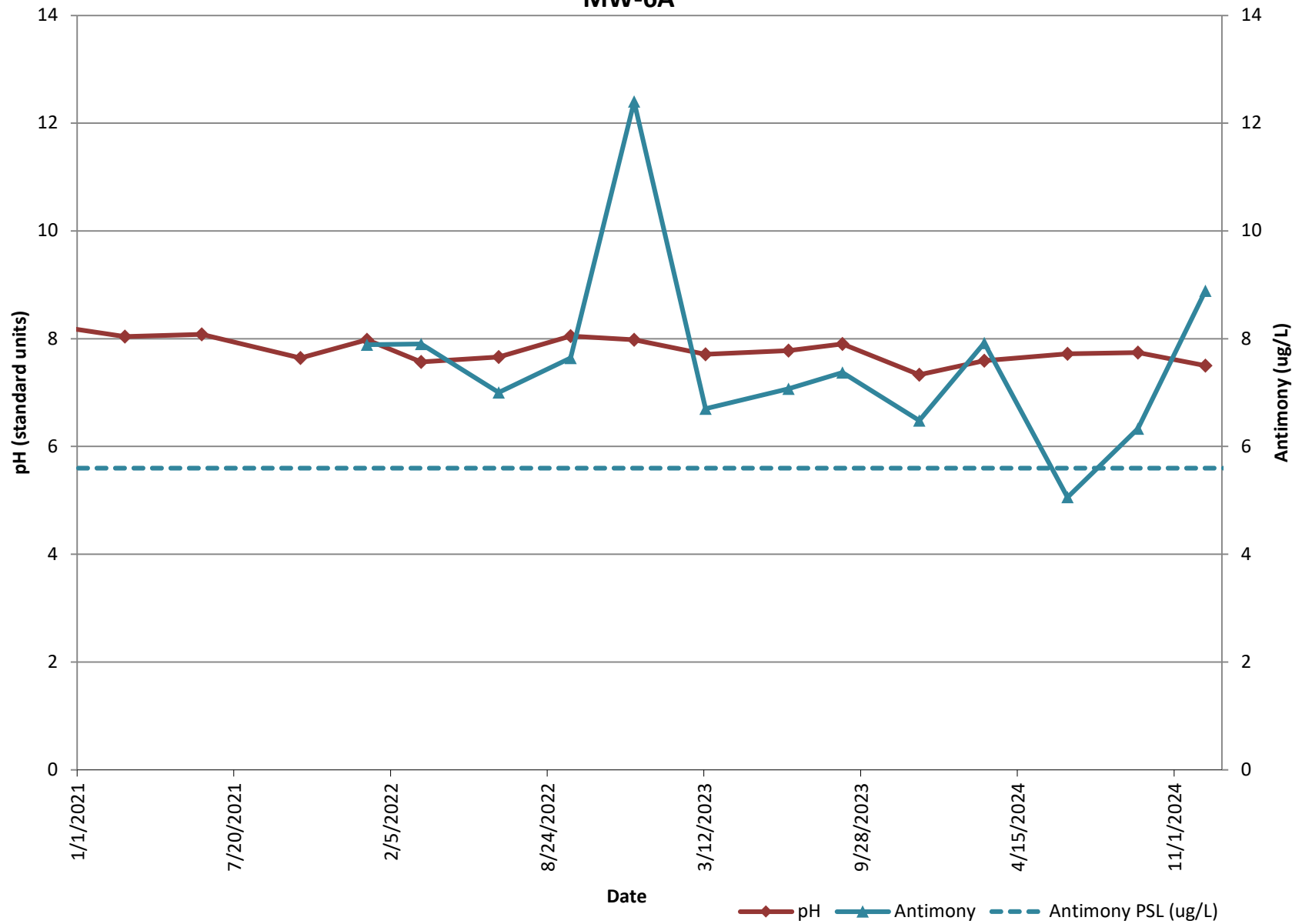


LDA Shallow Monitoring Wells

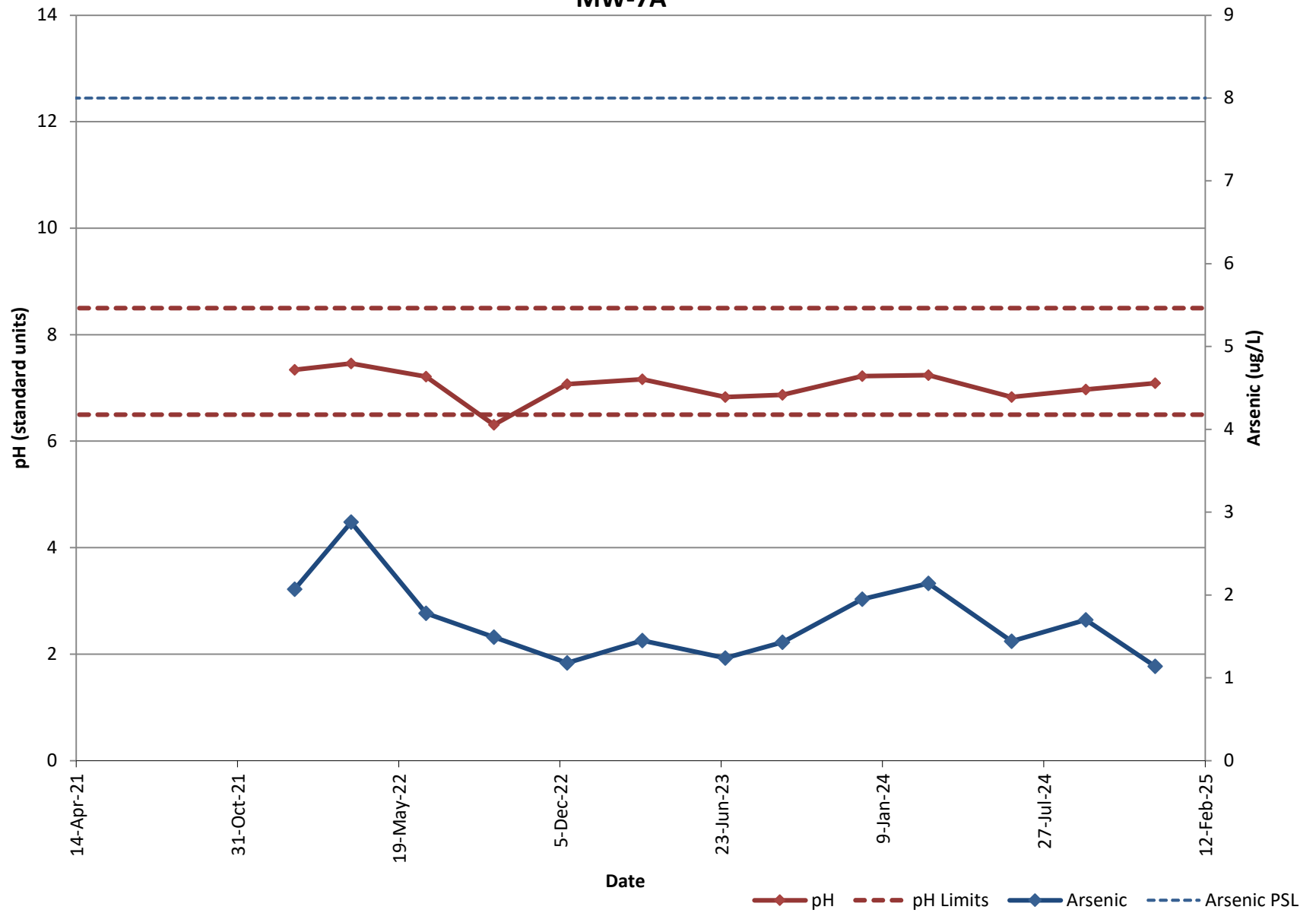
MW-6A



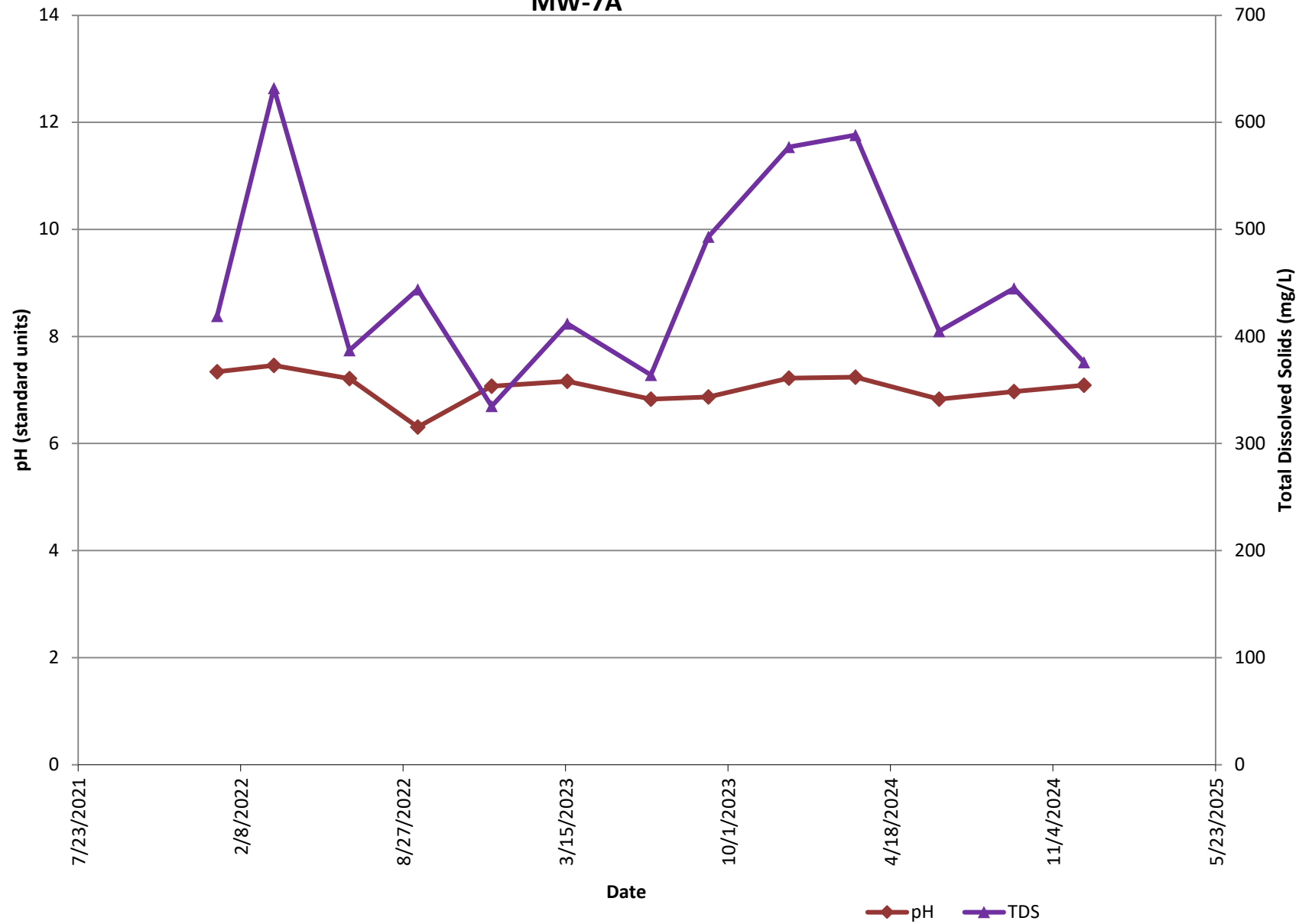
LDA Shallow Monitoring Wells MW-6A



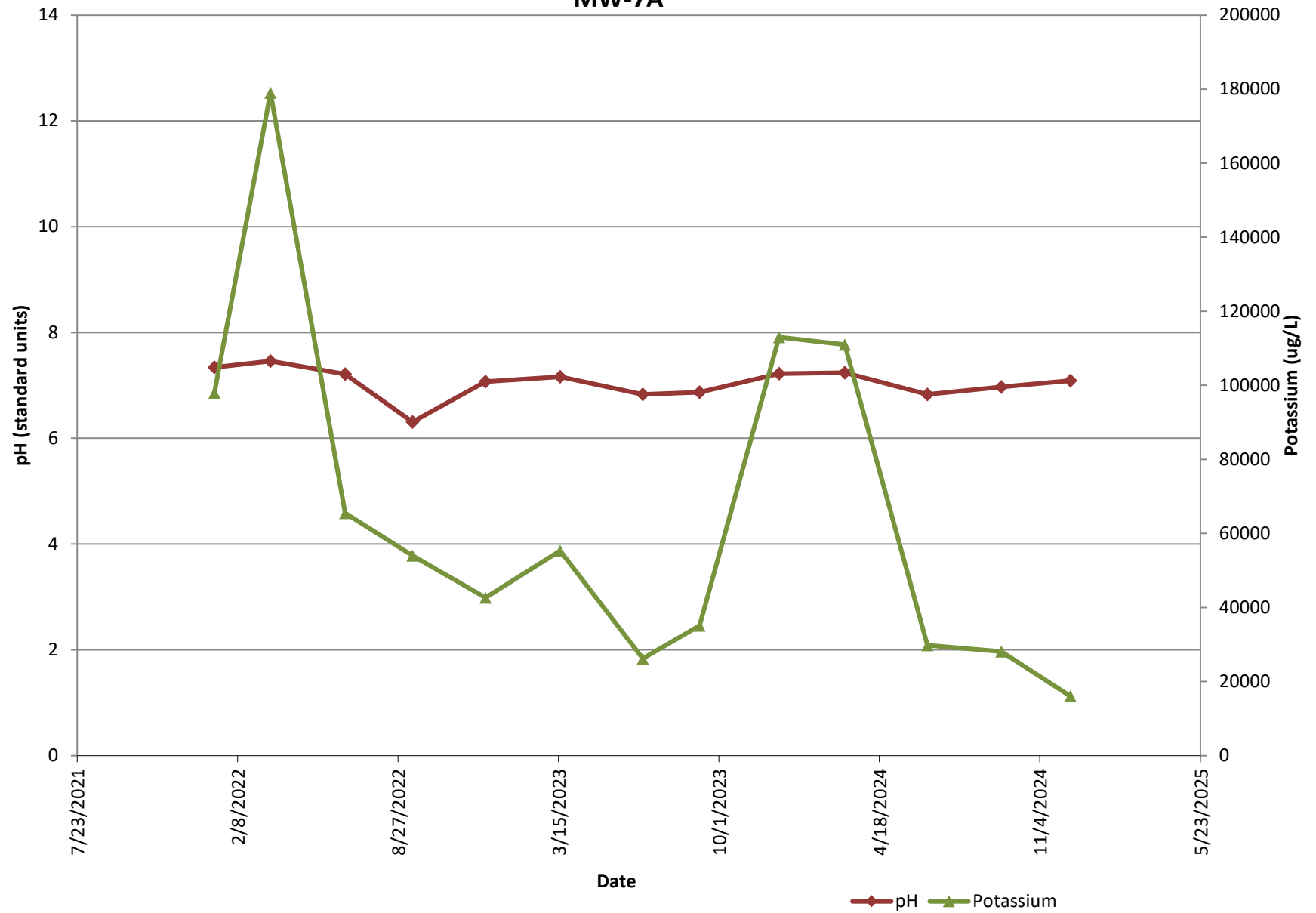
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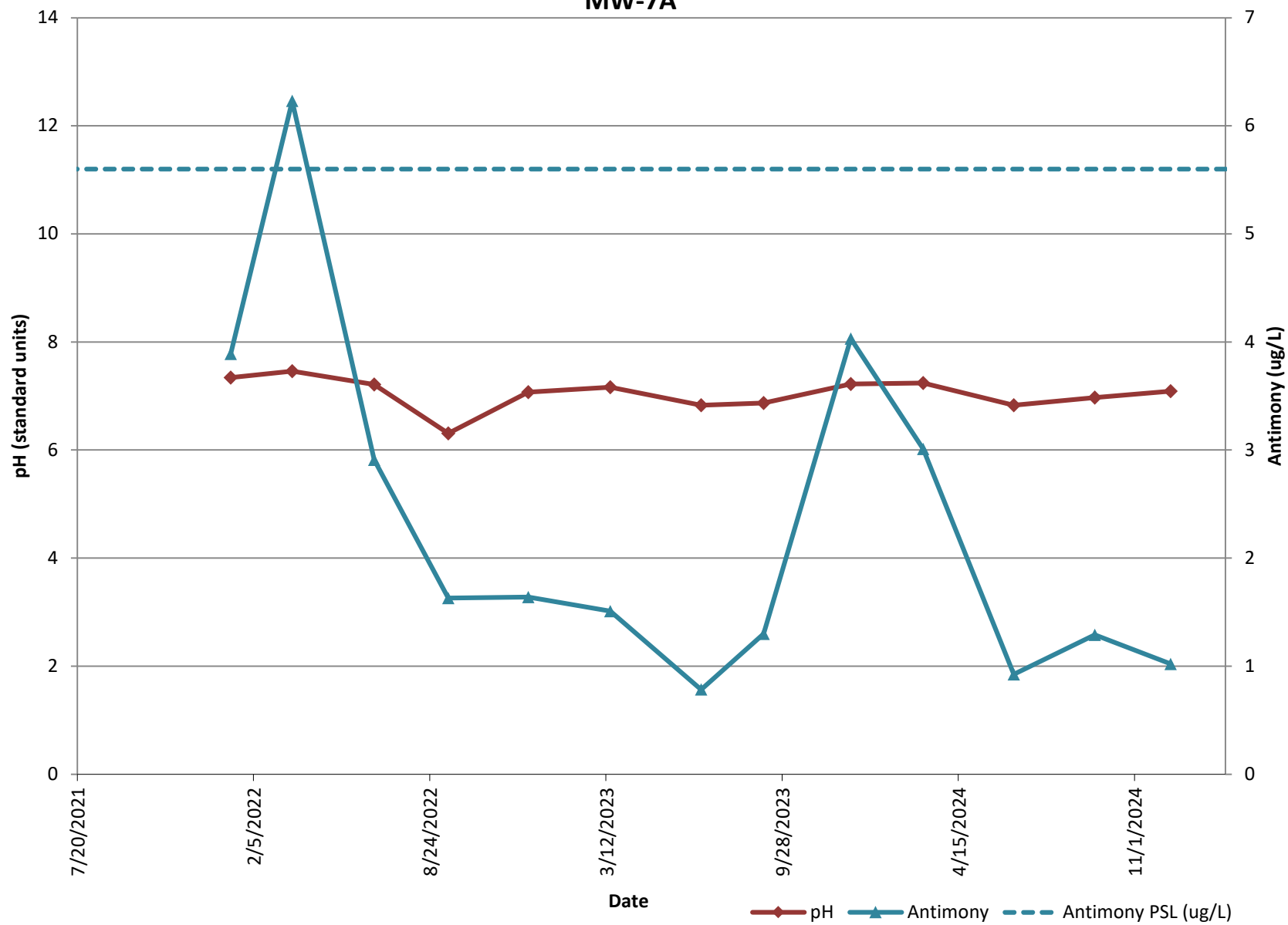
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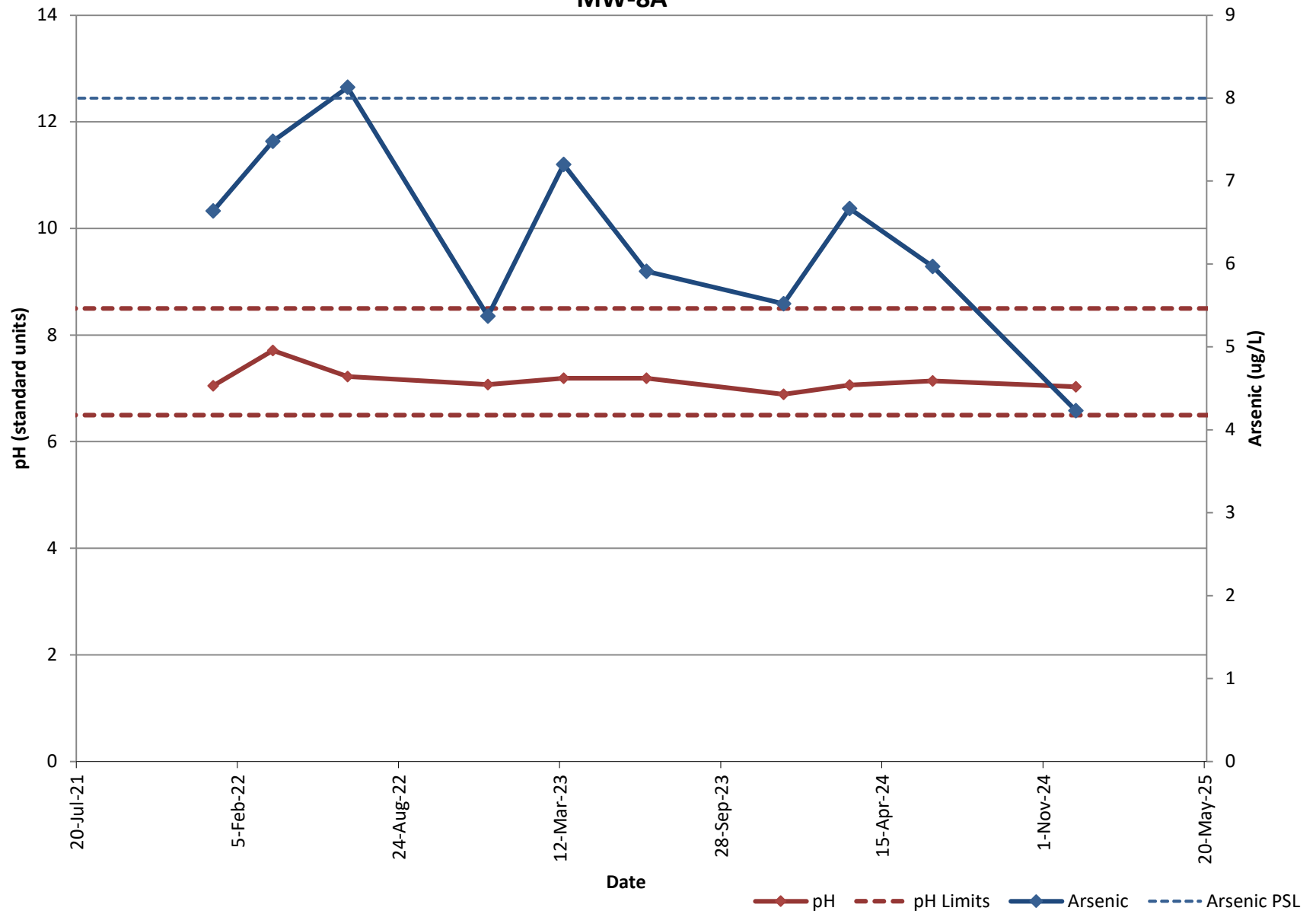
