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REPORT

QUARTERLY MONITORING REPORT
THIRD QUARTER 2022
RESERVE SILICA RECLAMATION SITE

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

Submitted to:

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1.0 INTRODUCTION

This report, prepared by Golder Associates USA Inc. (Golder) for Holcim (US) Inc., presents the results of surface water and groundwater monitoring conducted at the Reserve Silica Reclamation Site (Site) during the third quarter of 2022. The Site is located at 28131 Ravensdale-Black Diamond Road in Ravensdale, Washington. Figure 1 shows the Site location.

A Model Toxics Control Act (MTCA) Remedial Investigation/Feasibility Study (RI/FS) is being conducted at the Site under Agreed Order (AO) No. DE 16052. An RI Work Plan (Work Plan), supporting Sampling and Analysis Plan (SAP), and Quality Assurance Project Plan (QAPP) (Golder 2021) describe the RI monitoring requirements and sampling procedures. Quarterly groundwater monitoring at the Site is currently being conducted in accordance with the Work Plan and supporting documents. Historical groundwater and surface water monitoring activities at the Site were conducted under the requirements of Post-Closure Care and Maintenance Permits issued by Public Health – Seattle and King County (Public Health). The third quarter monitoring event was conducted in September 2022.

2.0 BACKGROUND

2.1 Site Background

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

2.1.1 Lower Disposal Area Background

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

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

2.1.2 Dale Strip Pit Background

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

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

2.2 Mitigation Activities

2.2.1 LDA Cover Upgrade

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

2.2.2 LDA Seep Collection System Test Trenches

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

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

2.2.3 LDA Seep Collection Ditch and Seepage Treatment System

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

In December 2017, the seepage collection trench was further extended approximately 100 feet to the north to collect additional seepage that was not previously captured. Seepage water was then redirected into a seepage treatment system, which completed construction and started initial operations on September 28, 2018. The treatment system uses carbon dioxide (CO_2) 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 intermittingly, 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 continuous operating in June 2019, with only minor shutdowns occurring to complete routine maintenance.

2.2.4 LDA Interceptor Trench

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

2.2.5 DSP Cover Upgrade

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

3.0 MONITORING PROGRAM

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

3.1 LDA Sampling Locations

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

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

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

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

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

In 2006, bedrock monitoring wells were installed along the west side of the main access road, west of the LDA. The bedrock wells were installed to assess groundwater conditions in the bedrock immediately downgradient of the LDA. MWB-1LDA is located near the northern tip of the LDA, MWB-2LDA is located near the center of the LDA, and MWB-3 LDA is located near the southern end of the LDA. In accordance with the Work Plan, field parameters are monitored in the LDA bedrock monitoring wells semi-annually, and the wells are sampled annually. The Third quarter monitoring event did not include sampling or measurement of field parameters in the LDA bedrock wells.

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 LDA bedrock monitoring wells semi-annually, and the wells are sampled annually. There are two additional monitoring wells (MWB-2DSP and MWB-4SDSP) near the DSP area that are monitored semi-annually for water levels and field parameters only.

3.3 LDA Interceptor Trench

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

4.0 SAMPLING ACTIVITIES

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

4.1 Procedures

4.1.1 Water Level and Field Parameter Measurements

Depth to water measurements were collected from all monitoring wells at the Site on September 12, 2022. Table 1 presents depth to water measurements and elevations. Groundwater elevation contour maps are provided in Figures 3A-C.

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

- YSI ProDSS multimeter with pH, ORP (oxidation-reduction potential), conductivity, dissolved oxygen, 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 September 12 to 23, 2022, Golder sampled groundwater from shallow/alluvial groundwater monitoring wells outside of the LDA (MW-1A, MW-2A, MW-3A, MW-4A, MW-5A, MW-6A, MW-7A, MW-8A, MW-9A, MW-10, P-16, P-17), from two well installed within the LDA (P-14 and P-15).

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

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

MW-9A, MW-10, P-16, P-17, P-14, and P-15 was purged at a rate between approximately 100 and 500 milliliters (mL) per minute.

- Using the dedicated bladder pump installed in wells MWB-1LDA, MWB-2LDA, and MWB-3LDA, water was purged at a rate of approximately 300 to 400 mL per minute.
- Field parameters of pH, conductivity, temperature, DO, ORP, and turbidity were measured and recorded during purging at approximately five-minute intervals until parameters were stable.
- Once the field parameters stabilized, the purging phase of the process was concluded. Groundwater samples were then collected directly from the dedicated sample tubing.
- For quality control purposes, a duplicate sample was collected from MW-2A (labeled as MW-45A).
- Laboratory-provided containers were used to collect the samples. For each groundwater sample, two 500-mL bottles preserved with nitric acid and one 1-Liter (L) unpreserved bottle were collected. The samples were then labeled and placed in a cooler with ice.
- The pH of the water in some of the wells within the LDA (P-14 and P-15) is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2 upon receipt at the laboratory. To meet this requirement, the pH of the LDA surface water samples collected for metals analysis were checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, additional nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

In addition, field parameters in LDA monitoring wells MWB-1LDA, MWB-2LDA, and MWB-3LDA were measured on September 12 to 23, 2021.

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 September 12 to 28, 2022, Golder monitored surface water from the Still Well, Weir, South Pond, and the Infiltration Ponds sampling locations. The Wier and South Pond were both dry, preventing collection of samples during this monitoring period. 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, two 500-mL bottles 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 some LDA surface water sampling locations is occasionally greater than 10. Sampling protocol requires that the preserved samples for dissolved metals analysis have a pH of less than 2 upon receipt at

the laboratory. To meet this requirement, the pH of the LDA surface water samples collected for metals analysis were checked at the time of sample collection using pH test paper strips. If the pH was higher than 2, additional nitric acid (provided by the laboratory) was added until the pH of the sample was less than 2.

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

4.1.5 DSP Groundwater Sampling

On September 13 and 14, 2022, Golder measured field parameters in the DSP groundwater monitoring wells (MWB-1SDSP, MWB-1DDSP, MWB-2DSP, MWB-4DSP, and MWB-5DSP) and at the Portal. Field parameter data are presented in Table 2. Golder was unable to measure parameters in MWB-6DSP because it had been destroyed by a falling tree. The well was repaired in December 2022, and will be available for monitoring after the wells are resurveyed and the pump is re-installed.

4.1.6 LDA Interceptor Trench Sampling

On September 23, 2022, Golder sampled groundwater from the Interceptor Trench outfall. The following methods and procedures were used to collect the sample:

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

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

5.0 RESULTS

Analytical results from the September 2022 monitoring round are presented in Table 2. Table 3 presents the current and a historical summary of the Interceptor Trench monitoring data. Historical summary tables of analytical results at each sampling location are provided in Appendix A and concentrations trend graphs for key parameters are provided in Appendix B. All analytical data were subject to a data validation review. Data validation was conducted in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 2020), the SAP, and the QAPP (Golder 2021). Data reporting qualifiers are included with the analytical results in Appendix A. The data validation review found that all the data were considered valid and usable. The data validation and raw analytical data packages provided by the laboratory are provided in Appendix C. Data collected during this sampling round will be combined with all RI data to complete the evaluations and requirements of the RI/FS.

6.0 OPERATIONS AND MAINTENANCE OF THE LEACHATE TREATMENT SYSTEM

The leachate treatment system began operating in September 2018. The system operated intermittently from December 2018 to May 2019 as the system upgrades were completed during that time, which included various upgrades and modifications to improve the system's long-term operating efficiency. The system began continuous

operations in June 2019, with minor shutdowns occurring to complete routine maintenance and continued minor modifications to improve long-term operating efficiency.

The treatment system includes a 4,200-gallon mixing tank (steel rectangular box shaped tank) that receives the influent water coming from the seepage collection ditch and piping. Water from the tank constantly flows through the carbon dioxide (CO_2) sparge unit, which continuously monitors the water pH and activates CO_2 sparging when the water pH exceeds 7.75. CO_2 sparging continues until the pH reduces to 7.25. The sparged water is pumped back into the mixing tank to maintain the neutralized water within the tank. The influent flow, pumping from the tank and through the CO_2 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 a 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 Golder 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 down time of less than 1 day occasionally occurs. Optimization of the metals adsorption system continues, as calcium carbonate clogging of the adsorption system frequently arises. Table 4 provides the 2022 third quarter laboratory analytical data before it enters the pH treatment tank, pre-iron-based adsorption media, and post-iron-based adsorption media showing the reduction in lead and arsenic concentrations. The laboratory analytical report is provided in Appendix C.

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

7.0 LIMITATIONS

Golder 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. Golder Associates 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: Third Quarter 2022 Water Level Measurements

Sample Area	Sample Location ID	Date Measured	Well Data				Water Levels		
			Total Well Depth (feet bgs)	Screened Interval (feet bgs)	Bentonite Seal (feet bgs)	Casing Diameter (inches)	TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)
LDA - Shallow/Alluvial Groundwater	MW-1A	9/12/2022	44	28-43	2-26	2	613.44	37.05	576.39
	MW-2A	9/12/2022	40	25-40	2-23	2	607.21	30.87	576.34
	MW-3A	9/12/2022	20	4-20	2-4	2	689.11	11.25	677.86
	MW-4A	9/12/2022	20	5-20	2-4	2	705.45	8.90	696.55
	MW-5A	9/12/2022	40	25-40	2-23	2	611.23	35.00	576.23
	MW-6A	9/12/2022	39	24-39	2-22	2	608.95	32.92	576.03
	MW-7A	9/12/2022	20	10-20	2-7	2	592.69	16.90	575.79
	MW-8A	9/12/2022	26	16-26	2-13	2	601.49	26.00	575.49
	MW-9A	9/12/2022	13	8-13	2-5	2	697.29	8.70	688.59
	MW-10A	9/12/2022	29	9-29	2-6	2	698.02	14.24	683.78
	P-16	9/12/2022	10	5-10	1-3	2	702.87	4.33	698.54
	P-17	9/12/2022	13	8-13	2-5	2	720.32	13.31	707.01
Within LDA - Groundwater	P-14	9/12/2022	52	40-50	3-38	2	773.32	34.22	739.10
	P-15	9/12/2022	34	24-34	2-20	2	756.55	28.82	727.73
LDA - Bedrock Groundwater	MWB-1LDA	9/12/2022	135	115-135	2-105	2	704.68	23.51	681.17
	MWB-2LDA	9/12/2022	125	110-125	2-103	2	741.66	37.00	704.66
	MWB-3LDA	9/12/2022	145	125-145	2-115	2	744.19	4.00	740.19
DSP - Bedrock Groundwater	MWB-1SDSP	9/12/2022	160	150-160	138-148	2	936.29	44.37	891.92
	MWB-1DDSP	9/12/2022	265	255-265	243-253	2	935.37	57.47	877.90
	MWB-2DSP	9/12/2022	258	238-258	-	2	934.82	200.03	734.79
	MWB-4SDSP	9/12/2022	43	32-42.8	-	2	932.41	21.60	910.81
	MWB-5DSP	9/12/2022	83	73-83	2-61	2	935.05	27.19	907.86
	MWB-6DSP	9/12/2022	195	120-195	2-108	2	920.65	DAMAGED	-

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

Table 2: Third Quarter 2022 Field Parameters and Analytical Data

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)				
			TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)*	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony, Total	Arsenic, Total	Potassium, Total	Lead, Total	Vanadium, Total
Preliminary Screening Level[a]			-	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.1	140
LDA - Shallow/Alluvial Groundwater	MW-1A	9/23/2022	613.44	37.05	576.39	13.2	312.5	6.93	128.4	2.84	6.91	222	0.83	1.2	14100	0.137	0.786
	MW-2A	9/23/2022	607.21	30.87	576.34	11.2	471.5	8.50	190.3	2.04	6.82	351	0.923	1.17	23300	0.13	1.18
	MW-2A Duplicate (MW-45A)	9/23/2022	-	-	-	-	-	-	-	-	-	354	0.921	1.24	22700	0.156	1.24
	MW-3A	9/13/2022	689.11	11.25	677.86	15.3	910	4.92	85.7	9.15	6.49	689	0.973	5.42	91100	0.137	0.507
	MW-4A	9/14/2022	705.45	8.9	696.55	13.4	389.4	2.46	87.6	2.53	6.02	330	0.2 U	0.385	1080	0.1 U	1.19
	MW-5A	9/23/2022	611.23	35	576.23	11.5	1,640	3.45	223.6	1.35	7.42	1720	4.57	3.21	455000	0.156 J	1.58
	MW-6A	9/23/2022	608.95	32.92	576.03	14.8	2,281	3.73	199.3	2.05	8.05	2150	7.64	4.97	646000	0.2 U	2.52
	MW-7A	9/14/2022	592.69	16.9	575.79	13.6	548	4.46	141	0.5	6.31	444	1.63	1.49	54000	0.1 U	1.16
	MW-8A	9/12/2022	601.49	26	575.49	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	MW-9A	9/14/2022	697.29	8.7	688.59	13.5	509	3.84	130.2	1.09	6.44	441	0.154 J	1.05	2780	0.1 U	1.13
	MW-10A	9/13/2022	698.02	14.24	683.78	12	221	6.64	189.1	3.74	6.78	195	0.201	1.54	2350	0.082 J	1.56
	P-16	9/13/2022	702.87	4.33	698.54	14.9	2,609	1.26	-427.3	31.8	11.63	2160	5.92	103	756000	42.7	431
	P-17	9/14/2022	720.32	13.31	707.01	14.3	706	1.91	-63.2	2.12	6.1	489	1 U	7.67	3570	0.5 U	2.99
Within LDA - Groundwater	P-14	9/14/2022	773.32	34.22	739.10	13.2	17,395	1.72	-127.9	1.7	13.21	6510	130	235	2570000	6.3	20.5
	P-15	9/14/2022	756.55	28.82	727.73	13.8	14,297	6.41	-17.7	4.71	12.99	5340	4 U	3.68 J	1790000	269	0.624
LDA - Bedrock Groundwater[b]	MWB-1LDA	9/12/2022	704.68	23.51	681.17	11.3	263.3	2.86	-7.4	0.37	6.76	-	-	-	-	-	-
	MWB-2LDA	9/23/2022	741.66	37	704.66	12.1	243.1	3.88	-17.8	0.54	7.47	-	-	-	-	-	-
	MWB-3LDA	9/23/2022	744.19	4	740.19	13.8	178.6	5.66	172	5.55	6.63	-	-	-	-	-	-

Table 2: Third Quarter 2022 Field Parameters and Analytical Data

Sample Area	Sample Location ID	Date Sampled	Field Parameters									Gen. Chem.	Metals (ug/L)				
			TOC Elevation (feet NAVD88)	Depth to Water (feet btoc)*	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony, Total	Arsenic, Total	Potassium, Total	Lead, Total	Vanadium, Total
Preliminary Screening Level[a]			-	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.1	140
LDA- Surface Water	South Pond	9/12/2022	-	-	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Still Well	9/14/2022	-	-	-	16.6	6728	6	68	44.5	12.33	2480	7.82	52.3	669000	6.96	3.47
	Weir	9/12/2022	-	-	-	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
	Infiltration Ponds	9/28/2022	-	-	-	16.20	3251.00	7.06	-49.10	3.18	8.75	2730 J	24	5.88	1040000	1.11	0.516
	Infiltration Ponds Duplicate (MW-35A)	9/28/2022	-	-	-	-	-	-	-	-	-	2700 J	24.4	5.77	1040000	0.995	0.528
DSP - Bedrock Groundwater[b]	MWB-1SDSP	9/13/2022	936.29	44.37	891.92	11.8	1122	2.97	6.4	4.73	6.42	-	-	-	-	-	-
	MWB-1DDSP	9/13/2022	935.37	57.47	877.90	11.9	778	2.5	-91	0.45	6.84	-	-	-	-	-	-
	MWB-2DSP	9/13/2022	934.82	200.03	734.79	12.6	404.7	8.66	252.7	10.5	6.91	-	-	-	-	-	-
	MWB-4SDSP	9/13/2022	932.41	21.6	910.81	15.3	531	7.87	90.3	1.45	7.53	-	-	-	-	-	-
	MWB-5DSP	9/13/2022	935.05	27.19	907.86	12.3	606	2.54	-3.7	1.49	6.74	-	-	-	-	-	-
	MWB-6DSP	9/13/2022	920.65	Well Damaged - Unable to Sample													
	MWB-6DSP Duplicate (MW-55A)	9/13/2022	-	Well Damaged - Unable to Sample													
	Portal	9/14/2022	-	-	-	12	521	7.29	39.1	93.8	6.7	-	-	-	-	-	-

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

-	Not measured or not collected.	TOC	Top of casing inside PVC well
*	Depth to water (DTW) measurements for all shallow/alluvial wells collected on the same day; date noted is sampling date.	°C	Degrees Celsius
		feet bmp	Feet below measuring point
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022	feet NAVD88	Feet in NAVD88 datum
b	LDA and DSP bedrock wells are monitered semi-annually		
J	Data validation code; estimated value.	ug/L	Micrograms per liter
J+	Data validation code; estimated value with high bias	mV	Millivolts
J-	Data validation code; estimated value with low bias.	NTU	Nephelometric Turbidity Unit
U	Data validation code; not detected at the Reporting Limit (RL).	µmhos/cm	Micromhos per centimeter
DRY	Location is dry. Unable to collect field parameters or samples.		

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

Table 3: Interceptor Trench Discharge Monitoring

Date Sampled	Time Sampled	Flow (gpm)	Field pH (standard units)	Turbidity (NTU)	Total Dissolved Solids (mg/L)
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

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

Table 4: Third Quarter 2022 Treatment System Metals Monitoring

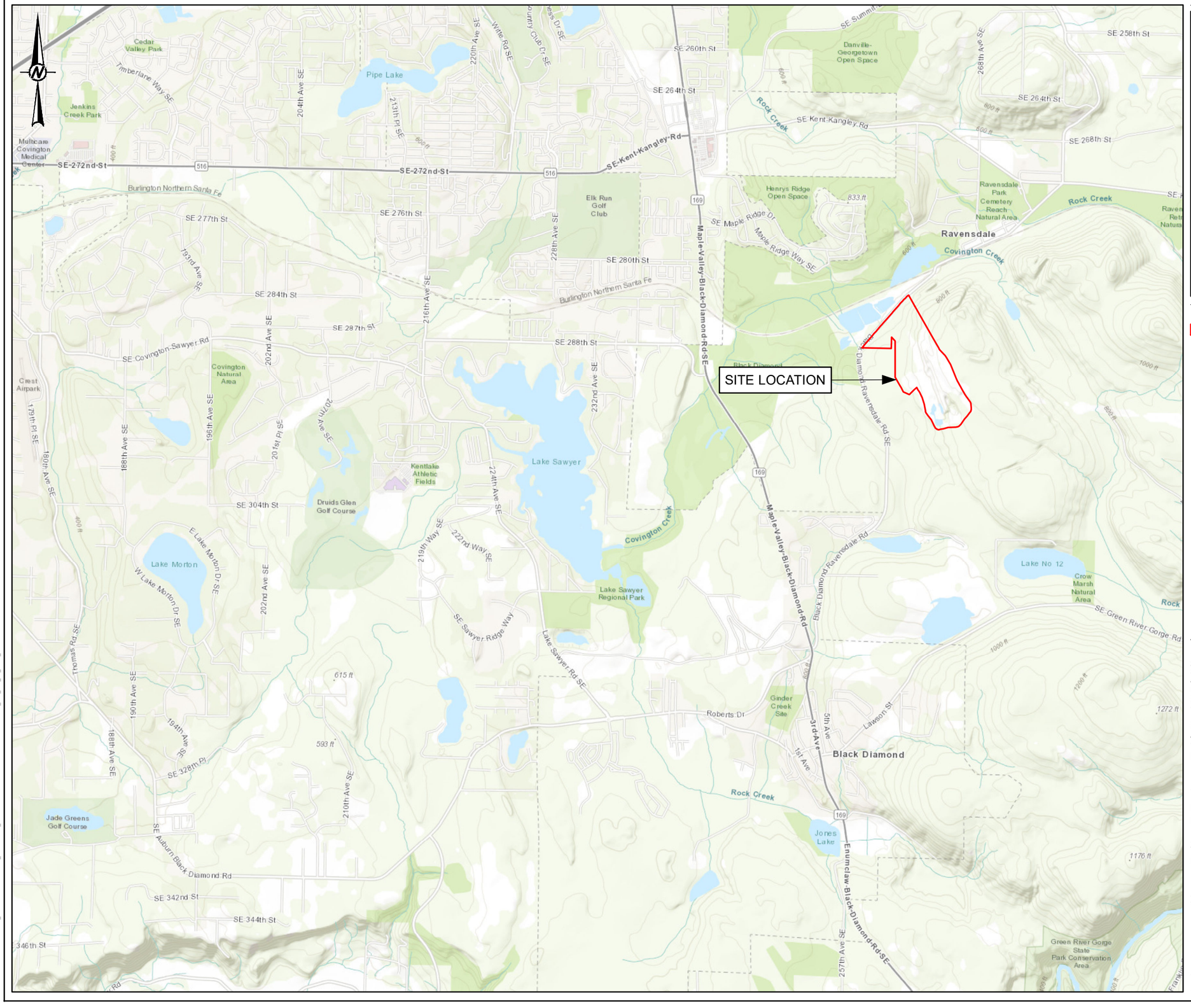
Sample Location	Sample ID	Date Sampled	Total Antimony (ug/L)	Dissolved Antimony (ug/L)	Total Arsenic (ug/L)	Dissolved Arsenic (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Vanadium (ug/L)	Dissolved Vanadium (ug/L)
pH Tank Influent	Tank-Influent	26-Oct-22	36.1	33.5	62.3	52.9	85.6	57.3	10	8.06
pH Tank Effluent/Filter Media Influent	Sand-Effluent	26-Oct-22	33.5	30.0	15.4	13.5	38.1	23.1	4.25	2.57
Filter Media Effluent	As-Effluent	26-Oct-22	30.6	28.5	20.8	20.0	50.5	27.2	5.05	3.39