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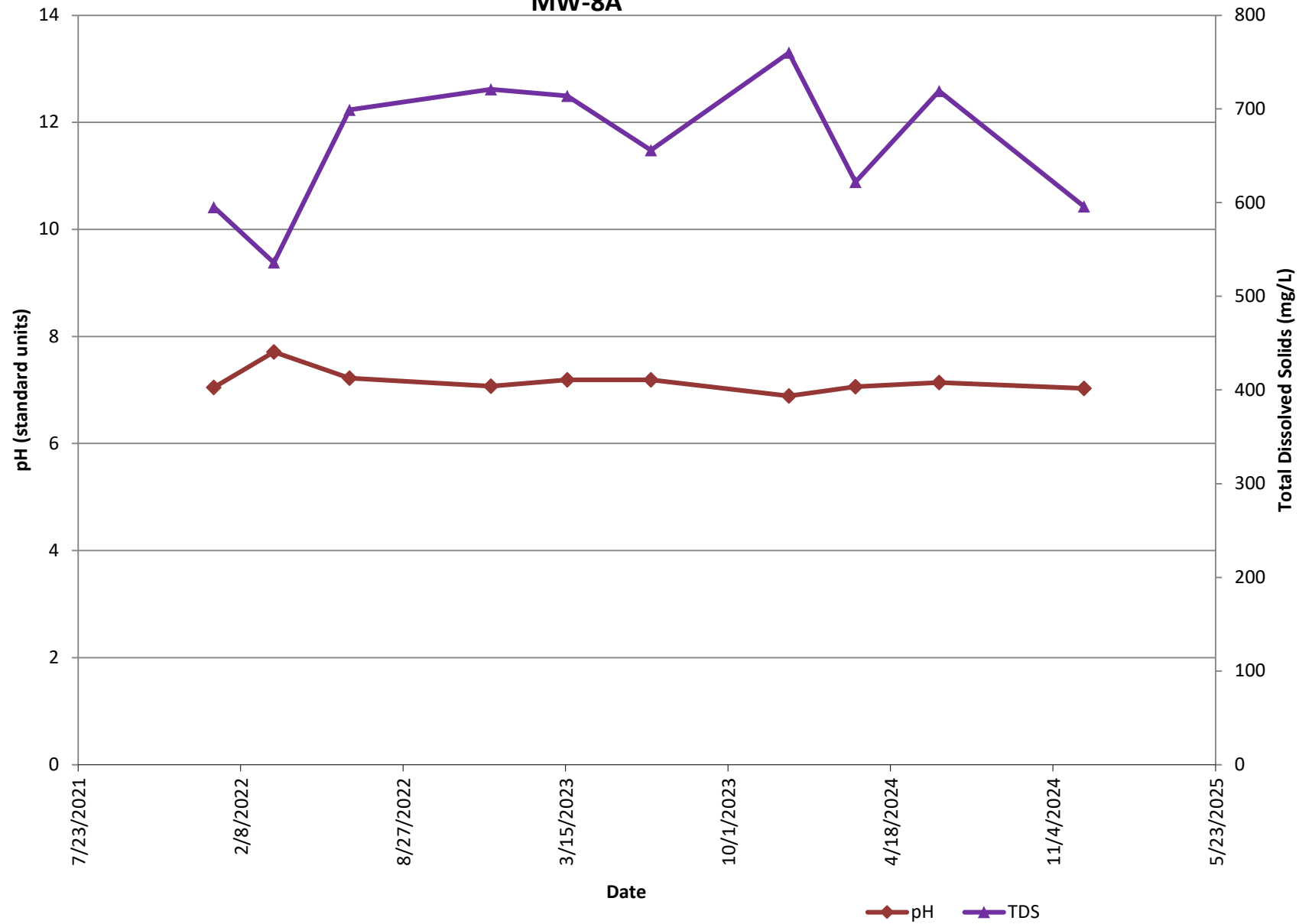
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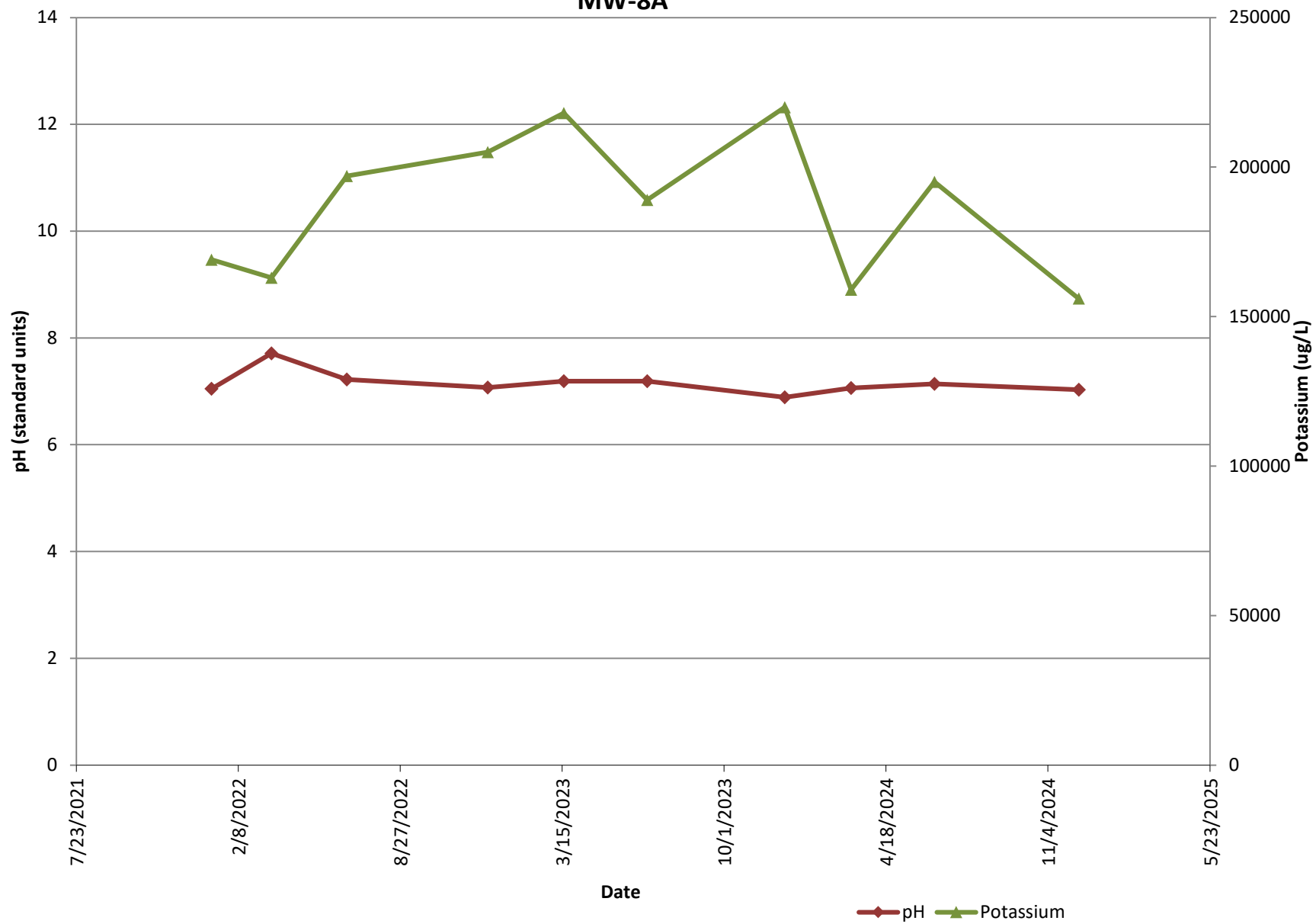
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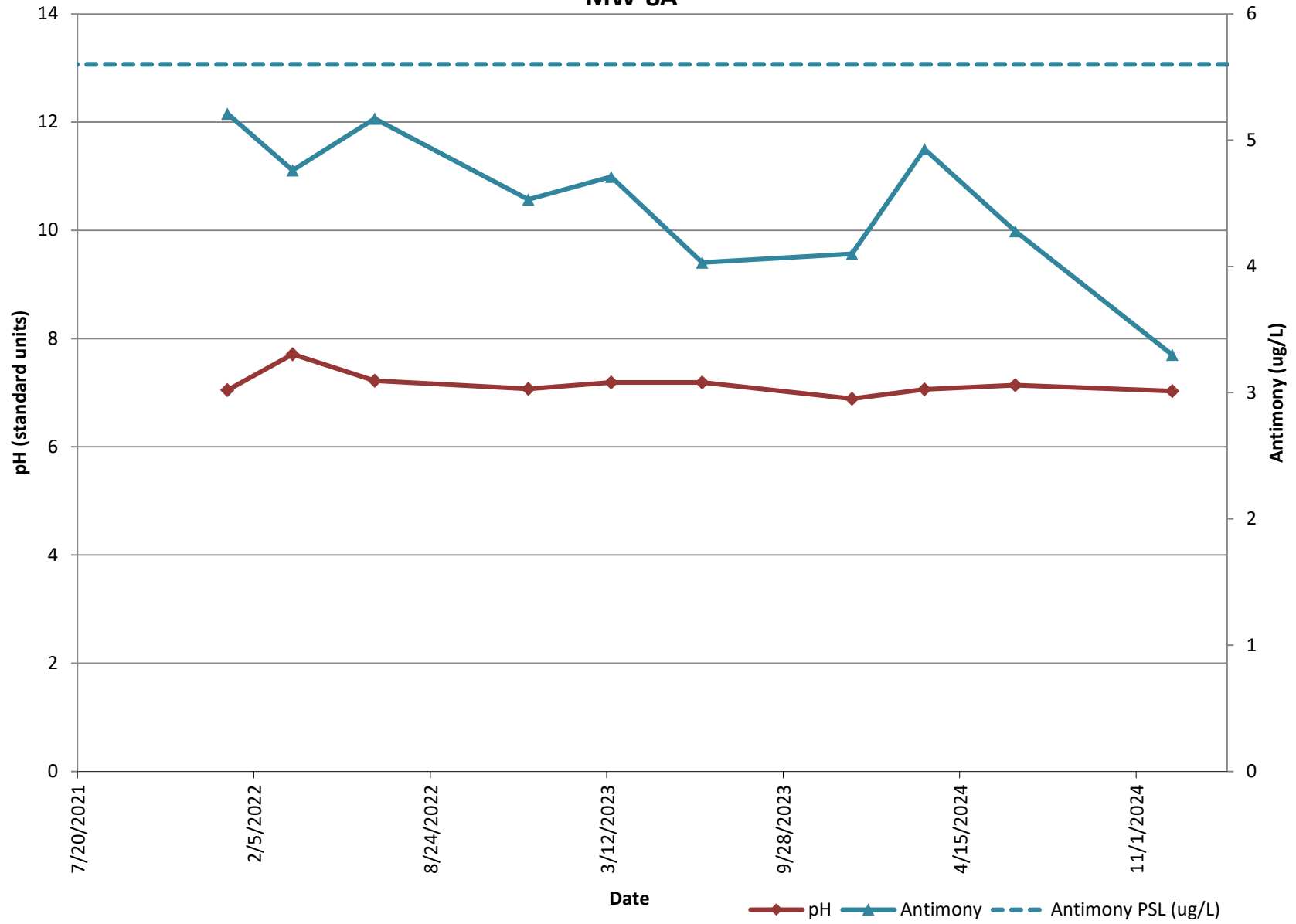
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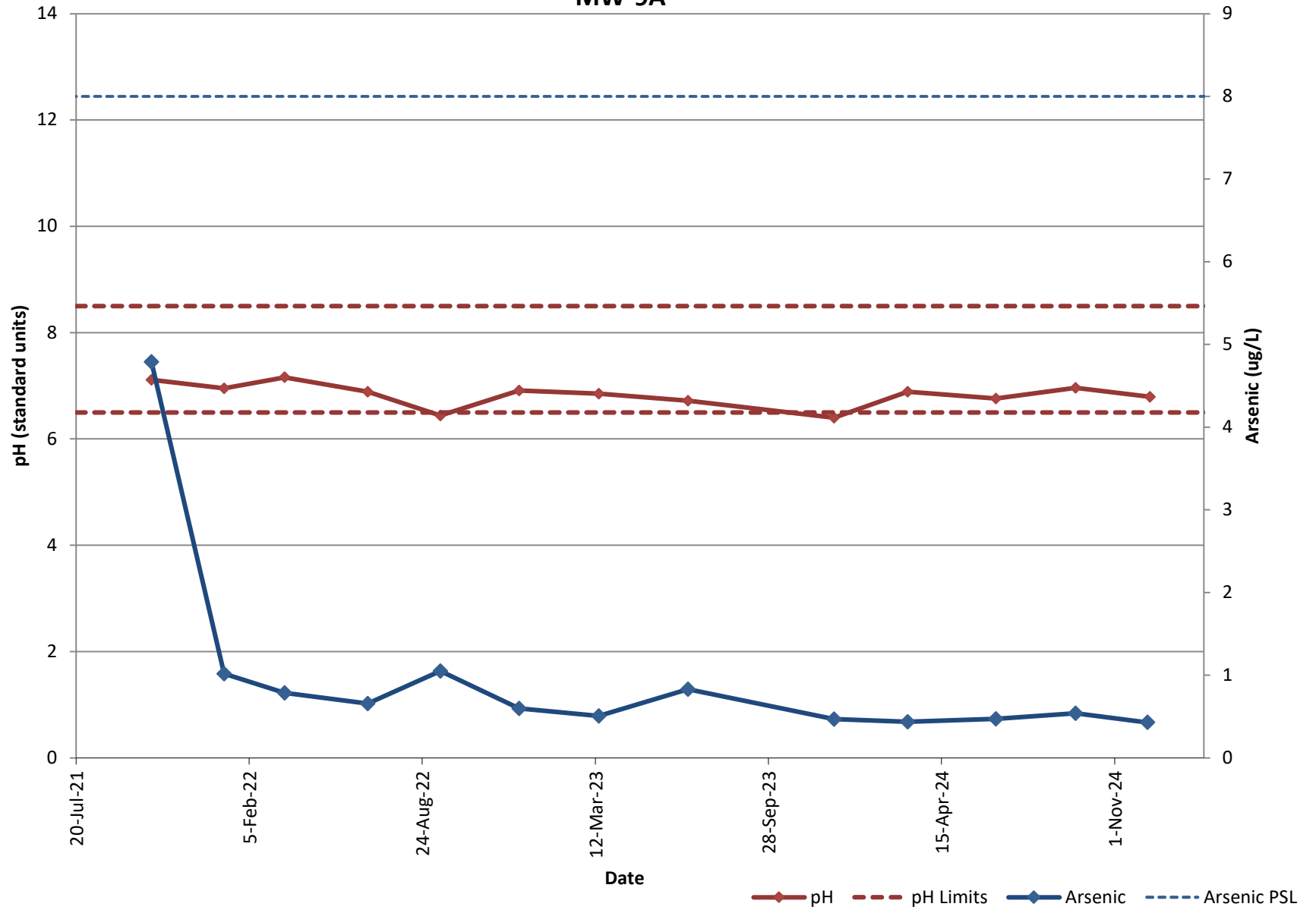
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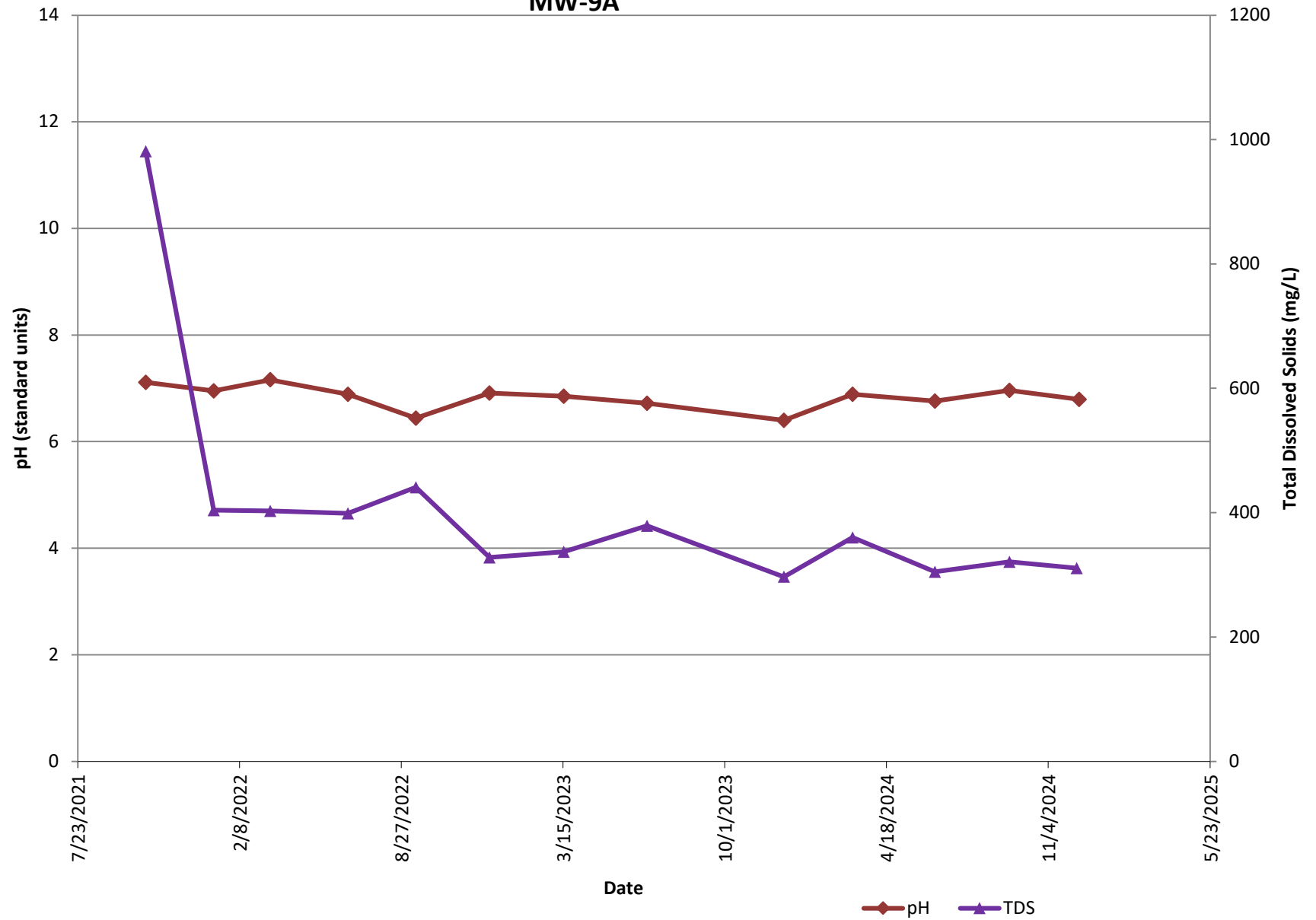