- Not measured or not available

ug/L Micrograms per liter

Filter media changed subsequent to sampling

Figures



LEGEND

Property Boundary

0 3,000 6,000

1 " = 3,000 FEET FEET

REFERENCE(S)

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

CLIENT
HOLCIM

PROJECT
RI WORK PLAN 2020
RAVENSDALE, WA

TITLE
SITE LOCATION MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-02-10
DESIGNED	TL
PREPARED	TL
REVIEWED	JX
APPROVED	GZ

PROJECT NO.	PHASE	REV.	FIGURE
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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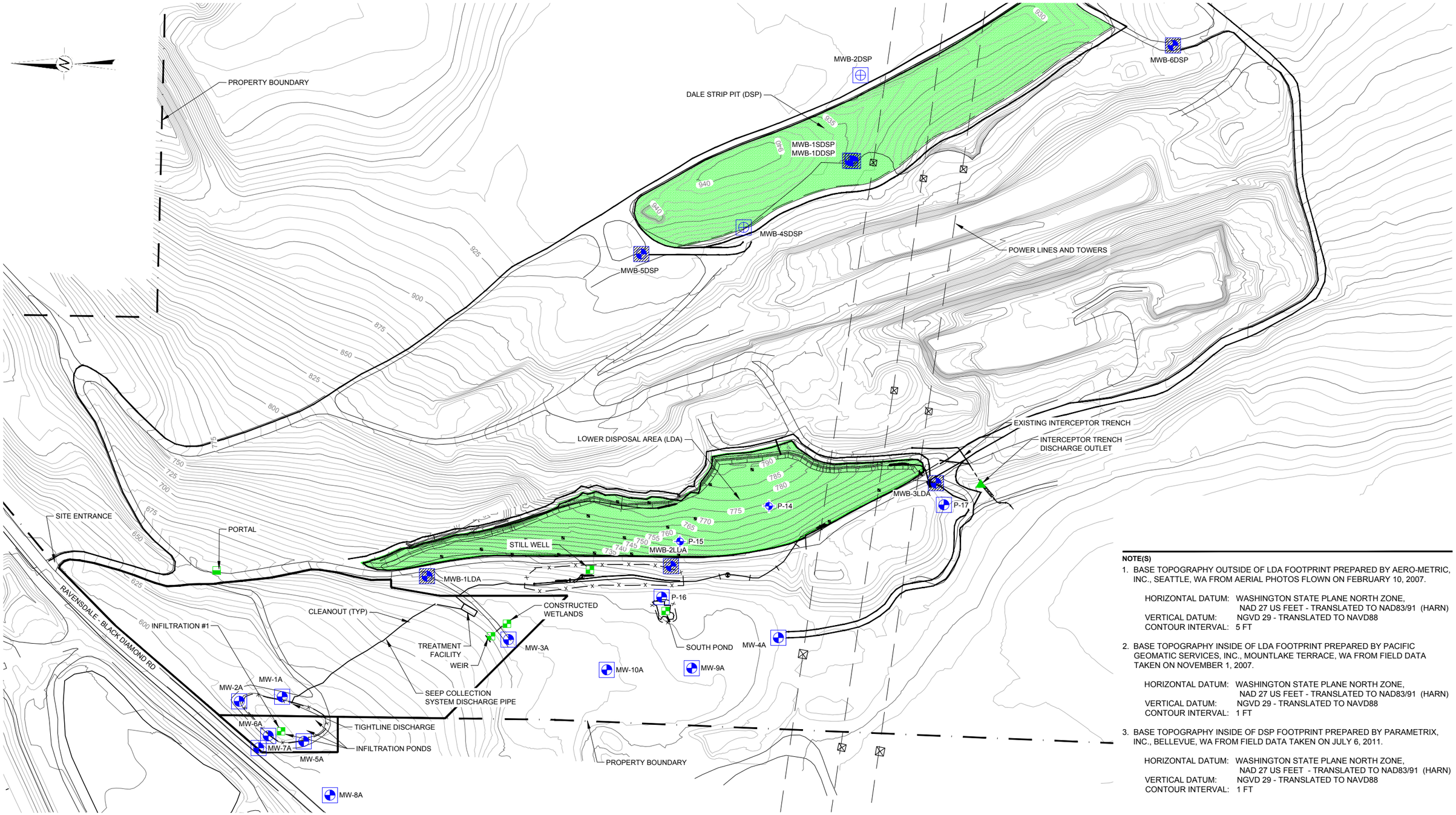

LEGEND

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

0 150 300
1" = 150' FEET

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

CLIENT
HOLCIM

CONSULTANT
GOLDER
MEMBER OF WSP

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

PROJECT
RI WORK PLAN 2020
RAVENSDALE, WA

TITLE
SITE PLAN

PROJECT NO.	PHASE	REV.	FIGURE
152030420	004	A	2

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

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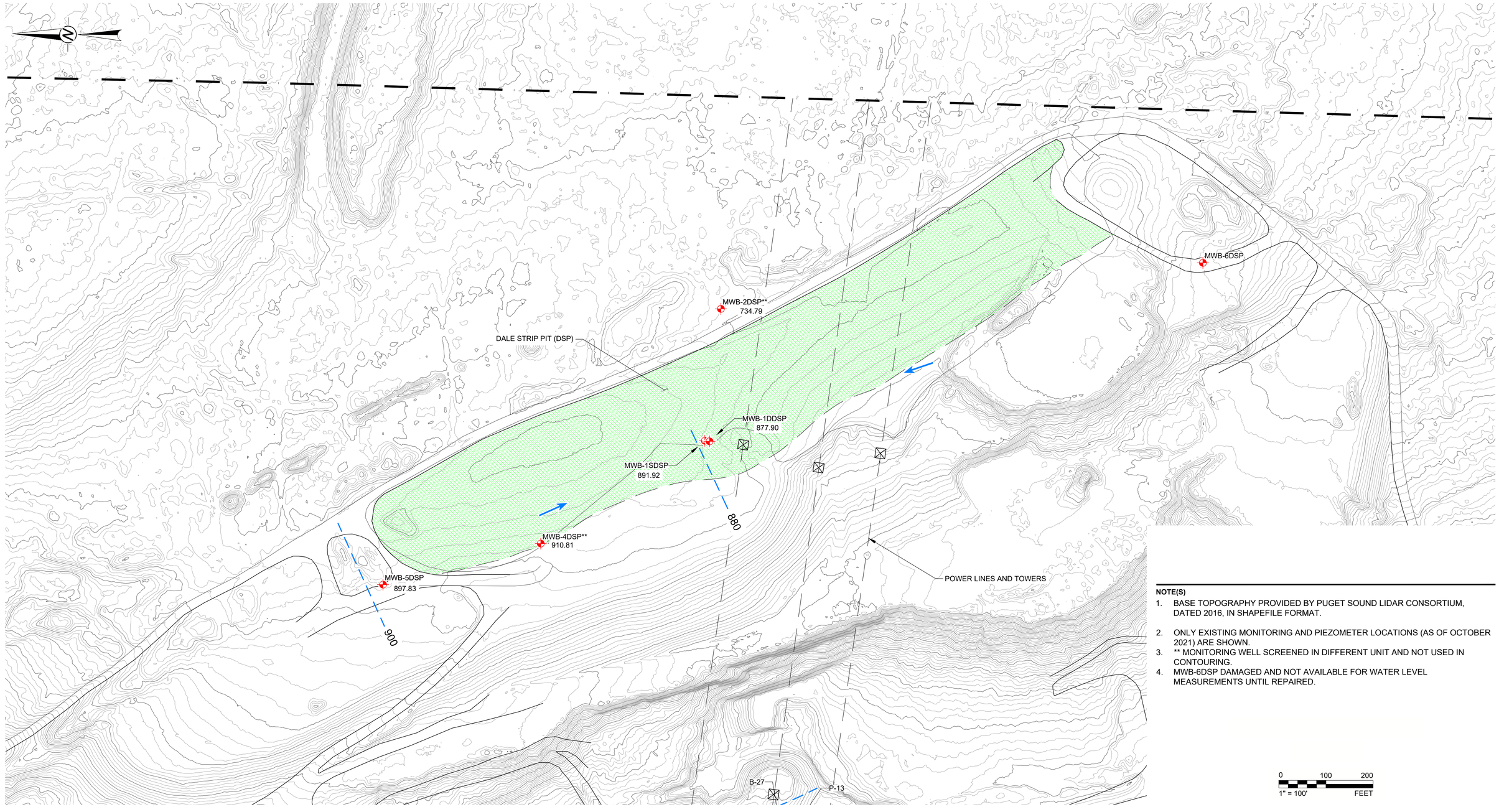

NOTE(S)

1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.
3. ** MONITORING WELL SCREENED IN DIFFERENT UNIT AND NOT USED IN CONTOURING.
4. MWB-6DSP DAMAGED AND NOT AVAILABLE FOR WATER LEVEL MEASUREMENTS UNTIL REPAIRED.

0 100 200
1" = 100' FEET

LEGEND

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

CLIENT
HOLCIM

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-10-14
DESIGNED	AP
PREPARED	REDMOND
REVIEWED	AP
APPROVED	GZ

PROJECT
SEPTEMBER 19, 2022 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
DSP BEDROCK GROUNDWATER ELEVATIONS

PROJECT NO.	PHASE	REV.	FIGURE
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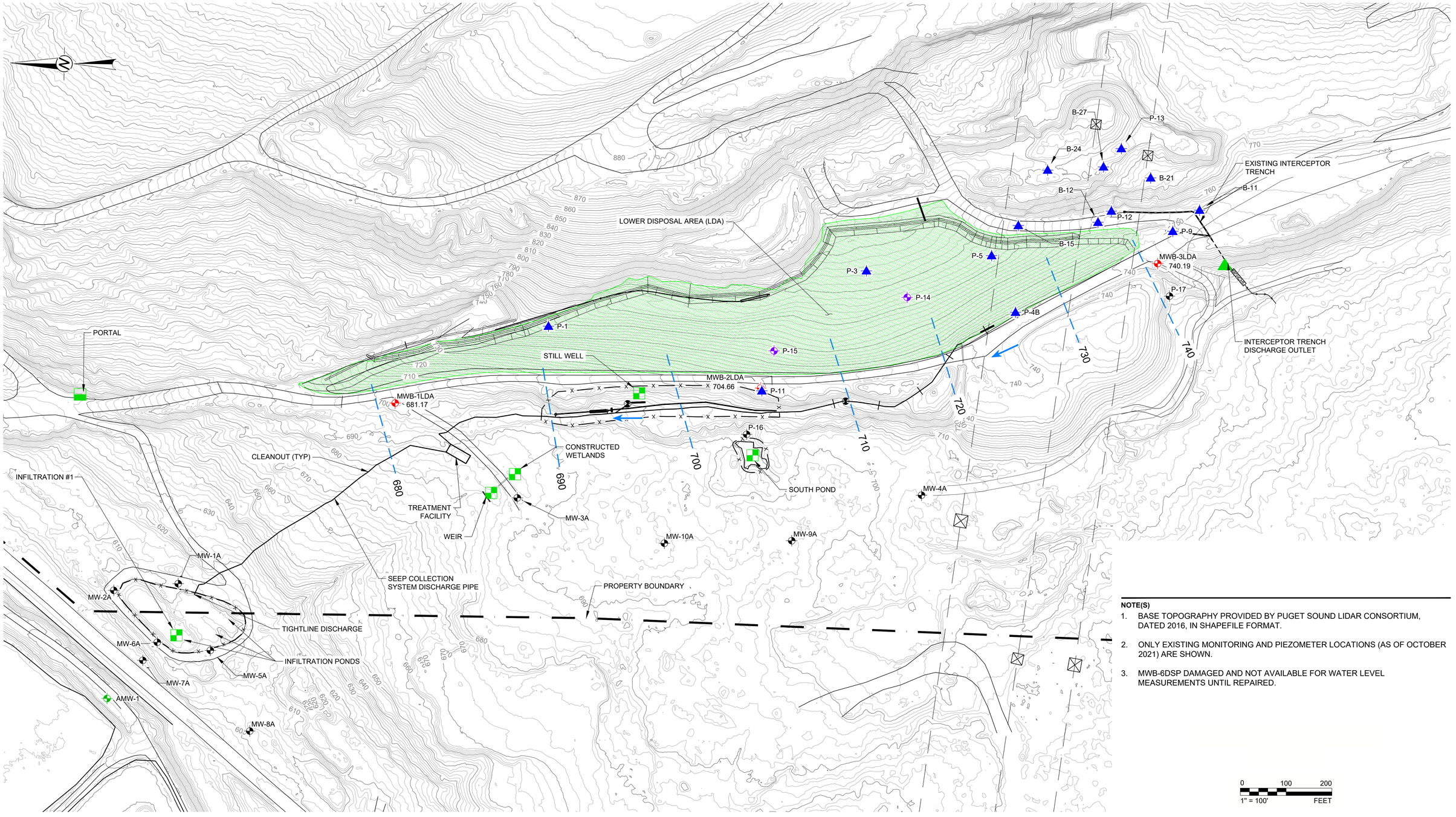

NOTE(S)

1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.
3. MWB-6DSP DAMAGED AND NOT AVAILABLE FOR WATER LEVEL MEASUREMENTS UNTIL REPAIRED.

0 100 200
1" = 100' FEET

LEGEND

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

CLIENT
HOLCIM

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-10-14
DESIGNED	AP
PREPARED	REDMOND
REVIEWED	AP
APPROVED	GZ

PROJECT
SEPTEMBER 19, 2022 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
LDA BEDROCK GROUNDWATER ELEVATIONS

PROJECT NO.	PHASE	REV.	FIGURE
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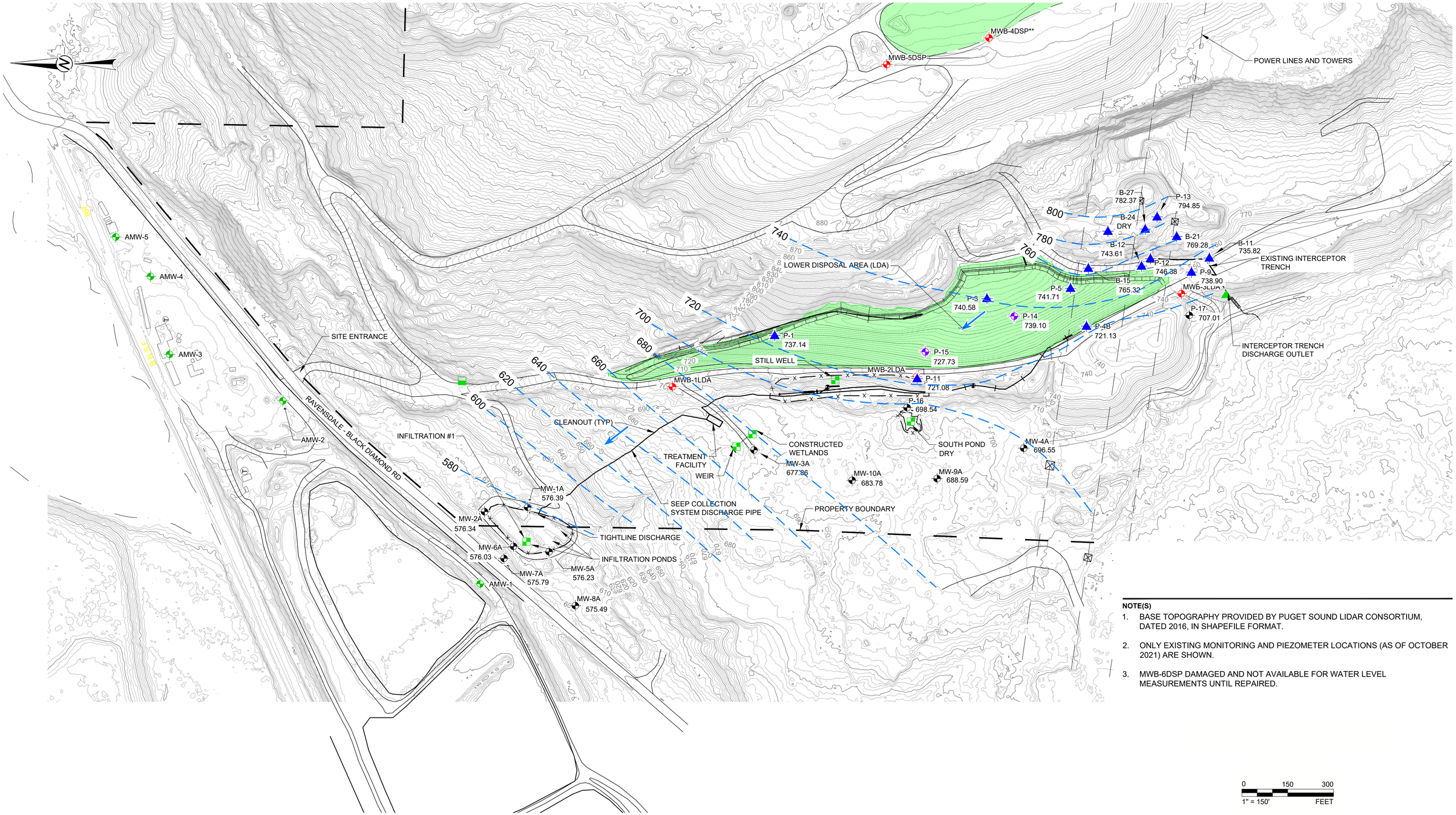
0 1in



NOTE(S)

1. BASE TOPOGRAPHY PROVIDED BY PUGET SOUND LIDAR CONSORTIUM, DATED 2016, IN SHAPEFILE FORMAT.
2. ONLY EXISTING MONITORING AND PIEZOMETER LOCATIONS (AS OF OCTOBER 2021) ARE SHOWN.
3. MWB-6DSP DAMAGED AND NOT AVAILABLE FOR WATER LEVEL MEASUREMENTS UNTIL REPAIRED.