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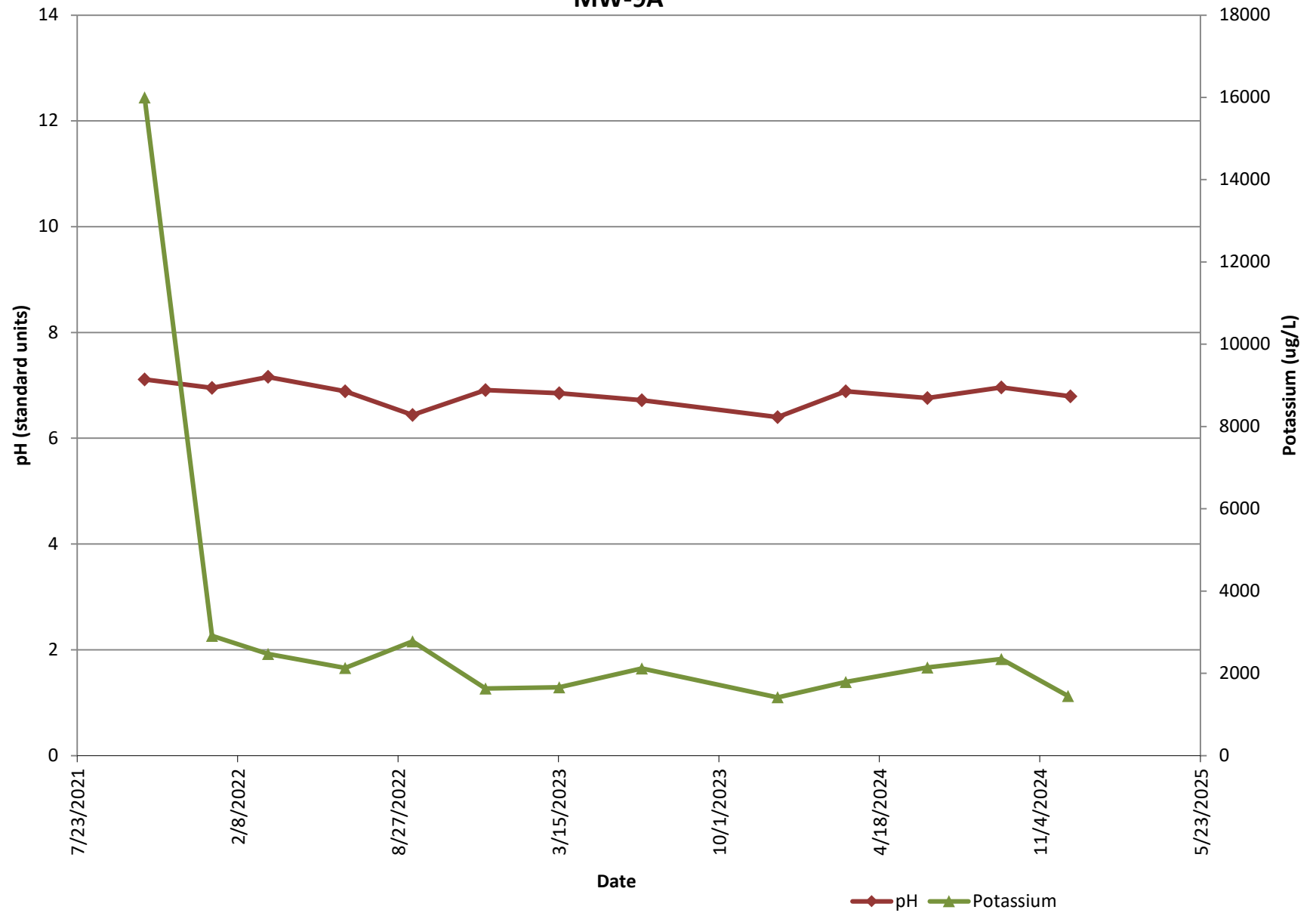
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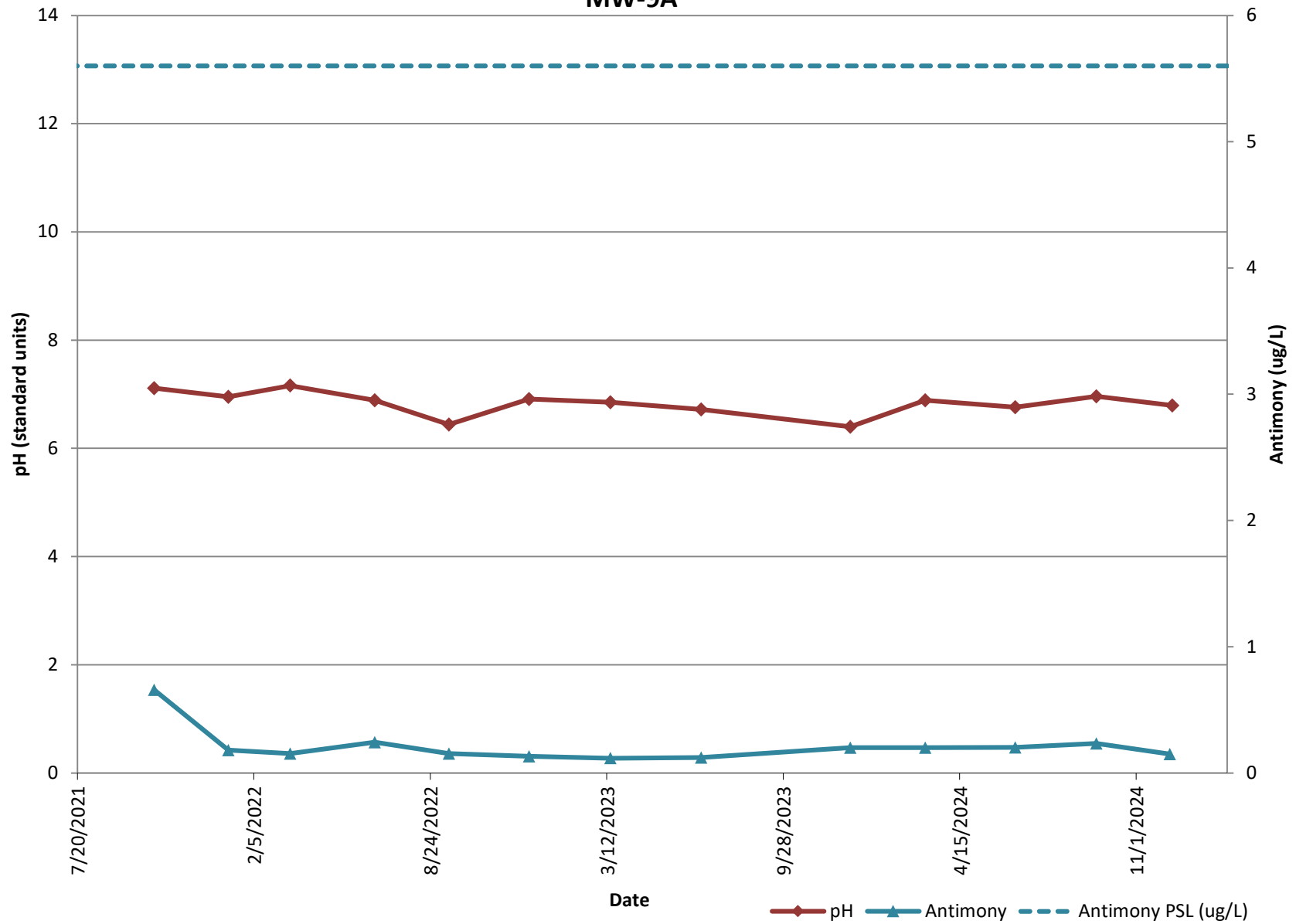
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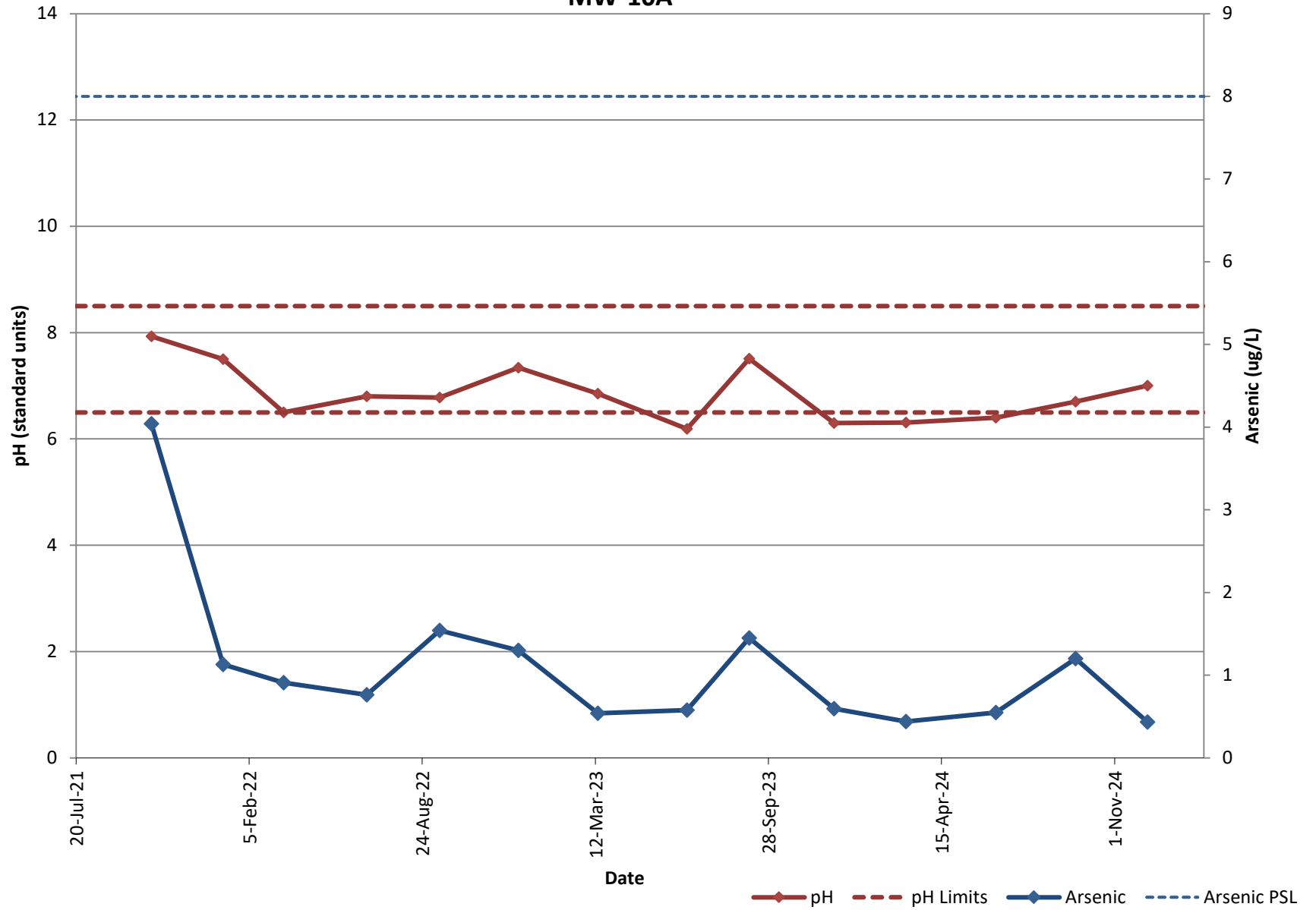
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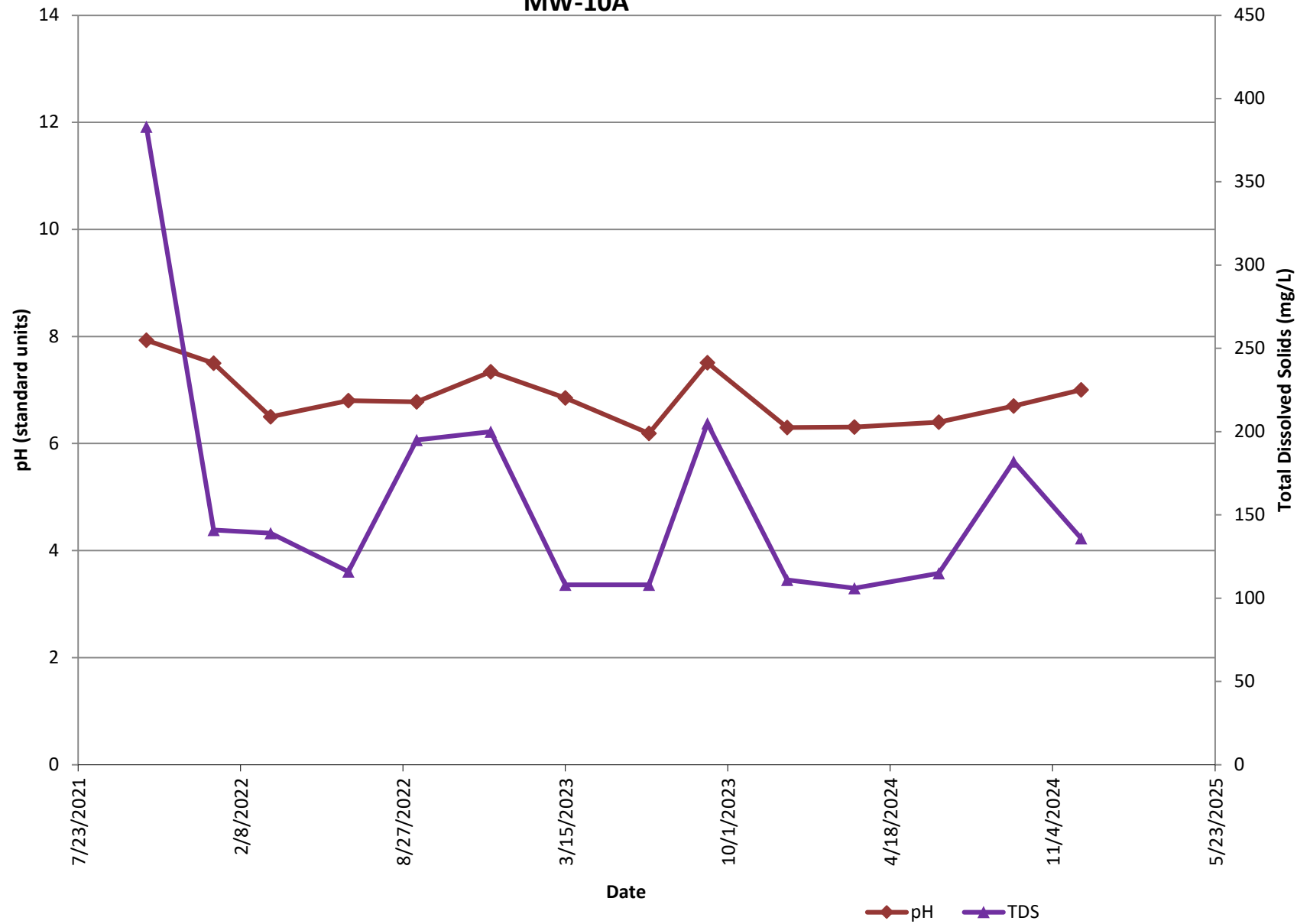
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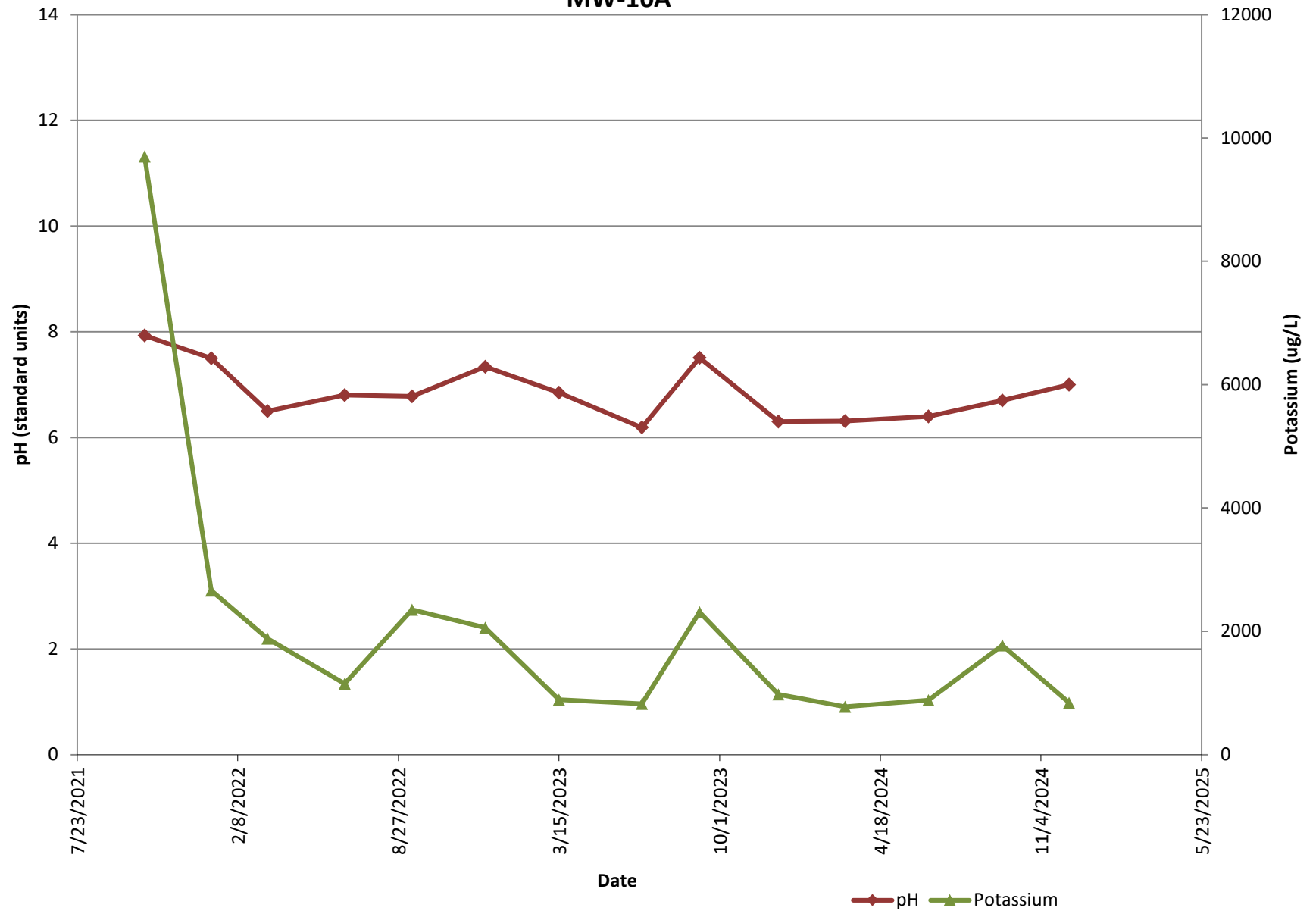