0 150 300
1" = 150' FEET

LEGEND

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

CLIENT
HOLCIM

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-10-14
DESIGNED	AP
PREPARED	REDMOND
REVIEWED	AP
APPROVED	GZ

PROJECT
SEPTEMBER 19, 2022 GROUNDWATER ELEVATIONS
RAVENSDALE, WA

TITLE
ALLUVIAL/SHALLOW GROUNDWATER ELEVATIONS

PROJECT NO.	PHASE	REV.	FIGURE
152030402	004	A	3C

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

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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: Summary of Lower Disposal Area - Surface Water 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	Iron	Lead	Manganese	Potassium	Vanadium
Preliminary Screening Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.1	-	-	140
1-Feb-05	8.1	10658	-	-	6.59	12.87	2860	-	49.9	100 U	5.52	10 U	-	-
9-Mar-05	13.23	7393	-	-	7.42	12.51	2860	-	115	228	14.7	10 U	-	-
5-Apr-05	9.5	11310	-	-	10.9	12.44	2900	-	55.6	100 U	11.6	20 U	-	-
10-May-05	13.99	11871	-	-	3.6	12.53	2810	-	55.4	100 U	12.5	20 U	-	-
7-Jun-05	13.83	10888	-	-	22.6	12.54	2490	-	5 U	100 U	5 U	20 U	-	-
15-Jul-05[a]	18.21	11331	-	-	14.8	12.5	3800	-	2.72	150 U	6.07	10 U	-	-
15-Jul-05[b]	-	-	-	-	-	-	2540	-	39.8	100 U	7.57	20 U	-	-
9-Aug-05[a]	21.45	12087	-	-	17.9	11.78	3500	-	120	288	10.9	10.1	-	-
9-Aug-05[b]	-	-	-	-	-	-	2820	-	91.5	100 U	9.53	20 U	-	-
14-Sept-05[a]	17.38	9507	-	-	14	12.36	3600	-	118	750 U	11.2	50 U	-	-
14-Sept-05[b]	-	-	-	-	-	-	2830	-	115	363	14.4	-	-	-
5-Oct-05	13.31	11481	-	-	62.7	12.47	3020	-	85.2	100 U	11.9	20 U	-	-
9-Nov-05	9.58	14417	-	-	11	12.34	3400	-	74	150 U	10 U	10 U	-	-
9-Dec-05	6.18	7138	-	-	12.5	12.82	2800	-	14.5	150 U	1.07	10 U	-	-
19-Jan-06	8.66	8265	1.74	-	11.8	13.06	1900 J	-	15.2 J	150 U	1 U	10 U	-	-
16-Feb-06	8.13	9019	2.81	195.6	6.16	12.27	3200 J	-	13.4 J	150 U	1.89	10 U	-	-
15-Mar-06	7.98	9033	0.79	114.8	8.93	12.6	3300 J	-	2.36	150 U	2.5 J	10 U	-	-
7-Apr-06	9.98	10450	0.57	34.8	6.08	12.51	3400	-	15.2	150 U	2.83	10 U	-	-
16-May-06	12.79	11060	0.14	45.4	9.28	12.4	3500	-	4.04	150 U	1.59	10 U	-	-
23-Jun-06	13.29	11680	0.44	-	14.6	12.9	3600	-	52.6	150 U	16.5	10 U	-	-
20-Jul-06	16.2	12240	0.14	-217.8	10.4	12.47	4300	-	19.3	150 U	3.57	10 U	-	-
22-Aug-06	17.14	10920	1.22	-146	13.3	12.66	3800	-	144	150 U	9.14 J	10 U	-	-
26-Sep-06	15.72	9599	0.42	-263.3	61.4	12.59	3800	-	123	171	4.63	15.4	-	-
26-Oct-06	10.99	9955	0.88	-207.5	82.3	12.93	3600	-	161	1500 U	19.5	10 U	-	-
15-Nov-06	10.58	12040	1.82	149.2	188	12.87	3400	-	30.6 J	150 U	4.5	10 U	-	-
20-Dec-06	8.85	10990	0.71	-152	32.8	13.02	2600 J	-	52.6	150 U	13	10 U	-	-
24-Jan-07	8.29	10440	0.97	-139.8	13.7	13.05	2500 J	-	58.6	150 U	13.1	10 U	-	-
12-Feb-07	8.88	10590	0.86	-125.8	56.4	13.06	3400	-	61.3	150 U	14	10 U	-	-
27-Mar-07	9.45	9163	1.25	-42.4	18.4	11.53	2900 J	-	44.1	150 U	1.81	10 U	-	-
18-Apr-07	8.9	8155	2.63	2.3	37.2	12.77	3300 J	-	29.3	150 U	1.98	10 U	-	-
31-May-07	20.12	11050	5.3	-153.9	9.31	11.59	2800 J	-	48.5	150 U	15.1 J	10 U	-	-
20-Jun-07	18.28	12000	5.41	-122.5	16.1	12.04	4300 J	-	26.8	150 U	2.33	10 U	-	-
31-Jul-07	16.53	12200	1.7	-151.6	24.8	12.48	6000	-	87.6	150 U	1.03	10 U	-	-
29-Aug-07	17	9570	1.12	-183.1	268	12.78	4600 J	-	106	150 U	9.46	10 U	-	-
27-Sep-07	14.49	8263	52.4	-183	211	12.42	2800	-	125	150 U	15.4	10 U	-	-
26-Oct-07	9.49	6144	4.88	-147.2	92.4	12.85	3300 J	-	124	260	24.9	10.1	-	-
30-Nov-07	5.53	7703	2.13	-122.6	127	12.67	2200	-	174	184	14.1	10 U	-	-
12-Dec-07	5.24	11609	3.43	-144.8	116	12.6	4100	-	110	150 U	11.3	10 U	-	-
24-Jan-08	3.73	9649	13.81	-138	-	10.74	2500	-	101	1530	9.74	81.5	-	-
28-Feb-08	-	-	-	-	51.2	-	2900	-	58.5	150 U	12.6	10 U	-	-
25-Mar-08	7.06	8623	5.52	-11.2	17.4	11.26	3400	-	74.3	150 U	10.4	10 U	-	-
29-Apr-08	9.74	11332	4.29	-1.3	27.7	12.82	3000 J	-	76.6	150 U	13.3	10 U	-	-
20-May-08	14.53	11955	1.74	-35.8	72.7	12.82	3400	-	87.3	150 U	15.1	10 U	-	-
18-Jun-08	12.77	10267	3.34	-27	34	12.86	3200 J	-	63.2	150 U	16.9	10 U	-	-
26-Aug-08	15.86	7703	1.06	-72.8	38.3	12.67	2600 J	-	430	1220	35	49.7	759000	-
20-Nov-08	9.59	8762	0.91	-65.6	74.1	13.32	3500	-	70	150 U	16.8	10 U	848000	-
12-Feb-09	3.25	554	14.29	-	108	13.03	550	-	47.2	150 U	13.7	10 U	551000	-
19-May-09	11.53	276	8.8	26	43.4	9.83	2500 J	-	37.8	150 U	15	10 U	689000	-
22-Sep-09	12.47	9760	1.5	159.1	625	12.47	3000	-	160	200	37	10 J	990000	-
15-Dec-09	5.2	11650	1.9	237	26.3	12.85	3000	-	86	67 J	21	4.7 J	900000 J	-
22-Mar-10	9.7	1035	-	182	19.4	12.58	3000	-	73	200 U	17	20 U	870000	-
17-Jun-10	11.7	9610	0.08	-	6.59	12.48	2700	-	66	95 J	15	2 J	780000	-
21-Sep-10	15	6710	1.26	152.6	140	12.29	2400	-	300	1100 J+	39	30 J+	570000	-
8-Dec-10	8.3	10110	1	-	5.44	12.63	2600	-	64	200 U	10	20 U	860000	-
30-Mar-11	8.6	4810	0.46	136.3	13.7	14.31	2500 J	-	65	200 U	9.6	20 U	720000	-
21-Jun-11	16.6	10420	1.63	111.9	3.4	12.36	5200	-	60	200 U	9.1	1.7 J	770000	-
28-Sep-11	14.8	5270	2.34	70	66.7	12.17	2200	-	220	360	11	7.2 J	1000000	-
15-Dec-11	6	7330	2.47	104.2	18.3	13.09	2800	-	83	200 U	2.9	20 U	880000	-
21-Mar-12	5.5	11040	3.15	294.2	12	12.39	2600	-	67	200 U	4.7	20 U	760000	-
19-Jun-12	5.5	11040	3.15	294.2	12	12.39	2600	-	58	200 U	6.7	20 U	690000	-
20-Sep-12	16.1	9560	3.27	76	10.7	12.35	2900	-	84	200 U	3	20 U	830000	-
19-Dec-12	4.1	1320	10.11	303.1	5.86	9.69	700	-	75	690	4.3	71	250000	-
26-Feb-13	7.3	9950	1.77	161.8	25.5	12.66	2000	-	70	500 U	0.29 J	20 U	720000	-
23-May-13	11.5	8040	2.23	266.8	22.7	12.47	2500	-	57	500 U	3.4	20 U	690000	-
22-Aug-13	17.4	8810	2.42	10.8	38.5	12.79	2590	-	57.8	100 U	1.5	2	863000	-
19-Nov-13	9	7090	2.47	79	62.8	12.54	2720	-	52.5	100 U	4.2	2 U	909000	-
1-Apr-14	10.3	6080	0.55	128.2	37.1	6.08	1890	-	54.6	100 U	1.1	1.3 U	687000	-
22-May-14	13.6	7360	1.22	34.4	-	11.75	2330	-	60.9	100 U	2	2 U	689000	-
13-Aug-14	18.26	7844	0.33	1.2	7.3	12.53	2770	-	70	100 U	2.1	2 U	849000	-
12-Nov-14	9	585	3.17	-47.8	17.5	12.93	2450	-	83.2	100 U	3.9	2 U	837000	-
12-Feb-15	10.7	7540	2.68	-18.6	9.64	12.71	2150	-	51.6	100 U	0.3	2 U	690000	-
4-May-15	12.9	9140	2.73	110.4	26.8	13.02	2520	-	54.6	100 U	0.22 J	2 U	734000	-
5-Aug-15	19.5	8060	2.58	-29.8	61.1	12.62	2980	-	63.9	250 U	1.7	4.7 J	898000	-
3-Nov-15	11.1	5150	0.37	38.6	171	8.93	1840	-	109	270	21.7	13	747000	-
9-Feb-16	9.7	7390	0.78	80.8	7.79	13.07	2170	-	53.6	100 U	1.2	6	601000	-
3-May-16	14.7	7530	1.4	358.1	2.65	12.98	2480	-	54.2	100 U	1.7 J-	2	711000	-
22-Aug-16	20.5	7.91	2.1	-	59	12.95	2780	-	91.3	250 U	5.87	2.3 J	831000	-