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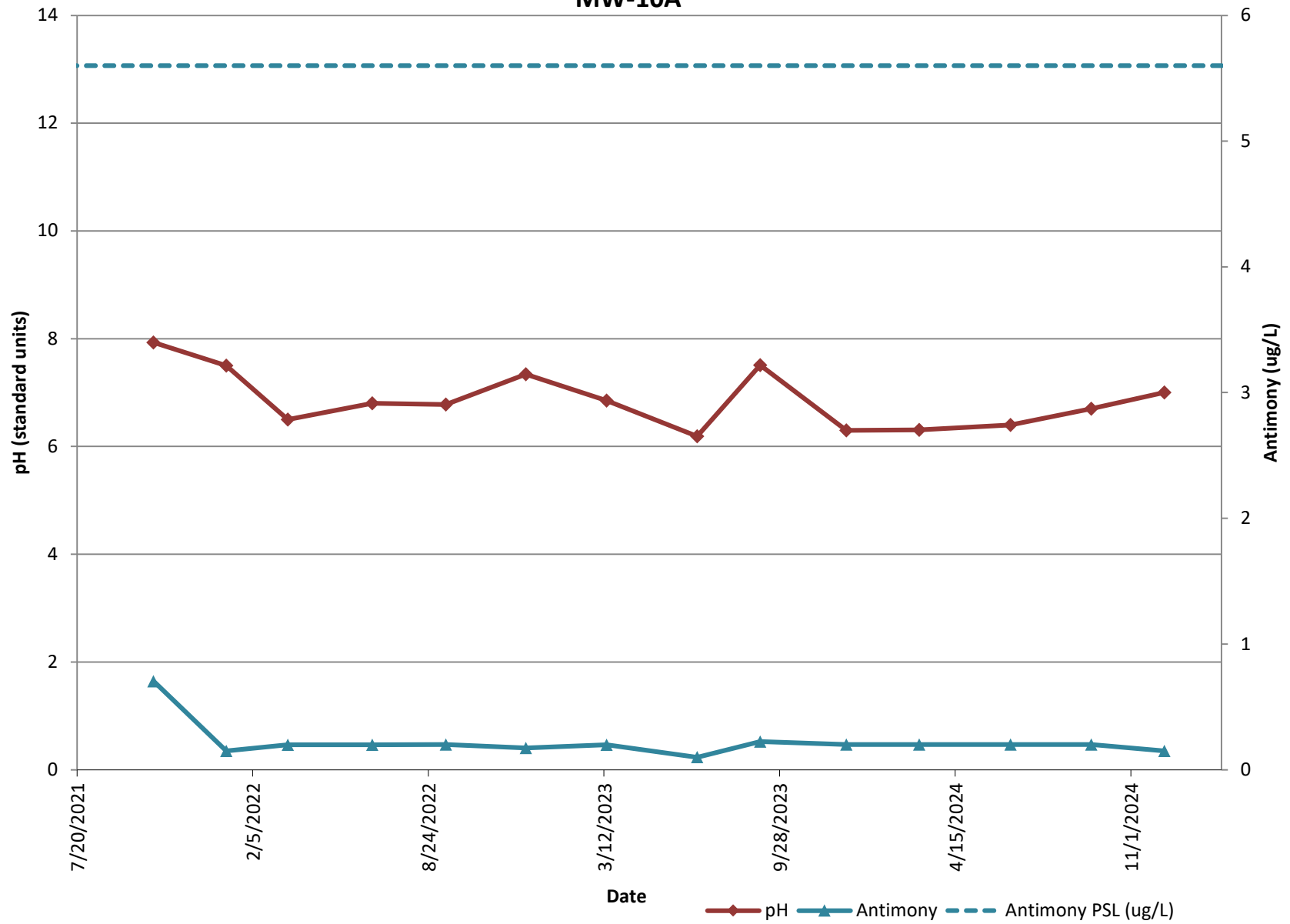
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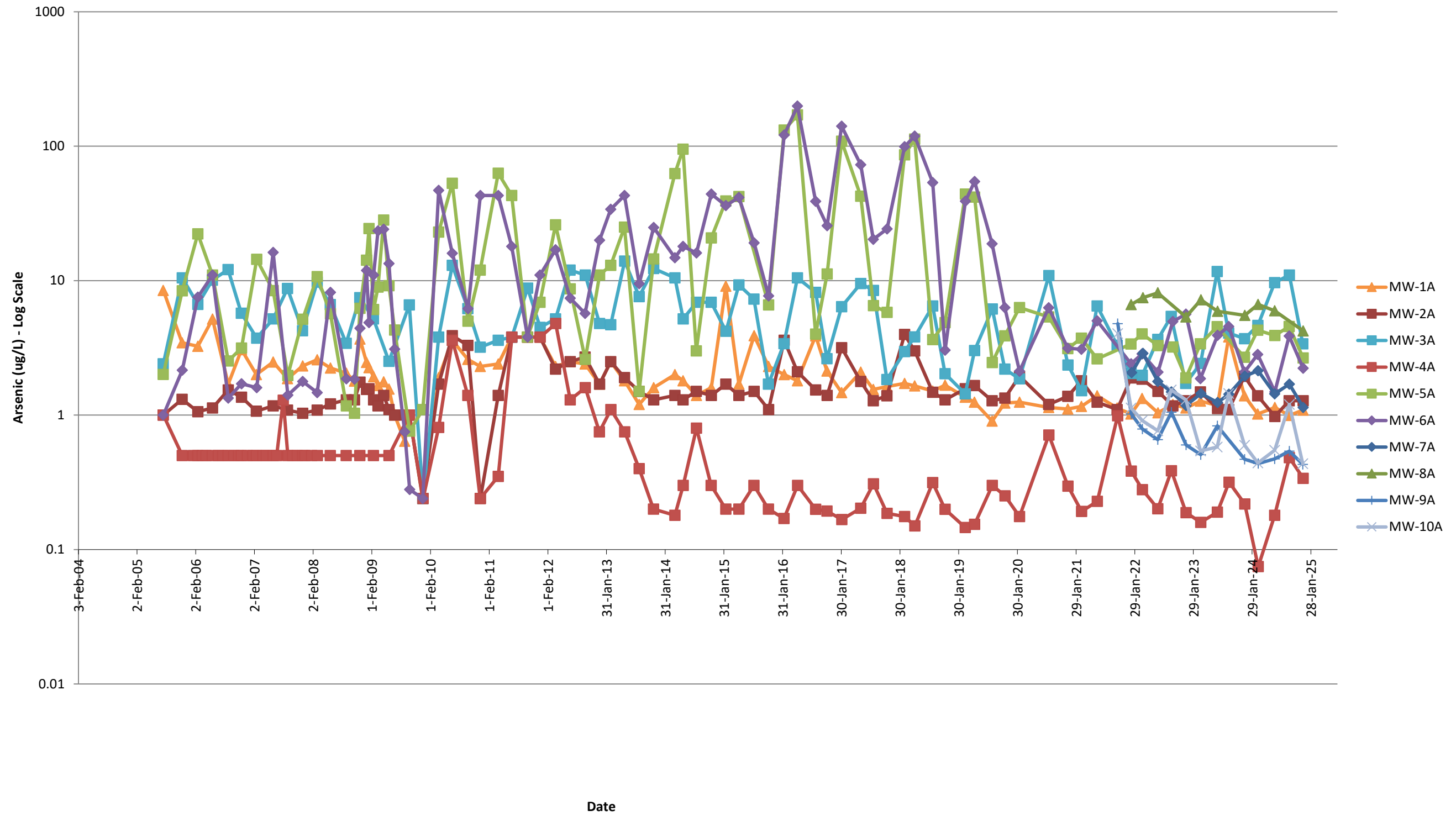
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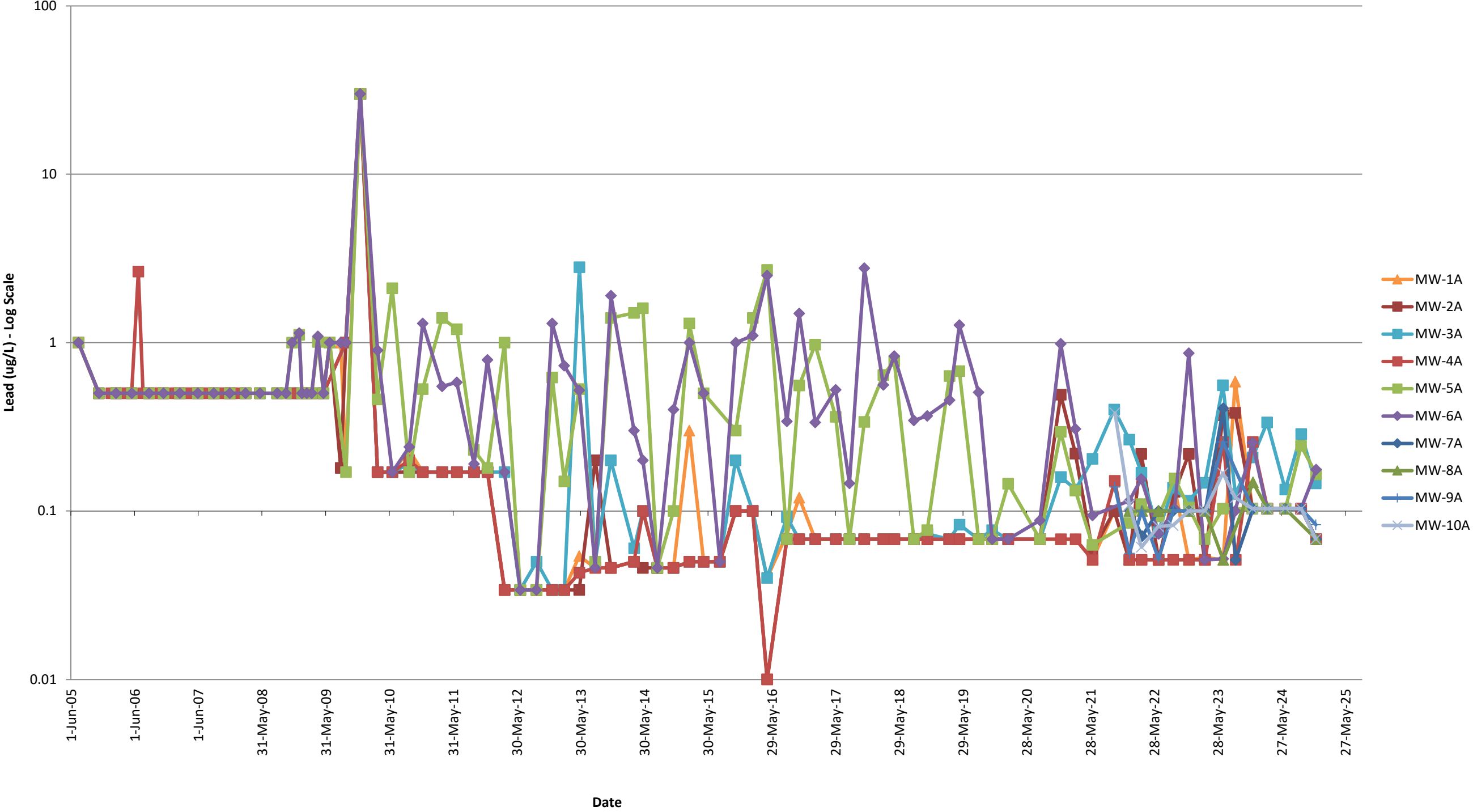
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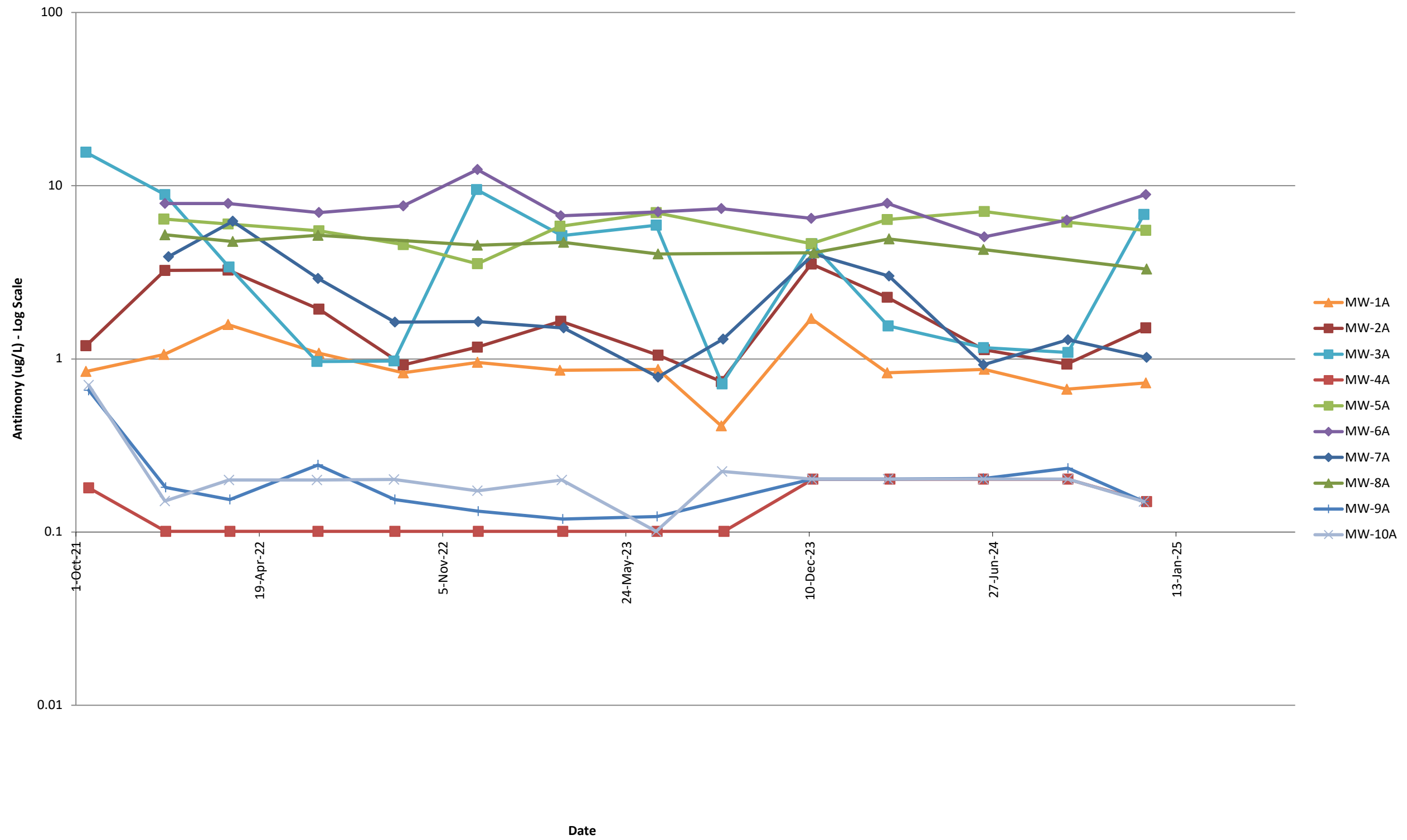
LDA Shallow Monitoring Wells

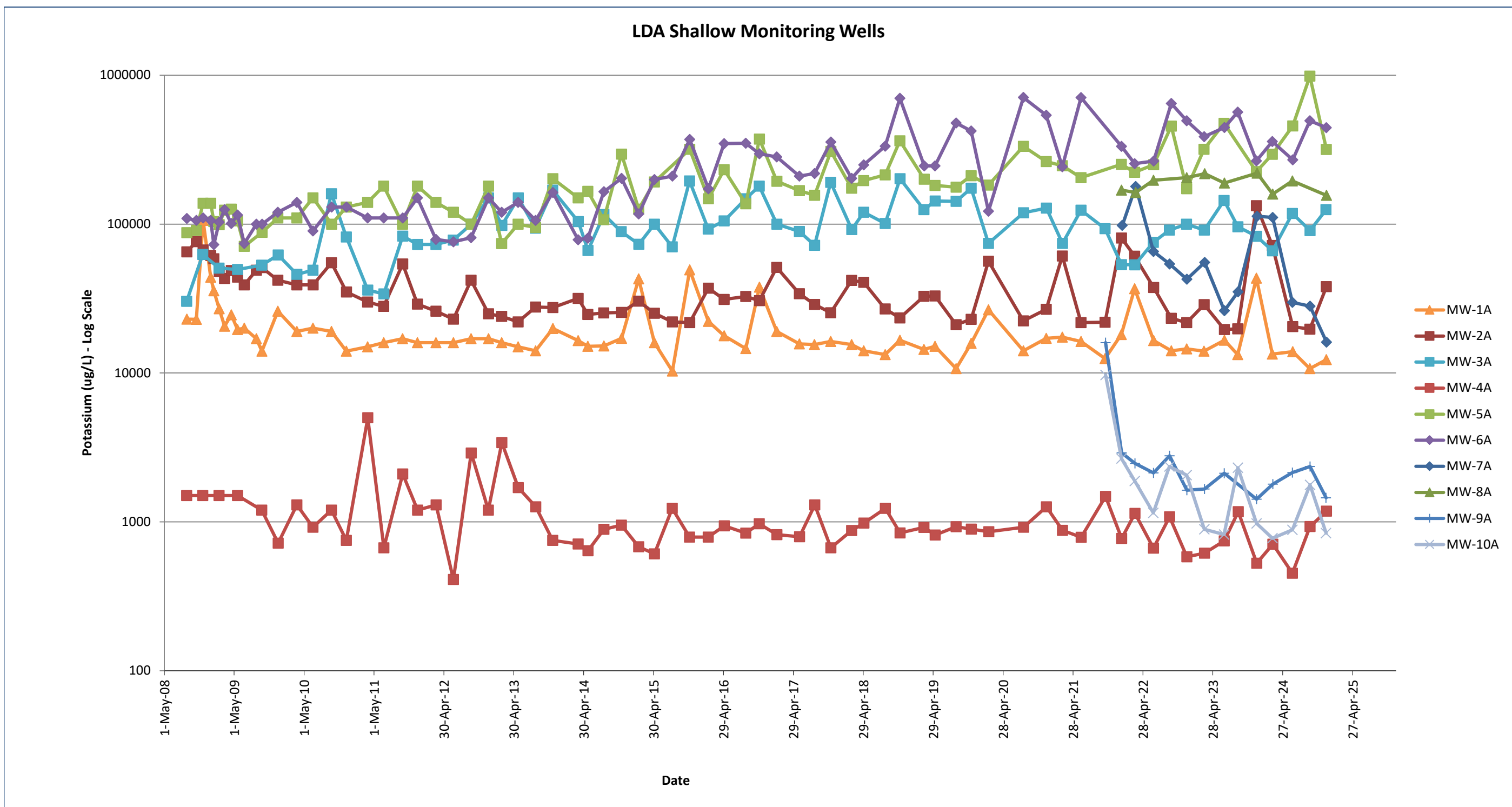


A Shallow Monitoring Wells

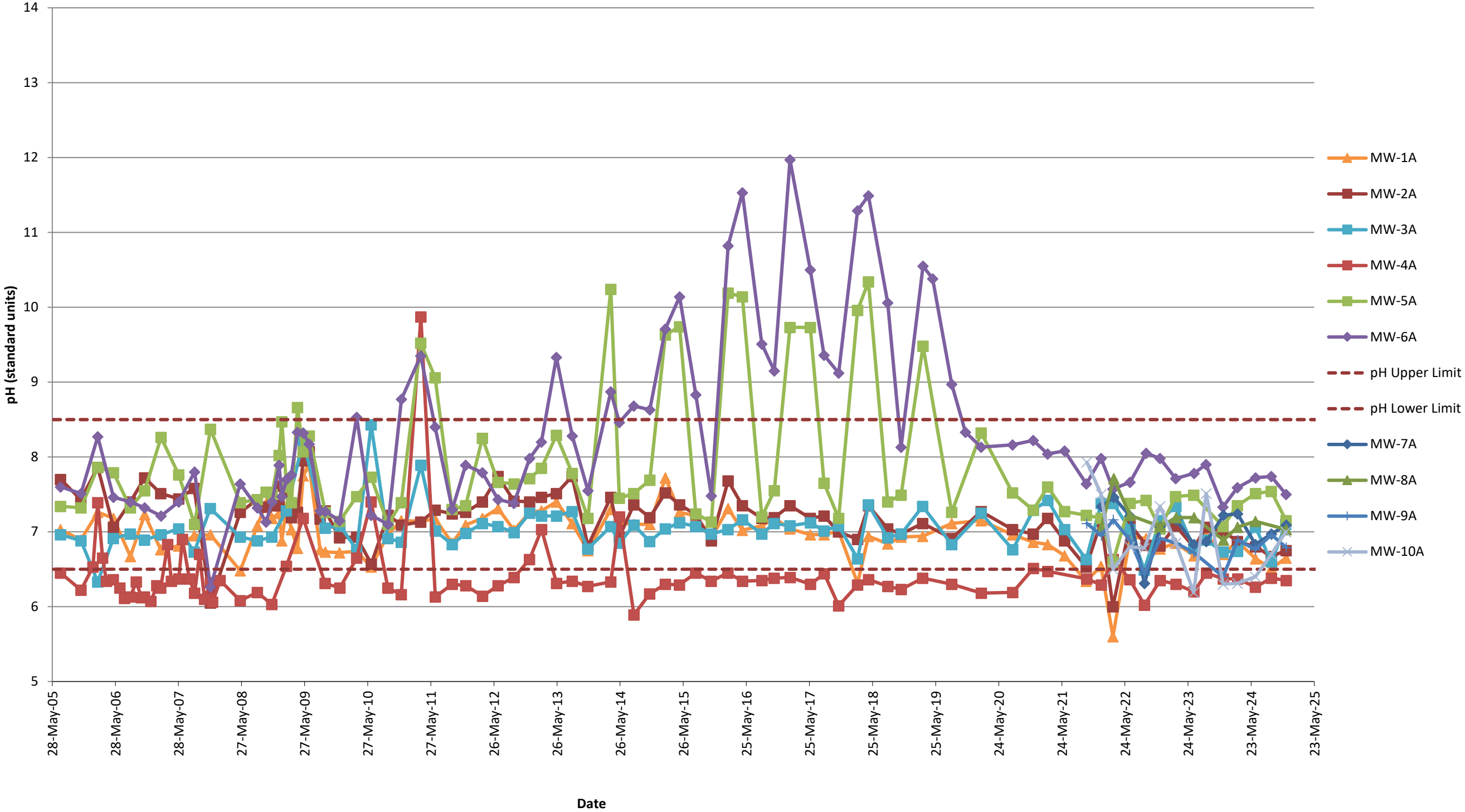


LDA Shallow Monitoring Wells





LDA ShallowMonitoring Wells



APPENDIX C

**Data Validation Report and
Laboratory Analytical Results**

Data Validation Checklist

Project Name:	Ravensdale Project
Project Number:	US-WSP-31406578.8318/300
Sample Identification(s):	MW-1A-1224, MW-2A-1224, MW-3A-1224, MW-4A-1224, MW-5A-1224, MW-6A-1224, MW-7A-1224, MW-8A-1224, MW-9A-1224, MW-10A-1224, MW-45A-1224 (Field duplicate of MW-2A), Infiltration Ponds – 1224, Weir-1224 (MS/MSD), South Pond-1224, Still Well – 1224, Interceptor Trench – 1224, Baja well-1224, MW-35A-1224 (Field duplicate of Infiltration Ponds), and MW-99-1-1224 (Field blank)
Sample Date(s):	12/9/2024, 12/11/2024, and 12/12/2024
Sample Team:	Andrew Waser, WSP
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	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)
Laboratory Report No.:	24L0245

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

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		X		X	
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		X	
7. MS duplicate (MSD) %R		X	X		
8. MS / MSD RPD		X		X	
9. LCS / LCSD RPD		X		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:

- The MSD recovery from project sample Weir-1224 exceeded the QC criteria (75-125%) for dissolved potassium (131%). When only 1 of the 3 QC criteria (MS/MSD/RPD) is exceeded, no action is required other than to note.
- The MS/MSD recoveries from project sample Infiltration Ponds-1224 exceeded the QC criteria (75-125%) for dissolved potassium (133/141%). The native sample concentration was four times greater than the spiking concentration and therefore no qualifications were required. There is no other action than to note.
- Field duplicates are as follows: MW-35A-1224 is a duplicate for Infiltration Ponds-1224, and MW-45A-1224 is a field duplicate for MW-2A-1224. 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 National Functional 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		X		X	
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		X	
7. MS duplicate (MSD) %R		X		X	
8. MS/MSD RPD		X		X	
9. LCS/LCSD RPD		X		X	
10. Laboratory Duplicate RPD		X		X	
11. Field duplicate comparison		X		X	

%R – percent recovery

RPD – relative percent difference

Comments:

- Field duplicates are as follows: MW-35A-1224 is a duplicate for Infiltration Ponds-1224, and MW-45A-1224 is a field duplicate for MW-2A-1224. All RPD values were within QC limits; no qualifications were required

Data Validation Checklist
Summary and Data Qualifier Codes

Project Name:	Ravensdale Project
Project Number:	US-WSP-31406578.8318/300
Sample Identification(s):	MW-1A-1224, MW-2A-1224, MW-3A-1224, MW-4A-1224, MW-5A-1224, MW-6A-1224, MW-7A-1224, MW-8A-1224, MW-9A-1224, MW-10A-1224, MW-45A-1224 (Field duplicate of MW-2A), Infiltration Ponds – 1224, Weir-1224 (MS/MSD), South Pond-1224, Still Well – 1224, Interceptor Trench – 1224, Baja well-1224 , MW-35A-1224 (Field duplicate of Infiltration Ponds), and MW-99-1-1224 (Field blank)
Sample Date(s):	12/9/2024, 12/11/2024, and 12/12/2024
Sample Team:	Andrew Waser, WSP
Sample Matrix:	Aqueous
Analyzing Laboratory:	Analytical Resources, Inc. – Tukwila, WA
Analyses:	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)
Laboratory Report No.:	24L0245

Sample ID	Analyte(s)	Old Result	Old Qualifier	New Result	New Qualifier	Reason(s)
No Qualifications Required						

Validation Performed By:	Julia Campbell, WSP
Date:	2/3/2025
Peer Review Performed By:	Michael Shadle
Date:	2/20/2025

Infiltration Ponds		MW-35A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	14.9	13.9	7%	ug/L		1	0.75
Arsenic	22	20.3	8%	ug/L		1	0.5
Potassium	556	571	3%	mg/L		2.5	1.25
Lead	2.82	2.63	7%	ug/L		0.5	0.34
Vanadium	2.14	1.96	9%	ug/L		1	0.5
Total Dissolved Solids	1610	1630	1%	mg/L		20	20
Antimony, dissolved	14.6	13.6	7%	ug/L		1	0.75
Arsenic, dissolved	22.2	21.2	5%	ug/L		1	0.5
Potassium, dissolved	566	568	0%	mg/L		2.5	1.25
Vanadium, dissolved	1.9	1.8	5%	ug/L		1	0.5
Lead, dissolved	1.48	1.49	1%	ug/L		0.2	0.136

MW-2A		MW-45A Duplicate					
Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Antimony	1.51	1.42	6%	ug/L		0.2	0.15
Arsenic	1.28	1.28	0%	ug/L		0.2	0.1
Potassium	38	36.9	3%	mg/L		0.5	0.25
Lead	0.068	0.136	67%	ug/L		0.1	0.068
Total Dissolved Solids	408	393	4%	ug/L		10	10
Vanadium	1.09	0.886	21%	mg/L		0.4	0.2



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

24 January 2025

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

RE: Ravensdale (Ravensdale)

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.