Table A-1a: Summary of Lower Disposal Area - Surface Water 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	Iron	Lead	Manganese	Potassium	Vanadium
Preliminary Screening Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	-	2.1	-	-	140
1-Nov-16	12.3	2884	2.66	-72.1	19.1	13.17	2620	-	46.2	100 U	9.64	2 U	841000	-
31-Jan-17	7.4	8510	2.37	-167	7.35	13.17	2050	-	52.5	26 J	1.19	1.6 J	582000	-
31-May-17	14.6	7500	2.44	-	4.17	12.89	1900	-	45.4	11 J	0.68 J+	0.7 J	615000	-
17-Aug-17	18.3	8460	3.35	-84	15.9	12.79	2680	-	56.8	3 J	2.14	1.3 J	750000	-
9-Nov-17	8.2	7215	3.48	90.9	18.2	12.65	2360	-	62.1	100 U	3.52	2.5	822000	-
27-Feb-18	6.6	5312	3.75	2.3	2.49	12.11	1970	-	50.2	100 U	7.53	2.5	521000	-
2-May-18	11.1	8260	1.7	-	13	12.92	2360	-	43.4	133	21.7 J+	8.8	552000	-
21-Aug-18	20.22	6260	4.71	-42.1	5.84	12.58	2100	-	52.2	100 U	0.138	2 U	629000	-
7-Nov-18	9.7	995	6.72	126.8	20.6	9.15	1880	-	644	1350	80.2	49.1	502000 J+	-
11-Mar-19	10.6	1354	5.93	-18.7	7.19	10.31	1710	-	52.8	9.1 J	21.2	1.3 J	501000	-
9-May-19	13.8	6973	6.4	18.1	16.7	12.36	1980	-	41.6	7.9 J	13.4	0.8 J	521000	-
26-Aug-19	17.8	6405	3.91	Note 1	5.15	12.56	2570	-	42.5	100 U	15.4	1 J	722000	-
14-Nov-19	9.7	6065	0.41	-53.3	12	12.67	1750	-	167	121 J	23.9	6.5	563000	-
13-Feb-20	7.6	4936	0.37	-139	2.56	12.66	1630	-	48.6	13.6 J	6.08	3.1	490000	-
13-Aug-20	15	6817	2.55	-42.8	2.02	12.39	2620	-	41.9	6.3 J	0.86	0.9 J	659000	-
10-Dec-20	8.8	4534	0.55	-26.2	5.87	12.79	1670	-	82.7	241	11.1	10.8	510000	-
4-Mar-21	7.7	4728	0.05	-42	0.85	11.94	1470	-	61.8	100 U	1.49	8 U	512000	-
9-Jun-21	13.4	5213	0.89	-148.4	4.06	12.56	1600	-	91.7	-	5.72	-	471000	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	-	DRY	DRY
7-Jan-22	8.8	4103	2.53	55.4	3.04	12.88	1900	8.39	50.3	-	4.26	-	486000	3.34
17-Mar-22	9	4955	7.42	153.1	1.88	13.71	2070	8.23	51.7	-	5.88	-	517000	3.02
21-Jun-22	15.4	5090	2.53	156.3	3.4	11.96	2180	9.34	51.6	-	3.08	-	465000	3.7
14-Sep-22	16.6	6728	6	68	44.5	12.33	2480	7.82	52.3	-	6.96	-	669000	3.47

Notes:

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

-	Not analyzed or not available	
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.	
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

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

Date Sampled	Field Parameters						Gen-Chem	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 Screening Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
1-Feb-05	8.17	1315	-	-	8.13	9.95	874	-	84.9	4.99	-	-
9-Mar-05	14.04	1183	-	-	23.00	9.59	960	-	96.2	3.92	-	-
5-Apr-05	11.00	1115	-	-	43.70	9.80	800	-	62.3	3.21	-	-
10-May-05	14.91	1275	-	-	564.00	9.83	844	-	76.5	5 U	-	-
7-Jun-05	15.11	1140	-	-	239.00	9.61	804	-	84.3	5 U	-	-
15-Jul-05[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	-
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	-

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

Date Sampled	Field Parameters						Gen-Chem	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 Screening Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
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

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

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

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

Date Sampled	Field Parameters							Gen-Chem	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	pH (standard units)	Weir Flow Rate (gpm)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.1	-	140
1-Feb-05	8.47	2205	-	-	6.24	10.23	-	1440	-	149	10.7	-	-
9-Mar-05	11.38	2054	-	-	7.80	10.15	2.64	1630	-	200	11.9	-	-
5-Apr-05	7.7	2169	-	-	7.99	10.42	10.00	1420	-	129	8.61	-	-
10-May-05	14.1	1912	-	-	562.00	9.87	25.00	1210	-	105	7.63	-	-
7-Jun-05	15.74	2588	-	-	11.60	10.03	6.82	1570	-	138	10.1	-	-
15-Jul-05[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	-
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	-

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

Date Sampled	Field Parameters							Gen-Chem	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	pH (standard units)	Weir Flow Rate (gpm)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	6.5-8.5	-	-	5.6	8	2.1	-	140
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

Notes:

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

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

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

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
1-Feb-05	7.13	9580	-	-	4.19	13.02	4080	-	174	24.3	-	-
9-Mar-05	14.28	9979	-	-	6.79	12.52	4640	-	240	42.1	-	-
5-Apr-05	9.90	10820	-	-	43.50	11.99	3830	-	133	9.85	-	-
10-May-05	15.10	6091	-	-	45.60	12.14	3270	-	92.9	25.5	-	-
7-Jun-05	14.49	8257	-	-	24.20	12.19	3780	-	132	24.7	-	-
15-Jul-05[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.l	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	-
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	-

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

Date Sampled	Field Parameters						Gen-Chem	Metals (ug/L)				
	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[c]	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
1-Nov-16	12.10	401	5.56	-65.9	15.00	9.43	742	-	21.9	14.1	356000	-
1-Feb-17	2.10	2064	4.82	5.0	17.80	10.27	1330	-	57.6	139	455000	-
31-May-17	14.50	2594	5.36	-	22.70	9.93	1920	-	105	51.5 J+	664000	-
17-Aug-17	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
9-Nov-17	6.50	1049	6.38	92.3	14.40	10.13	1260	-	58.8	53.4 J+	441000	-
27-Feb-18	6.50	1379	4.05	-71.0	6.11	10.94	865	-	61.7	47.7 J-	429000	-
2-May-18	11.60	2547	-	-	25.30	10.36	1860	-	85.9	26.7 J+	611000	-
22-Aug-18	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
7-Nov-18	9.70	995	6.72	126.8	20.60	9.15	1040	-	76	65.5	333000 J+	-
11-Mar-19	10.60	1354	5.93	-18.7	7.19	10.31	1270	-	49.3	41.7	458000	-
9-May-19	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
26-Aug-19	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
14-Nov-19	8.70	1180	5.98	30.9	7.38	9.03	1120	-	67.2	76.4	418000	-
13-Feb-20	4.30	1032	2.51	-126.9	6.10	10.46	927	-	28.1	13	348000	-
13-Aug-20	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
10-Dec-20	5.60	1000	2.52	66.8	6.02	9.66	952	-	12	6.63	318000	-
4-Mar-21	8.10	1271	1.98	38.0	8.02	10.35	4820	-	50.6	35.7	435000	-
10-Jun-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	-	DRY	DRY	DRY	-
13-Oct-21	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	4.50	305	10.57	-30.2	4.07	9.42	300	2.29	4.42	2.29	77100	4.27
17-Mar-22	8.80	997	8.53	-66.4	4.54	11.32	912	4.85	22.60	16.70	358000	37.80
21-Jun-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12-Sep-22	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Notes:

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

-	Not analyzed or not available	
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.	
+	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	mg/L
feet bmp	Feet below measuring point	mV
feet NAVD88	Feet NAVD88 Datum	NTU

APPENDIX A-2

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Jul-05	35.43	578.01	15.17	883	-	-	358	7.03	664	-	8.47	2 U	-	-
9-Nov-05	31.83	581.61	10.77	1037	-	-	22.2	6.89	680	-	3.45	1 U	-	-
15-Feb-06	23.91	589.53	9.14	623	1.53	497.4	6.76	7.26	470 J	-	3.25	1 U	-	-
17-May-06	31.91	581.53	11.32	1029	1.33	121.6	10.3	7.18	600	-	5.18	1 U	-	-
23-Aug-06	35.35	578.09	19.21	481	5.97	60.4	6.3	6.67	340	-	1.7	1 U	-	-
14-Nov-06	20.00	593.44	10.35	635	4.55	95.1	22.2	7.23	550	-	3.07	1 U	-	-
14-Feb-07	29.29	584.15	11.13	435	3.88	85.6	32.1	6.76	260	-	2	1 U	-	-
30-May-07	32.90	580.54	10.30	545	6.63	145.7	6.93	6.81	320	-	2.48	1 U	-	-
27-Aug-07	35.68	577.76	10.49	428	7.13	76.7	8.65	6.95	260 J	-	1.87	1 U	-	-
29-Nov-07	32.75	580.69	10.10	625	7.14	144.3	12.2	6.96	340 J	-	2.32	1 U	-	-
27-Feb-08	27.83	585.61	-	-	-	-	19.6	-	320	-	2.58	1 U	-	-
20-May-08	31.86	581.58	10.22	471	6.38	177.0	109	6.48	290 J	-	2.24	1 U	-	-
27-Aug-08	36.04	577.40	9.84	427	7.40	118.4	63.6	7.08	260	-	2.05	1 U	23000	-
26-Sep-08	*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	-
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	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
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