Associated Work Order(s)
24L0245

Associated SDG ID(s)
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 enclose 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

ARI Assigned Number: 2460245	Turn-around Requested:	Page: 1 of 2
ARI Client Company: WSP	Phone:	Date: 12/12/24
Client Contact: Gary Zimmerman		Ice Present? Y
Client Project Name: Ravensdale		No. of Coolers: 2
Client Project #: US-WSP-31406578-9318	Samplers: AW + NM	Cooler Temps: 1.603



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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested								Notes/Comments
					TDS	Total Metals (As, Pb, Sb, V, U)	Dissolved Metals (As, Pb, Sb, U, K)						
MW-1A-1224	12/11/24	1355	W	2	X	X							
MW-2A-1224	12/11/24	1240 1240	W	2	X	X							
MW-3A-1224	12/9/24	1315 1315	W	2	X	X							
MW-4A-1224	12/12/24	1035 1035	W	2	X	X							
MW-5A-1224	12/11/24	1000 1000	W	2	X	X							
MW-6A-1224	12/11/24	1200 1200	W	2	X	X							
MW-7A-1224	12/12/24	1330	W	2	X	X							
MW-8A-1224	12/12/24	1230	W	2	X	X							
MW-9A-1224	12/12/24	1115	W	2	X	X							
MW-10A-1224	12/12/24	1210	W	2	X	X							

Comments/Special Instructions	Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Andrew Waser	Printed Name: Matthew Nanni	Printed Name:	Printed Name:
	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 12/12/24 1530	Date & Time: 12/12/24 1530	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: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 2460245	Turn-around Requested:	Page: 2 of 2
ARI Client Company: WSP	Phone:	Date: 12/12/24
Client Contact: Gary Zimmerman		Ice Present? Y
Client Project Name: Ravensdale		No. of Coolers: 2
Client Project #: WS-WSP-31406578-8318	Samplers: AW + NM	Cooler Temps: 1.60.3



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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested								Notes/Comments
					TDS	Total Metals (As, Pb, Sb, V, K)	Dissolved Metals (As, Pb, Sb, V, K)						
Infiltration Ponds - 1224	12/11/24	1015	W	3	X	X	X						
Weir - 1224	12/9/24	1340	W	6	X	X							MS/MSD
South Pond - 1224	12/9/24	1105	W	2	X	X							
Still Well - 1224	12/9/24	1420	W	2	X	X							
Interceptor Trench - 1224	12/9/24	1440	W	1	X								
MW-35A - 1224	12/11/24	1020	W	3	X	X	X						
MW-45A - 1224	12/11/24	1245	W	2	X	X							
Basin Well - 1224	12/12/24	1150	W	2	X	X							
MW-99-1 - 1224	12/12/24	1355	W	2	X	X							

Comments/Special Instructions	Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Andrew Luser	Printed Name: Matthew [Name]	Printed Name:	Printed Name:
	Company: WSP	Company: ARI	Company:	Company:
	Date & Time: 12/12/24 1530	Date & Time: 12/12/24 1530	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: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1A-1224	24L0245-01	Water	11-Dec-2024 13:55	12-Dec-2024 15:30
MW-2A-1224	24L0245-02	Water	11-Dec-2024 12:40	12-Dec-2024 15:30
MW-3A-1224	24L0245-03	Water	09-Dec-2024 13:15	12-Dec-2024 15:30
MW-4A-1224	24L0245-04	Water	12-Dec-2024 10:35	12-Dec-2024 15:30
MW-5A-1224	24L0245-05	Water	11-Dec-2024 10:00	12-Dec-2024 15:30
MW-6A-1224	24L0245-06	Water	11-Dec-2024 12:00	12-Dec-2024 15:30
MW-7A-1224	24L0245-07	Water	12-Dec-2024 13:30	12-Dec-2024 15:30
MW-8A-1224	24L0245-08	Water	12-Dec-2024 12:30	12-Dec-2024 15:30
MW-9A-1224	24L0245-09	Water	12-Dec-2024 11:15	12-Dec-2024 15:30
MW-10A-1224	24L0245-10	Water	09-Dec-2024 12:10	12-Dec-2024 15:30
Infiltration Ponds-1224	24L0245-11	Water	11-Dec-2024 10:15	12-Dec-2024 15:30
Infiltration Ponds-1224	24L0245-12	Water	11-Dec-2024 10:15	12-Dec-2024 15:30
Weir-1224	24L0245-13	Water	09-Dec-2024 13:40	12-Dec-2024 15:30
South Pond-1224	24L0245-14	Water	09-Dec-2024 11:05	12-Dec-2024 15:30
Still Well-1224	24L0245-15	Water	09-Dec-2024 14:20	12-Dec-2024 15:30
Interceptor Trench-1224	24L0245-16	Water	09-Dec-2024 14:40	12-Dec-2024 15:30
MW-35A-1224	24L0245-17	Water	11-Dec-2024 10:20	12-Dec-2024 15:30
MW-35A-1224	24L0245-18	Water	11-Dec-2024 10:20	12-Dec-2024 15:30
MW-45A-1224	24L0245-19	Water	11-Dec-2024 12:45	12-Dec-2024 15:30
Baja Well-1224	24L0245-20	Water	12-Dec-2024 11:50	12-Dec-2024 15:30
MW-99-1-1224	24L0245-21	Water	12-Dec-2024 13:55	12-Dec-2024 15:30



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

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 including interference checks were within method requirements for reported elements.

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.

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 sample duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



WORK ORDER

24L0245

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: Ravensdale

Preservation Confirmation

Container ID	Container Type	pH	
24L0245-01 A	HDPE NM, 1000 mL		
24L0245-01 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-02 A	HDPE NM, 1000 mL		
24L0245-02 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-03 A	HDPE NM, 1000 mL		
24L0245-03 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-04 A	HDPE NM, 1000 mL		
24L0245-04 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-05 A	HDPE NM, 1000 mL		
24L0245-05 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-06 A	HDPE NM, 1000 mL		
24L0245-06 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-07 A	HDPE NM, 1000 mL		
24L0245-07 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-08 A	HDPE NM, 1000 mL		
24L0245-08 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-09 A	HDPE NM, 1000 mL		
24L0245-09 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-10 A	HDPE NM, 1000 mL		
24L0245-10 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-11 A	HDPE NM, 1000 mL		
24L0245-11 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-12 A	HDPE NM, 500 mL, 1:1 HNO ₃ (FF)	2	P
24L0245-13 A	HDPE NM, 1000 mL		
24L0245-13 B	HDPE NM, 1000 mL		
24L0245-13 C	HDPE NM, 1000 mL		
24L0245-13 D	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-13 E	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-13 F	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-14 A	HDPE NM, 1000 mL		
24L0245-14 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-15 A	HDPE NM, 1000 mL		
24L0245-15 B	HDPE NM, 500 mL, 1:1 HNO ₃	2	P
24L0245-16 A	HDPE NM, 1000 mL		



WORK ORDER

24L0245

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: Ravensdale

24L0245-17 A	HDPE NM, 1000 mL		
24L0245-17 B	HDPE NM, 500 mL, 1:1 HNO ₃	CZ	P
24L0245-18 A	HDPE NM, 500 mL, 1:1 HNO ₃ (FF)	CZ	P
24L0245-19 A	HDPE NM, 1000 mL		
24L0245-19 B	HDPE NM, 500 mL, 1:1 HNO ₃	CZ	P
24L0245-20 A	HDPE NM, 1000 mL		
24L0245-20 B	HDPE NM, 500 mL, 1:1 HNO ₃	CZ	P
24L0245-21 A	HDPE NM, 1000 mL		
24L0245-21 B	HDPE NM, 500 mL, 1:1 HNO ₃	CZ	P

Preservation Confirmed By

12/12/24

Date



Cooler Receipt Form

ARI Client: WSP

Project Name: Lavusdale

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 2460245

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 NO

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

Temperature of Cooler(s) (°C) Time 1530 1.6 0.3 Temp Gun ID#: 5009708

Was a temperature blank included in the cooler? YES NO

Were coolers received between 0° - 6° (°C) YES NO

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

Cooler Accepted by: Mn Date: 12/12/24 Time: 1530

Complete custody forms and attach all shipping documents

Log-In Phase:

What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block N/A Other: _____

Are any samples that were out of temperature compliance documented in LIMS? 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? 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: Mn Date: 12/12/24 Time: 1656 Labels checked by: Rn

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

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



WSP USA, Inc.

840 HOWE STREET, #1000

VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale

Project Number: Ravensdale

Project Manager: Accounts Payable

Reported:

24-Jan-2025 16:45

MW-1A-1224
24L0245-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 13:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:54

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-01 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	0.726	ug/L	
Arsenic UCT	7440-38-2	1	0.100	0.200	1.09	ug/L	
Lead	7439-92-1	1	0.0680	0.100	ND	ug/L	U
Vanadium	7440-62-2	1	0.100	0.200	0.583	ug/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-1A-1224
24L0245-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/11/2024 13:55

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 21:30

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-01 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	12.3	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-1A-1224
24L0245-01 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/11/2024 13:55

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-01

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	285	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-2A-1224
24L0245-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 12:40

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 07:35

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-02 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	1.51	ug/L	
Arsenic UCT	7440-38-2	1	0.100	0.200	1.28	ug/L	
Lead	7439-92-1	1	0.0680	0.100	ND	ug/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-2A-1224
24L0245-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/11/2024 12:40

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 21:33

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-02 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	38.0	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-2A-1224
24L0245-02 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/11/2024 12:40

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-02

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	408	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-2A-1224
24L0245-02RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 12:40

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/06/2025 23:55

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-02RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	1.09	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-3A-1224
24L0245-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/09/2024 13:15

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 07:40

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-03 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.150	0.200	6.83	ug/L	
Arsenic UCT	7440-38-2	1	0.100	0.200	3.39	ug/L	
Lead	7439-92-1	1	0.0680	0.100	0.146	ug/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-3A-1224
24L0245-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/09/2024 13:15

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 21:36

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-03 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	125	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-3A-1224
24L0245-03 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/09/2024 13:15

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-03

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	592	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-3A-1224
24L0245-03RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/09/2024 13:15

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/08/2025 21:04

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-03RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	0.676	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-4A-1224
24L0245-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 10:35

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 07:45

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-04 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	ND	ug/L	U
Arsenic UCT	7440-38-2	1	0.100	0.200	0.338	ug/L	
Lead	7439-92-1	1	0.0680	0.100	ND	ug/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-4A-1224
24L0245-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D	Sampled: 12/12/2024 10:35
Instrument: ICP3 Analyst: SH	Analyzed: 01/04/2025 21:39
Sample Preparation:	Extract ID: 24L0245-04 B 02
Preparation Method: TWC EPA 3010A	
Preparation Batch: BML0431	Sample Size: 25 mL
Prepared: 12/20/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	1.18	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-4A-1224
24L0245-04 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/12/2024 10:35

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-04

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	341	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-4A-1224
24L0245-04RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 10:35

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/06/2025 23:59

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-04RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	0.864	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-5A-1224
24L0245-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 10:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 07:49

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-05 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.150	0.200	5.52	ug/L	
Arsenic UCT	7440-38-2	1	0.100	0.200	2.66	ug/L	
Lead	7439-92-1	1	0.0680	0.100	0.165	ug/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-5A-1224
24L0245-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 12/11/2024 10:00

Analyzed: 01/04/2025 21:42

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BML0431
Prepared: 12/20/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24L0245-05 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	1.25	2.50	317	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-5A-1224
24L0245-05 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/11/2024 10:00

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-05

Preparation Batch: BML0295

Sample Size: 75 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	1090	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-5A-1224
24L0245-05RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 10:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/08/2025 21:09

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-05RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	1.60	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-6A-1224
24L0245-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 12:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 07:54

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-06 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	8.89	ug/L	
Arsenic UCT	7440-38-2	1	0.100	0.200	2.23	ug/L	
Lead	7439-92-1	1	0.0680	0.100	0.176	ug/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-6A-1224
24L0245-06 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/11/2024 12:00

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 22:02

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-06 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.500	1.00	444	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-6A-1224
24L0245-06 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/11/2024 12:00

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-06

Preparation Batch: BML0295

Sample Size: 50 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1360	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-6A-1224
24L0245-06RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 12:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/07/2025 00:03

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-06RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	0.898	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-7A-1224
24L0245-07 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 13:30

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 07:58

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-07 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.150	0.200	1.02	ug/L	
Arsenic UCT	7440-38-2	1	0.100	0.200	1.14	ug/L	
Lead	7439-92-1	1	0.0680	0.100	ND	ug/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-7A-1224
24L0245-07 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/12/2024 13:30

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 22:05

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-07 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	16.1	mg/L	



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840 HOWE STREET, #1000
VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-7A-1224
24L0245-07 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/12/2024 13:30

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-07

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	376	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-7A-1224
24L0245-07RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 13:30

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/08/2025 21:14

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-07RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	0.670	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-8A-1224
24L0245-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 12:30

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 08:03

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-08 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	3.30	ug/L	
Arsenic UCT	7440-38-2	1	0.100	0.200	4.23	ug/L	
Lead	7439-92-1	1	0.0680	0.100	ND	ug/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-8A-1224
24L0245-08 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/12/2024 12:30

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 22:08

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-08 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	156	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-8A-1224
24L0245-08 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/12/2024 12:30

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-08

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	596	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-8A-1224
24L0245-08RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 12:30

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/07/2025 00:07

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-08RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	3.13	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-9A-1224
24L0245-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 11:15

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 08:08

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-09 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	ND	ug/L	U
Arsenic UCT	7440-38-2	1	0.100	0.200	0.430	ug/L	
Lead	7439-92-1	1	0.0680	0.100	0.0830	ug/L	J



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-9A-1224
24L0245-09 (Water)

Metals and Metallic Compounds

Method: EPA 6010D	Sampled: 12/12/2024 11:15
Instrument: ICP3 Analyst: SH	Analyzed: 01/04/2025 22:10
Sample Preparation:	Preparation Method: TWC EPA 3010A
	Preparation Batch: BML0431
	Prepared: 12/20/2024
	Sample Size: 25 mL
	Final Volume: 25 mL
	Extract ID: 24L0245-09 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	1.45	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-9A-1224
24L0245-09 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/12/2024 11:15

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-09

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	311	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-9A-1224
24L0245-09RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 11:15

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/08/2025 21:19

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-09RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	0.774	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-10A-1224
24L0245-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/09/2024 12:10

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 08:13

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-10 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	ND	ug/L	U
Arsenic UCT	7440-38-2	1	0.100	0.200	0.435	ug/L	
Lead	7439-92-1	1	0.0680	0.100	ND	ug/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-10A-1224
24L0245-10 (Water)

Metals and Metallic Compounds

Method: EPA 6010D	Sampled: 12/09/2024 12:10
Instrument: ICP3 Analyst: SH	Analyzed: 01/04/2025 22:13
Sample Preparation:	Preparation Method: TWC EPA 3010A
	Preparation Batch: BML0431
	Prepared: 12/20/2024
	Sample Size: 25 mL
	Final Volume: 25 mL
	Extract ID: 24L0245-10 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	0.841	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-10A-1224
24L0245-10 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/09/2024 12:10