Notes:

Top of casing elevation (feet NAVD88): 613.44

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

-	Not measured or not available		
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.		
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/Alluvial Groundwater Sampling Results - Well MW-2A
Ravensdale Site, Ravensdale, Washington

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
9-Jun-21	29.14	578.07	9.1	459.8	8.65	193.6	1.34	6.88	360 J	-	1.25	0.058 J	21800	-
12-Oct-21	27.75	579.46	10.4	595	9.33	188.2	0.56	6.53	439 J-	1.19	1.1	0.1 U	21900	1.07
6-Jan-22	19.05	588.16	10.2	466.3	4.66	197.7	2.69	7.14	368	3.24	1.89	0.1 U	80700	1.19
16-Mar-22	17.54	589.67	8.4	304.1	9.88	154.6	6.43	6	291	3.26	1.85	0.218	60900	1.15
23-Jun-22	21.76	585.45	9.5	442.6	6.06	158.8	1.49	7.10	369	1.94	1.5	0.1 U	37500	1.15
23-Sep-22	30.87	576.34	11.2	471.5	8.5	190.3	2.04	6.82	351	0.923	1.17	0.13	23300	1.18

Notes:
Top of casing elevation (feet NAVD88): 607.21

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

-	Not measured or not available		
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL		
*	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	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Jul-05	6.09	683.02	13.8	1124	-	-	30.3	6.96	922	-	2.41	2 U	-	-
10-Nov-05	5.50	683.61	10.8	1518	-	-	2.32	6.88	960	-	10.5	1 U	-	-
15-Feb-06	5.31	683.80	9.52	1357	0.46	217.4	58.2	6.33	930 J	-	6.66	1 U	-	-
16-May-06	6.25	682.86	10.4	1296	0.96	91	11.4	6.91	910	-	10.1	1 U	-	-
22-Aug-06	8.85	680.26	12.84	1362	1.28	-64.8	56	6.97	900	-	12.1	1 U	-	-
13-Nov-06	5.03	684.08	11.24	1392	2.12	-74.4	234	6.89	910	-	5.73	1 U	-	-
16-Feb-07	5.55	683.56	8.99	1155	0.75	-71.3	12.3	6.96	770	-	3.74	1 U	-	-
30-May-07	6.72	682.39	11.86	1297	0.75	-25.2	12.5	7.04	790	-	5.2	1 U	-	-
27-Aug-07	8.38	680.73	12.65	1483	0.71	-96.3	15.3	6.73	1100 J	-	8.74	1 U	-	-
28-Nov-07	5.66	683.45	10.47	1363	1.05	-72.9	26.9	7.31	730	-	4.24	1 U	-	-
27-Feb-08	5.57	683.54	-	-	-	-	121	-	860	-	9.76	1 U	-	-
19-May-08	5.94	683.17	9.39	1346	0.66	-52.6	20	6.93	820 J	-	6.64	1 U	-	-
26-Aug-08	6.44	682.67	12.15	1495	0.85	-53.6	5.85	6.88	820	-	3.42	1 U	30300	-
18-Nov-08	5.50	683.61	10.5	975	1.87	-67.4	225	6.93	880 J	-	7.48	1 U	62500	-
11-Feb-09	5.62	683.49	7.67	877	0.98	-	68	7.28	810	-	5.2	1 U	50600	-
19-May-09	5.60	683.51	8.52	847	0.91	-63.4	52	8.21	750 J	-	2.51	1 U	49500	-
22-Sep-09	8.36	680.75	15.7	1149	0.1	132.1	75.1	7.05	910	-	6.6	2 U	53000	-
17-Dec-09	4.59	684.52	8.9	1300	0.4	194	401	7.08	710	-	2 U	2 U	62000	-
24-Mar-10	5.40	683.71	11.2	1010	0.12	-	226	6.76	800	-	3.8	2 U	46000	-
16-Jun-10	5.27	683.84	10.1	1123	0.2	188	6.19	8.43	570	-	13	2 U	49000	-
21-Sep-10	6.01	683.10	12.7	1314	0.19	177.7	2.97	6.91	1,000	-	6.2	0.19 J	160000	-
7-Dec-10	5.23	683.88	9.7	1183	0.23	182.7	25.3	6.86	840	-	3.2	2 U	82000	-
30-Mar-11	5.04	684.07	8.3	498	0.28	174	4.93	7.89	700	-	3.6	2 U	36000	-
22-Jun-11	6.77	682.34	9.7	895	0.43	172.2	9.18	7.01	700 J	-	5 U	2 U	34000	-
28-Sep-11	7.83	681.28	12.6	99	0.18	141.8	6.07	6.83	840	-	8.8	2 U	83000	-
15-Dec-11	5.40	683.71	9	785	0.6	179.8	24.4	6.98	760	-	4.5 J	2 U	73000	-
20-Mar-12	4.96	684.15	7.1	1092	0.16	22.6	12.1	7.11	470	-	5.2	2 U	73000	-
19-Jun-12	6.76	682.35	10.3	1077	0.11	198.6	11.3	7.07	660	-	12	0.4 U	78000	-
20-Sep-12	8.67	680.44	12.3	1235	0.15	111	1.96	6.99	710	-	11	0.05 J	100000	-
18-Dec-12	4.98	684.13	8.7	1450	0.3	-40.6	18.7	7.25	740	-	4.8	0.4 U	150000	-
26-Feb-13	5.25	683.86	7.8	1211	0.15	186.6	27.8	7.21	740	-	4.7	0.4 U	98000	-
23-May-13	6.56	682.55	9.9	1000	0.18	242.3	16.9	7.21	460	-	14	2.8	150000	-
21-Aug-13	9.01	680.10	12.1	917	0.12	-14.2	1.24	7.27	772	-	7.6	0.05 J	94000	-
19-Nov-13	6.09	683.02	9.9	697	0.07	61.8	2.93	6.77	852	-	12.3	0.2	169000	-
1-Apr-14	5.75	683.36	9	722	0.1	131.3	4.47	7.07	624	-	10.5	0.06 J	104000	-
22-May-14	5.80	683.31	9.8	580	1.08	185.3	-	6.85	494	-	5.2	0.1	66500	-
13-Aug-14	8.54	680.57	11.48	915	2.85	-67.6	8.16	7.09	740	-	6.9	0.1 U	116000	-
12-Nov-14	5.97	683.14	11.1	313.7	2.79	-85.1	15.3	6.87	744	-	6.9	0.1 U	89100	-
12-Feb-15	5.50	683.61	9.8	980	0.52	-54.5	1.28	7.04	696	-	4.2	0.1 U	73200	-
4-May-15	5.80	683.31	10.8	994	0.17	143.4	15.4	7.12	701	-	9.3	0.1 U	100000	-
5-Aug-15	10.12	678.99	12.6	881	0.13	-90.4	0.89	7.07	724	-	7.3	0.1 U	70300	-
3-Nov-15	5.30	683.81	12	865	1.23	105.5	5.06	6.97	1020	-	1.7	0.2	195000	-
9-Feb-16	5.14	683.97	9.1	954	0.55	154.6	4.82	7.03	625	-	3.4	0.1 U	92700	-
2-May-16	4.74	684.37	11.3	844	0.19	96.8	2.21	7.16	621	-	10.5	0.04 J-	105000	-
23-Aug-16	9.04	680.07	13.2	946	0.03	156.2	3.48	6.97	924	-	8.19	0.09 J	148000	-
1-Nov-16	6.18	682.93	11.9	349	0.15	18.5	2.43	7.11	744	-	2.63	0.1 U	180000	-
1-Feb-17	5.91	683.20	7.5	1114	0.17	-67.4	6.05	7.08	694	-	6.4	0.1 U	100000	-
30-May-17	7.40	681.71	10.4	753	2.2	8.59	3.28	7.12	465	-	9.52	0.1 U	89300	-
17-Aug-17	9.71	679.40	12.4	1101	0.25	-60.2	3.39	7.01	737	-	8.47	0.1 U	72000	-
9-Nov-17	6.06	683.05	9.6	833	0.64	75.3	2.01	7.08	748	-	1.84	0.1 U	191000	-
27-Feb-18	5.16	683.95	7.6	791	0.21	-75.4	9.52	6.64	506	-	2.97	0.1 U	92000	-
1-May-18	5.41	683.70	10	847	0.93	-	5.82	7.36	547	-	3.81	0.1 UJ	120000	-
21-Aug-18	10.81	678.30	14.54	909	2.96	-17.2	1.67	6.92	722	-	6.48	0.1 U	101000	-
7-Nov-18	5.85	683.26	11.2	931	0.66	179	0.87	6.97	828	-	2.03	0.073 J	202000 J+	-
11-Mar-19	5.26	683.85	6.1	477.5	1.25	53.7	2.39	7.34	486	-	1.44	0.1 U	125000	-
9-May-19	5.44	683.67	10.2	678	3.72	-9.4	1.85	7.04	574	-	3.02	0.083 J	143000	-
26-Aug-19	9.30	679.81	13.96	1041	0.6	Note 1	0.02	6.83	843	-	6.15	0.1 U	142000	-
13-Nov-19	5.58	683.53	9.4	803	0.31	12.8	0.02	6.97	724	-	2.2	0.077 J	174000	-
12-Feb-20	5.10	684.01	7.8	349.3	0.37	-62.4	1.4	7.25	287	-	1.86	0.1 U	74200	-
13-Aug-20	9.33	679.78	11.8	884	0.64	-81.6	4.28	6.76	683	-	10.9	0.1 U	119000	-
10-Dec-20	5.08	684.03	8.5	688	3.06	210	0.9	7.29	566	-	2.36	0.159	128000	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
4-Mar-21	5.26	683.85	7	364	0.59	47	1.54	7.42	319	-	1.52	0.134	74200	-
9-Jun-21	6.24	682.87	11.4	706	0.96	-50.2	4.12	7.03	540	-	6.48	0.204	124000	-
12-Oct-21	5.34	683.77	12.3	1611	2.92	133.4	5.25	6.63	1070 J-	15.6	3.31	0.4	93200	2.14
6-Jan-22	5.10	684.01	7.5	269.6	2.33	189.1	1.84	7.38	242	8.89	2.04	0.265	53400	2.61
17-Mar-22	4.97	684.14	7.5	269.6	2.33	189.1	1.84	7.38	252	3.39	1.98	0.169	53200	0.88
21-Jun-22	5.21	683.9	11.2	439.4	0.19	181.3	0.66	7.03	368	0.966	3.66	0.075 J	75400	0.39
13-Sep-22	11.25	677.86	15.3	910	4.92	85.7	9.15	6.49	689	0.973	5.42	0.137	91100	0.507