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-10

Preparation Batch: BML0295

Sample Size: 200 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	136	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-10A-1224
24L0245-10RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/09/2024 12:10

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/07/2025 00:11

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-10RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	0.890	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Infiltration Ponds-1224
24L0245-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 10:15

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:04

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-11 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	5	0.750	1.00	14.9	ug/L	D
Arsenic UCT	7440-38-2	5	0.500	1.00	22.0	ug/L	D
Lead	7439-92-1	5	0.340	0.500	2.82	ug/L	D
Vanadium	7440-62-2	5	0.500	1.00	2.14	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Infiltration Ponds-1224
24L0245-11 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/11/2024 10:15

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 22:16

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-11 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	1.25	2.50	556	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Infiltration Ponds-1224
24L0245-11 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/11/2024 10:15

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-11

Preparation Batch: BML0295

Sample Size: 50 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1610	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Infiltration Ponds-1224
24L0245-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8

Sampled: 12/11/2024 10:15

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:09

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-12 A 02

Preparation Batch: BML0337

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	5	0.750	1.00	14.6	ug/L	D
Arsenic UCT, Dissolved	7440-38-2	5	0.500	1.00	22.2	ug/L	D
Vanadium, Dissolved	7440-62-2	5	0.500	1.00	1.90	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Infiltration Ponds-1224
24L0245-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D

Sampled: 12/11/2024 10:15

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 21:00

Sample Preparation:

Preparation Method: WMN (No Prep)

Extract ID: 24L0245-12 A 02

Preparation Batch: BML0546

Sample Size: 25 mL

Prepared: 12/27/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	1.25	2.50	566	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Infiltration Ponds-1224
24L0245-12RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8

Sampled: 12/11/2024 10:15

Instrument: ICPMS1 Analyst: HAL

Analyzed: 01/09/2025 23:43

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-12RE1 A 02

Preparation Batch: BNA0142

Sample Size: 25 mL

Prepared: 01/09/2025

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	2	0.136	0.200	1.48	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Weir-1224
24L0245-13 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/09/2024 13:40

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 00:47

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-13 F 01

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	2	0.300	0.400	5.42	ug/L	D
Arsenic UCT	7440-38-2	2	0.200	0.400	3.70	ug/L	D
Lead	7439-92-1	2	0.136	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.200	0.400	0.670	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Weir-1224
24L0245-13 (Water)

Metals and Metallic Compounds

Method: EPA 6010D	Sampled: 12/09/2024 13:40
Instrument: ICP3 Analyst: SH	Analyzed: 01/04/2025 22:51
Sample Preparation:	Extract ID: 24L0245-13 F 02
Preparation Method: TWC EPA 3010A	
Preparation Batch: BML0431	Sample Size: 25 mL
Prepared: 12/20/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	99.8	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Weir-1224
24L0245-13 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/09/2024 13:40

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-13

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	542	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

South Pond-1224
24L0245-14 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/09/2024 11:05

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:35

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-14 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	5	0.750	1.00	2.99	ug/L	D
Arsenic UCT	7440-38-2	5	0.500	1.00	10.9	ug/L	D
Lead	7439-92-1	5	0.340	0.500	6.18	ug/L	D
Vanadium	7440-62-2	5	0.500	1.00	19.3	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

South Pond-1224
24L0245-14 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/09/2024 11:05

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 22:36

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-14 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.500	1.00	300	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

South Pond-1224
24L0245-14 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/09/2024 11:05

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-14

Preparation Batch: BML0295

Sample Size: 75 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	13	13	929	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Still Well-1224
24L0245-15 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/09/2024 14:20

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:40

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-15 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	5	0.750	1.00	24.2	ug/L	D
Arsenic UCT	7440-38-2	5	0.500	1.00	45.7	ug/L	D
Lead	7439-92-1	5	0.340	0.500	3.47	ug/L	D
Vanadium	7440-62-2	5	0.500	1.00	2.68	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Still Well-1224
24L0245-15 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 12/09/2024 14:20

Analyzed: 01/04/2025 22:39

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BML0431
Prepared: 12/20/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24L0245-15 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	1.25	2.50	404	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Still Well-1224
24L0245-15 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/09/2024 14:20

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-15

Preparation Batch: BML0295

Sample Size: 20 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	50	50	1310	mg/L	



WSP USA, Inc.

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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale

Project Number: Ravensdale

Project Manager: Accounts Payable

Reported:

24-Jan-2025 16:45

Sample Preparation:

Preparation Method: No Prep Wet Chem

Preparation Batch: BML0295

Prepared: 12/13/2024

Sample Size: 100 mL

Final Volume: 200 mL

Extract ID: 24L0245-16

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	277	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-35A-1224
24L0245-17 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 10:20

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:45

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-17 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	5	0.750	1.00	13.9	ug/L	D
Arsenic UCT	7440-38-2	5	0.500	1.00	20.3	ug/L	D
Lead	7439-92-1	5	0.340	0.500	2.63	ug/L	D
Vanadium	7440-62-2	5	0.500	1.00	1.96	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-35A-1224
24L0245-17 (Water)

Metals and Metallic Compounds

Method: EPA 6010D
Instrument: ICP3 Analyst: SH

Sampled: 12/11/2024 10:20

Analyzed: 01/04/2025 22:42

Sample Preparation: Preparation Method: TWC EPA 3010A
Preparation Batch: BML0431
Prepared: 12/20/2024

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 24L0245-17 B 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	1.25	2.50	571	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-35A-1224
24L0245-17 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/11/2024 10:20

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-17

Preparation Batch: BML0295

Sample Size: 50 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1630	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-35A-1224
24L0245-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8

Sampled: 12/11/2024 10:20

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:49

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-18 A 02

Preparation Batch: BML0337

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	5	0.750	1.00	13.6	ug/L	D
Arsenic UCT, Dissolved	7440-38-2	5	0.500	1.00	21.2	ug/L	D
Vanadium, Dissolved	7440-62-2	5	0.500	1.00	1.80	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-35A-1224
24L0245-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6010D

Sampled: 12/11/2024 10:20

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 21:27

Sample Preparation:

Preparation Method: WMN (No Prep)

Extract ID: 24L0245-18 A 02

Preparation Batch: BML0546

Sample Size: 25 mL

Prepared: 12/27/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium, Dissolved	7440-09-7	5	1.25	2.50	568	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-35A-1224
24L0245-18RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8

Sampled: 12/11/2024 10:20

Instrument: ICPMS1 Analyst: HAL

Analyzed: 01/09/2025 18:56

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-18RE1 A 01

Preparation Batch: BNA0142

Sample Size: 25 mL

Prepared: 01/09/2025

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	2	0.136	0.200	1.49	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-45A-1224
24L0245-19 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/11/2024 12:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 06:14

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-19 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	2	0.300	0.400	1.42	ug/L	D
Arsenic UCT	7440-38-2	2	0.200	0.400	1.28	ug/L	D
Lead	7439-92-1	2	0.136	0.200	ND	ug/L	U
Vanadium	7440-62-2	2	0.200	0.400	0.886	ug/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-45A-1224
24L0245-19 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/11/2024 12:45

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 22:45

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-19 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	36.9	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-45A-1224
24L0245-19 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/11/2024 12:45

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-19

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	393	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Baja Well-1224
24L0245-20 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 11:50

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 08:34

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-20 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	ND	ug/L	U
Arsenic UCT	7440-38-2	1	0.100	0.200	0.266	ug/L	
Lead	7439-92-1	1	0.0680	0.100	0.293	ug/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Baja Well-1224
24L0245-20 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/12/2024 11:50

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 22:48

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-20 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.500	1.00	3.73	mg/L	D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Baja Well-1224
24L0245-20 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/12/2024 11:50

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-20

Preparation Batch: BML0295

Sample Size: 100 mL

Prepared: 12/13/2024

Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	326	mg/L	



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Baja Well-1224
24L0245-20RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 11:50

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/08/2025 21:24

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-20RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	0.304	ug/L	J, D



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-99-1-1224
24L0245-21 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 13:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/03/2025 08:39

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-21 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.150	0.200	ND	ug/L	U
Arsenic UCT	7440-38-2	1	0.100	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0680	0.100	ND	ug/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-99-1-1224
24L0245-21 (Water)

Metals and Metallic Compounds

Method: EPA 6010D

Sampled: 12/12/2024 13:55

Instrument: ICP3 Analyst: SH

Analyzed: 01/04/2025 23:11

Sample Preparation:

Preparation Method: TWC EPA 3010A

Extract ID: 24L0245-21 B 02

Preparation Batch: BML0431

Sample Size: 25 mL

Prepared: 12/20/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.250	0.500	ND	mg/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-99-1-1224
24L0245-21 (Water)

Wet Chemistry

Method: SM 2540 C-11

Sampled: 12/12/2024 13:55

Instrument: BAL2 Analyst: VD

Analyzed: 12/13/2024 11:21

Sample Preparation:

Preparation Method: No Prep Wet Chem

Extract ID: 24L0245-21

Preparation Batch: BML0295

Sample Size: 200 mL

Prepared: 12/13/2024

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.
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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

MW-99-1-1224
24L0245-21RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8

Sampled: 12/12/2024 13:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/08/2025 21:28

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 24L0245-21RE1 B 02

Preparation Batch: BML0338

Sample Size: 25 mL

Prepared: 12/14/2024

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vanadium	7440-62-2	2	0.200	0.400	ND	ug/L	U



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

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BML0338 - EPA 200.8

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BML0338-BLK1)		Prepared: 14-Dec-2024 Analyzed: 02-Jan-2025 21:04										
Antimony	121	ND	0.150	0.200	ug/L							U
Arsenic UCT	75a UCT	ND	0.100	0.200	ug/L							U
Lead	208	ND	0.0680	0.100	ug/L							U
Vanadium	51a	ND	0.100	0.200	ug/L							U
LCS (BML0338-BS1)		Prepared: 14-Dec-2024 Analyzed: 02-Jan-2025 21:09										
Antimony	121	24.3	0.150	0.200	ug/L	25.0		97.2	80-120			
Arsenic UCT	75a UCT	24.7	0.100	0.200	ug/L	25.0		98.7	80-120			
Lead	208	27.3	0.100	0.200	ug/L	25.0		109	80-120			
Vanadium	51a	23.3	0.100	0.200	ug/L	25.0		93.2	80-120			
Duplicate (BML0338-DUP1)		Source: 24L0245-13		Prepared: 14-Dec-2024 Analyzed: 03-Jan-2025 00:52								
Antimony	121	5.66	0.300	0.400	ug/L		5.42			4.40	20	D
Arsenic UCT	75a UCT	3.94	0.200	0.400	ug/L		3.70			6.28	20	D
Lead	208	ND	0.136	0.200	ug/L		ND				20	U
Vanadium	51a	0.684	0.200	0.400	ug/L		0.670			2.07	20	D
Matrix Spike (BML0338-MS1)		Source: 24L0245-13		Prepared: 14-Dec-2024 Analyzed: 03-Jan-2025 00:57								
Antimony	121	30.0	0.300	0.400	ug/L	25.0	5.42	98.4	75-125			D
Arsenic UCT	75a UCT	29.4	0.200	0.400	ug/L	25.0	3.70	103	75-125			D
Lead	208	25.7	0.200	0.400	ug/L	25.0	ND	103	75-125			D
Vanadium	51a	23.3	0.200	0.400	ug/L	25.0	0.670	90.4	75-125			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: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BML0431 - 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
Blank (BML0431-BLK1)					Prepared: 20-Dec-2024 Analyzed: 04-Jan-2025 20:26						
Potassium	ND	0.250	0.500	mg/L							U
LCS (BML0431-BS1)					Prepared: 20-Dec-2024 Analyzed: 04-Jan-2025 20:28						
Potassium	10.0	0.250	0.500	mg/L	10.0		100	80-120			
Duplicate (BML0431-DUP1)					Source: 24L0245-13 Prepared: 20-Dec-2024 Analyzed: 04-Jan-2025 22:54						
Potassium	99.2	0.250	0.500	mg/L		99.8			0.67	20	
Matrix Spike (BML0431-MS1)					Source: 24L0245-13 Prepared: 20-Dec-2024 Analyzed: 04-Jan-2025 22:57						
Potassium	113	0.250	0.500	mg/L	10.0	99.8	131	75-125			HC
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BML0431-MSD1)					Source: 24L0245-13 Prepared: 20-Dec-2024 Analyzed: 04-Jan-2025 23:00						
Potassium	108	0.250	0.500	mg/L	10.0	99.8	81.9	75-125	4.43	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: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BML0337 - EPA 200.8

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BML0337-BLK1)						Prepared: 14-Dec-2024 Analyzed: 19-Dec-2024 17:14						
Arsenic UCT, Dissolved	75a UCT	ND	0.100	0.200	ug/L							U
Blank (BML0337-BLK2)						Prepared: 14-Dec-2024 Analyzed: 02-Jan-2025 19:35						
Antimony, Dissolved	121	ND	0.150	0.200	ug/L							U
Arsenic UCT, Dissolved	75a UCT	ND	0.100	0.200	ug/L							U
Vanadium, Dissolved	51a	ND	0.100	0.200	ug/L							U
LCS (BML0337-BS1)						Prepared: 14-Dec-2024 Analyzed: 19-Dec-2024 17:18						
Arsenic UCT, Dissolved	75a UCT	24.3	0.100	0.200	ug/L	25.0		97.1	80-120			
LCS (BML0337-BS2)						Prepared: 14-Dec-2024 Analyzed: 02-Jan-2025 19:40						
Antimony, Dissolved	121	25.3	0.150	0.200	ug/L	25.0		101	80-120			
Arsenic UCT, Dissolved	75a UCT	24.7	0.100	0.200	ug/L	25.0		98.7	80-120			
Vanadium, Dissolved	51a	23.1	0.100	0.200	ug/L	25.0		92.5	80-120			



WSP USA, Inc.
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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BML0546 - 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
Blank (BML0546-BLK1)						Prepared: 27-Dec-2024 Analyzed: 04-Jan-2025 20:46					
Potassium, Dissolved	ND	0.250	0.500	mg/L							U
LCS (BML0546-BS1)						Prepared: 27-Dec-2024 Analyzed: 04-Jan-2025 20:48					
Potassium, Dissolved	9.83	0.253	0.505	mg/L	10.0		98.3	80-120			
Duplicate (BML0546-DUP1)						Source: 24L0245-12 Prepared: 27-Dec-2024 Analyzed: 04-Jan-2025 21:03					
Potassium, Dissolved	568	1.25	2.50	mg/L		566			0.49	20	D
Matrix Spike (BML0546-MS1)						Source: 24L0245-12 Prepared: 27-Dec-2024 Analyzed: 04-Jan-2025 21:06					
Potassium, Dissolved	579	1.26	2.53	mg/L	10.0	566	133	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BML0546-MSD1)						Source: 24L0245-12 Prepared: 27-Dec-2024 Analyzed: 04-Jan-2025 21:08					
Potassium, Dissolved	580	1.26	2.53	mg/L	10.0	566	141	75-125	0.13	20	HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BNA0142 - EPA 200.8

Instrument: ICPMS1 Analyst: HAL

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BNA0142-BLK1)						Prepared: 09-Jan-2025 Analyzed: 09-Jan-2025 23:21						
Lead, Dissolved	208	ND	0.0680	0.100	ug/L							U
LCS (BNA0142-BS1)						Prepared: 09-Jan-2025 Analyzed: 09-Jan-2025 23:25						
Lead, Dissolved	208	24.6	0.0680	0.100	ug/L	25.0		98.5	85-115			
Duplicate (BNA0142-DUP1)						Source: 24L0245-12RE1 Prepared: 09-Jan-2025 Analyzed: 09-Jan-2025 23:48						
Lead, Dissolved	208	1.53	0.136	0.200	ug/L		1.48			3.33	20	D
Matrix Spike (BNA0142-MS1)						Source: 24L0245-12RE1 Prepared: 09-Jan-2025 Analyzed: 09-Jan-2025 23:52						
Lead, Dissolved	208	25.2	0.136	0.200	ug/L	25.0	1.48	94.9	75-125			D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.												
Matrix Spike Dup (BNA0142-MSD1)						Source: 24L0245-12RE1 Prepared: 09-Jan-2025 Analyzed: 09-Jan-2025 23:56						
Lead, Dissolved	208	23.9	0.136	0.200	ug/L	25.0	1.48	89.8	75-125	5.11	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: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BML0295 - SM 2540 C-11

Instrument: BAL2 Analyst: VD

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
Blank (BML0295-BLK1)					Prepared: 13-Dec-2024 Analyzed: 13-Dec-2024 11:21				
Dissolved Solids	ND	5	5	mg/L					U
LCS (BML0295-BS1)					Prepared: 13-Dec-2024 Analyzed: 13-Dec-2024 11:21				
Dissolved Solids	482	10	10	mg/L	500	96.4	90-110		
Duplicate (BML0295-DUP1)					Source: 24L0245-13 Prepared: 13-Dec-2024 Analyzed: 13-Dec-2024 11:21				
Dissolved Solids	537	10	10	mg/L		542		0.93 20	



WSP USA, Inc.
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VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale
Project Number: Ravensdale
Project Manager: Accounts Payable

Reported:
24-Jan-2025 16:45

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Antimony-121	DoD-ELAP,NELAP,WADOE,WA-DW
Antimony-121	NELAP,DoD-ELAP,WADOE,WA-DW
Arsenic-75a UCT	DoD-ELAP,NELAP,WADOE,WA-DW
Arsenic-75a UCT	NELAP,DoD-ELAP,WADOE
Lead-208	DoD-ELAP,NELAP,WADOE,WA-DW
Lead-208	NELAP,DoD-ELAP,WADOE,WA-DW
Vanadium-51a	DoD-ELAP,NELAP,WADOE,WA-DW
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Antimony-121	DoD-ELAP,NELAP,WADOE,WA-DW
Antimony-121	NELAP,DoD-ELAP,WADOE,WA-DW
Arsenic-75a UCT	DoD-ELAP,NELAP,WADOE,WA-DW
Arsenic-75a UCT	NELAP,DoD-ELAP,WADOE
Lead-208	DoD-ELAP,NELAP,WADOE,WA-DW
Lead-208	NELAP,DoD-ELAP,WADOE,WA-DW
Vanadium-51a	DoD-ELAP,NELAP,WADOE,WA-DW
Vanadium-51a	NELAP,DoD-ELAP,WADOE
EPA 6010D in Water	
Potassium	DoD-ELAP,NELAP,WADOE
Potassium	DoD-ELAP,NELAP,WADOE
SM 2540 C-11 in Water	
Dissolved Solids	DoD-ELAP,WADOE,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	05/12/2025
WADOE	WA Dept of Ecology	C558	06/30/2025
WA-DW	Ecology - Drinking Water	C558	06/30/2025



WSP USA, Inc.

840 HOWE STREET, #1000

VANCOUVER BRITISH COLUMBIA, V6Z 2M1

Project: Ravensdale

Project Number: Ravensdale

Project Manager: Accounts Payable

Reported:

24-Jan-2025 16:45

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
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.
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

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-7A - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 12, 2024 **Time** 13:30

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 10.61 ft BTOC (December 12, 2024 12:56 PM); 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 12/12/2024

Time Begin Purge 13:00

Time Collect Sample 13:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
10.61	13:05	7.08	656	7.3	4.2	192.8	1.48
10.61	13:10	7.08	654	7.3	3.96	195.3	1.93
10.61	13:15	7.08	655	7.3	3.99	196	1.75
10.61	13:20	7.08	655	7.3	3.89	196.6	2.55
	13:25	7.09	655	7.3	3.88	196.9	1.13

Comments:

Flow Rate: 200 mL/min

Sampler



Date December 12, 2024

Supervisor _____

Date _____

Ravensdale_SIDS_Master_2021-06_S123_ReportTemplate_16_records_20250226165140 (1)

Golder Associates Inc.

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-8A - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 12, 2024 **Time** 12:30

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 19.62 ft BTOC (December 12, 2024 12:06 PM); 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 Alkalinity	HDPE	N/A

SAMPLE INTEGRITY DATA SHEET

Well ID MW-8A

Date 12/12/2024

Time Begin Purge 12:08

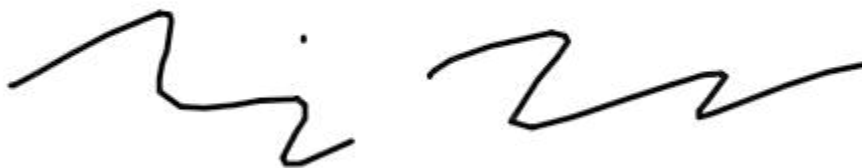
Time Collect Sample 12:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
19.65	12:15	7.03	1,010	10.3	2.89	211	1.02
19.62	12:20	7.03	1,003	10.5	2.85	209.4	0.84
19.62	12:25	7.03	996	10.5	2.84	208.1	1.32
19.62	12:30	7.03	997	10.5	2.83	207.2	1.32

Comments:

Flow Rate: 225 mL/min

Sampler



Date December 12, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Grab

Date December 12, 2024 **Time** 11:50

Media Groundwater **Station** Baja 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 ft BTOC (December 12, 2024 11:42 AM); Well total depth at

Screen Interval:

Pump Intake:

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 _____

Date 12/12/2024

Time Begin Purge 11:47

Time Collect Sample 11:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	11:47	6.46	573	9.3	7.59	213.1	0.72

Comments:

Flow Rate: _____ mL/min

Sampler



Date December 12, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-9A - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 12, 2024 **Time** 11:15

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 2.62 ft BTOC (December 12, 2024 10:46 AM); Well total depth at 13' BGS

Screen Interval: 8' - 13' BGS

Pump Intake: ~ 10' 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-9A

Date 12/12/2024

Time Begin Purge 10:48

Time Collect Sample 11:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
4.75	10:55	6.81	520	9	4.91	176.4	1.32
5.48	11:00	6.8	521	8.9	4.69	179.6	1.67
5.91	11:05	6.8	522	8.9	4.56	181.8	1.30
6.33	11:10	6.79	525	9.1	4.29	183.0	1.40

Comments:

Flow Rate: 200 mL/min

Sampler



Date December 12, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-4A - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 12, 2024 **Time** 10:35

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 3.67 ft BTOC (December 12, 2024 9:44 AM); Well total depth at 20' BGS

Screen Interval: 5' - 20' BGS

Pump Intake: ~ 12' BGS

Sample Description No color, odor, or 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-4A

Date 12/12/2024

Time Begin Purge 09:47

Time Collect Sample 10:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
3.6	09:55	6.34	600	9.6	0.86	216.2	15.5
3.91	10:00	6.35	598	9.6	0.75	211.6	4.97
3.91	10:05	6.35	597	9.4	0.68	208.5	2.88
3.96	10:10	6.35	594	9.6	0.67	197.0	2.08
3.97	10:15	6.35	592	9.5	0.66	192.2	1.76
3.98	10:20	6.35	590	9.5	0.64	175.9	1.81
3.98	10:25	6.35	587	9.5	0.6	160.8	1.67
3.98	10:28	6.34	585	9.5	0.6	157.3	1.48
3.98	10:31	6.35	583	9.5	0.59	153.2	0.95

Comments:

Flow Rate: 300 mL/min

SAMPLE INTEGRITY DATA SHEET

Sampler



Date December 12, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-1A - 1224

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 December 11, 2024 **Time** 13:55

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 31.09 ft BTOC (December 11, 2024 1:06 PM); Well total depth at 44' BGS

Screen Interval: 28' - 43' BGS

Pump Intake: ~ 39' 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 MW-1A

Date 12/11/2024

Time Begin Purge 13:06

Time Collect Sample 13:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
31.09	13:10	6.92	576	9	2.51	3.9	3.21
31.09	13:15	6.77	630	9.1	3.93	43.9	3.19
31.09	13:20	6.71	611	9.1	6.48	84.1	2.12
31.09	13:25	6.71	608	9.1	6.94	96.4	1.17
31.09	13:30	6.68	553	9.1	7.64	105.3	1.56
31.09	13:35	6.66	512	9.1	8.01	111.9	1.36
31.09	13:40	6.65	499	9	8.17	117.4	1.16
31.08	13:45	6.65	493.6	9	8.21	120.1	1.15
31.08	13:50	6.65	491.7	9	8.26	122.5	0.78

Comments:

Flow Rate: 200 mL/min

SAMPLE INTEGRITY DATA SHEET



Sampler _____

Date December 11, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-2A / MW-45A - 1224

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 December 11, 2024 **Time** 12:45

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 24.96 ft BTOC (December 11, 2024 12:20 PM); Well total depth at 40' BGS

Screen Interval: 24'- 40' BGS

Pump Intake: ~ 30' 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 MW-2A / MW-45A

Date 12/11/2024

Time Begin Purge 12:21

Time Collect Sample 12:45

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
25.08	12:25	6.73	666	9.8	5.65	189.5	6.61
24.96	12:30	6.74	673	9.8	5.45	193.6	5.36
25.03	12:35	6.75	683	9.8	5.54	195.3	3.59
24.97	12:40	6.75	688	9.8	5.59	196.3	2.81

Comments:

Flow Rate: 300 mL/min

Duplicate MW-45A-1224 taken at 1250



Sampler _____

Date December 11, 2024

Supervisor _____ Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-6A - 1224

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 December 11, 2024 **Time** 00:00

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 26.68 ft BTOC (December 11, 2024 11:12 AM); Well total depth at 39' BGS

Screen Interval: 24'- 39' BGS

Pump Intake: ~ 36' 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 MW-6A

Date 12/11/2024

Time Begin Purge 11:14

Time Collect Sample 00:00

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
2.84	11:20	7.28	1,904	10.4	4.24	192.5	26.68
26.7	11:25	7.14	1,430	10.4	4.72	193.4	2.97
26.7	11:30	7.24	1,611	10.4	4.86	193.2	2.95
26.7	11:35	7.36	1,817	10.5	4.8	191.7	
26.7	11:40	7.47	1,934	10.5	4.83	129.5	2.08
26.7	11:45	7.46	1,974	10.4	4.86	146	1.97
26.7	11:50	7.48	2,003	10.5	4.9	156.9	1.82
26.7	11:55	7.49	2,024	10.5	4.93	162.7	1.81
26.7	11:58	7.5	2,032	10.4	4.94	164.9	1.75

Comments:

Flow Rate: 300 mL/min

SAMPLE INTEGRITY DATA SHEET

A handwritten signature in black ink, consisting of a series of connected loops and curves, positioned above the signature lines.

Sampler _____

Date December 11, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Infiltration Ponds / MW-35A - 1224

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 December 11, 2024 **Time** 10:15

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 0 ft BTOC (December 11, 2024 10:15 AM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description _____

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
2-500 mL	Total Metals	HDPE	HNO3
2-500 mL	Dissolved Metals	HDPE	HNO3
2-1000 mL	Total Dissolved Solids	HDPE	N/A

SAMPLE INTEGRITY DATA SHEET

Well ID	Infiltration Ponds / MW-35A
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Date 12/11/2024

Time Begin Purge 10:15

Time Collect Sample 10:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	10:15	8.5	2,497	3.7	7.95	153.9	7.10

Comments:

Flow Rate: _____ mL/min

Duplicate sample MW-35A-1224 taken at 10:20

Sampler _____

Date December 11, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-5A - 1224

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 December 11, 2024 **Time** 10:00

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 28.94 ft BTOC (December 11, 2024 9:12 AM); Well total depth at 40' BGS

Screen Interval: 25'- 40' BGS

Pump Intake: ~ 38' 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 MW-5A

Date 12/11/2024

Time Begin Purge 09:15

Time Collect Sample 10:00

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
28.94	09:20	7.33	2,164	9.5	5.8	201.8	4.34
28.94	09:25	7.31	2,161	9.6	0.28	198.2	2.31
28.94	09:30	7.3	2,148	9.6	0.43	195.4	2.43
28.94	09:35	7.21	2,008	9.7	1.64	194.8	2.43
28.94	09:40	7.17	1,845	9.8	2.63	194.7	2.43
28.94	09:45	7.16	1,781	9.8	2.93	194.8	2.75
28.94	09:50	7.15	1,743	9.7	3.07	194.6	3.16
28.94	09:55	7.15	1,717	9.7	3.17	194.8	3.04

Comments:

Flow Rate: 300 mL/min

SAMPLE INTEGRITY DATA SHEET



Sampler _____

Date December 11, 2024

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Interceptor Trench - 1224

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 December 9, 2024 **Time** 14:40

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 0 ft BTOC (December 9, 2024 2:40 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

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

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Still Well - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 9, 2024 **Time** 14:20

Media Groundwater **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 0.1 ft BTOC (December 9, 2024 2:15 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

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 _____ Still Well _____

Date 12/09/2024

Time Begin Purge 14:15

Time Collect Sample 14:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
0.1	14:16	12.33	6,405	8.5	58.07	14.8	7.24

Comments:

Flow Rate: 500 mL/min

Sampler



Date December 9, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID Weir or Constructed Wetlands - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 9, 2024 **Time** 13:40

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 0 ft BTOC (December 9, 2024 1:37 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description _____

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 12/09/2024

Time Begin Purge 13:37

Time Collect Sample 13:40

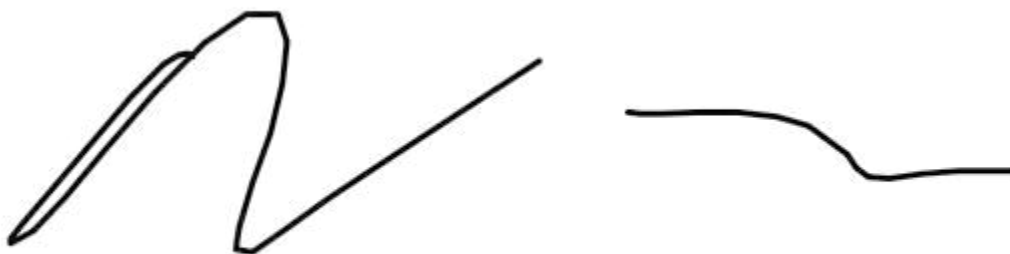
Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	13:37	7.36	823	6.6	40.22	58.4	1.07

Comments:

Flow Rate: _____ mL/min

MS/MSD

Sampler



Date December 9, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-3A - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 9, 2024 **Time** 13:15

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 5.06 ft BTOC (December 9, 2024 12:35 PM); Well total depth at 20' BGS

Screen Interval: 4' - 20' BGS

Pump Intake: ~ 12' 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 MW-3A

Date 12/09/2024

Time Begin Purge 12:40

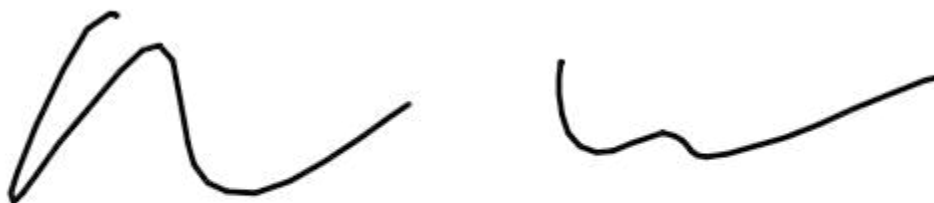
Time Collect Sample 13:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.18	12:45	6.8	1,340	8.5	62.34	80.2	9.07
5.18	12:50	6.96	1,090	8.5	61	63.0	7.44
5.2	12:55	7.06	959	8.9	59.9	65.1	4.95
5.2	13:00	7.08	950	8.8	59.1	51.9	4.65
5.2	13:05	7.08	944	8.7	59.43	51.3	2.77
5.2	13:10	7.1	939	8.6	59.6	50.6	2.65

Comments:

Flow Rate: 200 mL/min

Sampler



Date December 9, 2024

SAMPLE INTEGRITY DATA SHEET

Supervisor _____ Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID MW-10A - 1224

Sampling Location Monitoring Well

Technical Procedure Reference(s) Golder, Sampling and Analysis Plan; Quality Assurance Project Plan 2020

Type of Sampler Peristaltic Pump

Date December 9, 2024 **Time** 12:10

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 5.87 ft BTOC (December 9, 2024 11:19 AM); Well total depth at 29' BGS

Screen Interval: 9' - 29' BGS

Pump Intake: ~ 25' BGS

Sample Description No color,odor, or 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-10A

Date 12/09/2024

Time Begin Purge 11:24

Time Collect Sample 12:10

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
6.77	11:30	8.04	253.4	9	24.9	62.0	2.15
6.93	11:35	7.66	215.7	9.4	21.29	47.3	2.57
8.65	11:40	7.48	211.8	9.5	20.54	44.2	1.93
9.21	11:45	7.32	211.5	9.4	21.98	43.5	1.84
9.86	11:50	7.22	207.8	9.4	20.42	42.2	2.11
10.61	11:55	7.12	207	9.5	19.15	40.9	2.09
11.08	12:00	7.07	204.3	9.5	20.28	41.6	2.24
11.41	12:03	7.04	202	9.6	19.73	42.3	2.15
11.72	12:06	7.02	200.2	9.6	19.78	43.0	2.47
12	12:09	7	199.4	9.7	19.79	44.1	2.45

Comments:

Flow Rate: 100 mL/min

SAMPLE INTEGRITY DATA SHEET

Sampler



Date December 9, 2024

Supervisor _____

Date _____

SAMPLE INTEGRITY DATA SHEET

Plant/Site Ravensdale **Project No.** 152030402

Site Location Ravensdale, WA

Sample ID South Pond - 1224

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 December 9, 2024 **Time** 11:05

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 0.37 ft BTOC (December 9, 2024 11:02 AM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description _____

Field Measurements on Sample (pH, conductivity, etc.) SEE FIELD PARAMETERS SHEET

Aliquot Amount	Analysis	Container	Preservation
1-500 mL	Total Metals	HDPE	HNO3
1-1000 mL	Total Dissolved Solids	HDPE	N/A

SAMPLE INTEGRITY DATA SHEET

Well ID South Pond

Date 12/09/2024

Time Begin Purge 11:02

Time Collect Sample 11:05

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
0.37	11:03	8.68	1,407	3.4	43.39	122.1	7.18

Comments:

Flow Rate: _____ mL/min

Sampler



Date December 9, 2024

Supervisor _____

Date _____