Notes:
Top of casing elevation (feet NAVD88): 689.11

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Jul-05	4.60	700.85	12.43	629	-	-	6.07	6.45	490	-	2 U	2 U	-	-
10-Nov-05	3.70	701.75	11.98	441	-	-	7.4	6.22	290	-	1 U	1 U	-	-
19-Jan-06	3.56	701.89	8.29	319	0.42	-	1.46	6.53	290 J	-	1 U	1 U	-	-
15-Feb-06	3.82	701.63	8.32	326	0.62	99.7	3.5	7.39	220 J	-	1 U	1 U	-	-
15-Mar-06	3.79	701.66	7.58	254	0.87	201.9	0.82	6.65	210 J	-	1 U	1 U	-	-
7-Apr-06	3.87	701.58	9.36	295	0.55	157.4	0.24	6.34	220	-	1 U	1 U	-	-
16-May-06	4.92	700.53	10.8	321	0.45	142.1	0.99	6.36	220	-	1 U	1 U	-	-
23-Jun-06	4.41	701.04	12.62	316	0.57	-	2.05	6.25	200	-	1 U	2.64	-	-
20-Jul-06	6.90	698.55	13.43	347	0.23	-20.9	0.32	6.11	120	-	1 U	1 U	-	-
22-Aug-06	8.46	696.99	13.68	406	0.9	153.5	2.2	6.13	280	-	1 U	1 U	-	-
26-Sep-06	6.50	698.95	14.59	417	2.47	-35.2	2.42	6.33	290	-	1 U	1 U	-	-
26-Oct-06	5.98	699.47	12.82	434	3.3	124.1	0.82	6.12	320	-	1 U	1 U	-	-
13-Nov-06	3.02	702.43	11.7	386	5.06	187.8	2.47	6.13	280	-	1 U	1 U	-	-
20-Dec-06	3.60	701.85	9.64	379	4.3	150.5	1.03	6.07	250	-	1 U	1 U	-	-
23-Jan-07	3.68	701.77	8.37	239	3.96	58.9	0.66	6.28	220	-	1 U	1 U	-	-
14-Feb-07	3.74	701.71	8.18	325	2.85	110.8	0.53	6.25	210	-	1 U	1 U	-	-
27-Mar-07	3.32	702.13	8.27	289	2.07	61.5	0.88	6.83	210 J	-	1 U	1 U	-	-
17-Apr-07	3.89	701.56	9.59	306	1.8	102.3	2.31	6.34	190	-	1 U	1 U	-	-
30-May-07	4.70	700.75	11.27	285	1.78	101.7	1.37	6.37	180	-	1 U	1 U	-	-
20-Jun-07	4.69	700.76	12.37	350	1.67	9.3	1.25	6.9	240 J	-	1 U	1 U	-	-
31-Jul-07	6.38	699.07	14.57	402	1.15	5.5	0.6	6.37	250	-	1.29	1 U	-	-
29-Aug-07	7.44	698.01	13.78	353	1.11	128.3	1.87	6.18	280 J	-	1 U	1 U	-	-
27-Sep-07	8.25	697.20	13.6	375	0.96	142.6	0.7	6.7	300	-	1 U	1 U	-	-
26-Oct-07	4.09	701.36	12.16	343	2.27	75.9	3.93	6.1	310 J	-	1 U	1 U	-	-
29-Nov-07	3.93	701.52	10.13	428	3.17	197.3	1.63	6.32	270	-	1 U	1 U	-	-
12-Dec-07	5.82	699.63	9.51	384	3.37	185	0.8	6.06	260	-	1 U	1 U	-	-
24-Jan-08	3.86	701.59	7.74	354	3.09	109	-	6.35	250	-	1 U	1 U	-	-
28-Feb-08	4.04	701.41	-	-	-	-	1.06	-	220	-	1 U	1 U	-	-
19-May-08	4.35	701.10	9.79	329	1.38	209.2	1.2	6.08	200 J	-	1 U	1 U	-	-
26-Aug-08	7.83	697.62	12.66	431	1.38	210.5	0.28	6.19	270	-	1 U	1 U	3000 U	-
18-Nov-08	3.64	701.81	10.43	235	3.95	217.5	0.66	6.03	210	-	1 U	1 U	3000 U	-
11-Feb-09	4.09	701.36	7.24	188	2.13	-	0.12	6.54	180	-	1 U	1 U	3000 U	-
19-May-09	3.79	701.66	8.19	173	1.28	111.9	1.78	7.18	170 J	-	1 U	1 U	3000 U	-
22-Sep-09	9.70	695.75	16.5	440	0.82	383.3	12.5	6.31	370 J	-	2 U	2 U	1200 J	-
17-Dec-09	3.47	701.98	9.2	311	4.37	470	16	6.25	110	-	2 U	2 U	700 J	-
24-Mar-10	3.87	701.58	9.4	410	0.34	204.8	30.7	6.65	240	-	0.81 J	2 U	1300 J	-
16-Jun-10	3.77	701.68	10.3	298	0.99	397.8	1.11	7.4	180	-	3.6	2 U	900 J	-
21-Sep-10	5.82	699.63	13.7	350	1.01	302.5	1.04	6.25	200	-	1.4 J	0.2 J	1200 J	-
7-Dec-10	3.83	701.62	9.6	283	0.72	405.6	0.42	6.16	190	-	2 U	2 U	800 J	-
30-Mar-11	3.91	701.54	8.2	133.3	0.51	248.2	0.29	9.87	140 J	-	0.35 J	2 U	5000	-
22-Jun-11	3.99	701.46	11	219.3	0.16	222.5	0.22	6.13	160	-	5 U	2 U	700 J	-
28-Sep-11	8.54	696.91	14.3	34.5	0.26	333.9	2.45	6.3	270	-	5 U	2 U	2100 J	-
15-Dec-11	4.12	701.33	9.4	217	1.15	414.3	2.74	6.28	200	-	5 U	2 U	1200 J	-
21-Mar-12	3.35	702.10	8.4	346	0.42	438.4	0.48	6.14	220	-	4.8	0.4 U	1300 J	-
19-Jun-12	3.78	701.67	11.3	290.1	0.09	314	0.46	6.28	170 J+	-	1.3	0.4 U	3300 U	-
20-Sep-12	8.53	696.92	14.4	419	0.26	309	1.07	6.39	240	-	1.6	0.4 U	2900 J	-
18-Dec-12	3.49	701.96	9.1	491	2.56	264.4	1.38	6.63	170	-	1 U	0.4 U	1200 J	-
26-Feb-13	3.91	701.54	8.4	324	2.59	404.2	1.01	7.03	140	-	1.1	0.4 U	3400	-
23-May-13	3.76	701.69	10.6	338	1.15	465.9	0.57	6.31	190	-	1 U	0.4 U	3300 U	-
22-Aug-13	8.28	697.17	13.1	284.2	0.33	32.2	0.89	6.34	220	-	0.4	0.1 U	1260	-
19-Nov-13	3.33	702.12	10.3	323	1.7	109.2	0.64	6.27	200	-	0.2	0.1 U	750	-
1-Apr-14	3.69	701.76	8.2	243.6	0.45	180.7	0.28	6.33	173	-	0.18 J	0.1 U	710	-
22-May-14	4.52	700.93	10.8	195	0.65	75	-	7.2	152	-	0.3	0.1	600	-
13-Aug-14	7.56	697.89	12.62	269	0.44	37.7	1.12	5.89	181	-	0.8	0.1 U	890	-
12-Nov-14	3.73	701.72	11.7	230.9	1.29	108.2	1.32	6.17	191	-	0.3	0.1 U	950	-
11-Feb-15	3.50	701.95	9.2	270.4	0.53	-34.2	0.73	6.3	170	-	0.2	0.1 U	680	-
4-May-15	4.69	700.76	10.9	249.5	0.28	378.1	0.57	6.29	341	-	0.2	0.1 U	610	-
5-Aug-15	9.44	696.01	13.9	316	0.72	-38.1	1.16	6.45	262	-	0.3	0.1 U	1230	-
3-Nov-15	4.21	701.24	11.8	192.2	8.59	205.6	5.39	6.34	166	-	0.2 J	0.1 U	790	-
9-Feb-16	3.82	701.63	9.2	291.8	4.61	230.7	0.49	6.45	164	-	0.17 J	0.1 U	790	-
3-May-16	4.61	700.84	10.9	310	2.39	253	1.01	6.34	178	-	0.3	0.01 J-	940	-
24-Aug-16	8.76	696.69	13.2	286.7	1.24	490.4	1.01	6.35	177	-	0.2 J	0.1 U	840	-
1-Nov-16	3.34	702.11	12.2	100	3.69	177.2	0.4	6.38	205	-	0.19 J	0.1 U	971	-
2-Feb-17	3.94	701.51	7.8	363	3.11	190	0.1	6.39	223	-	0.17 J	0.1 U	819	-
31-May-17	4.68	700.77	10.3	300	4.5	-	2.48	6.3	182	-	0.203	0.1 U	795	-
18-Aug-17	8.61	696.84	12.7	393	0.51	120.2	0.87	6.44	228	-	0.308	0.1 U	1300	-
10-Nov-17	3.58	701.87	11	264.4	3.88	56.5	0.76	6.01	217	-	0.186 J	0.1 U	669	-
27-Feb-18	3.76	701.69	8.3	302.1	3.19	221.1	0.55	6.29	238	-	0.176 J	0.1 U	875	-
2-May-18	4.02	701.43	10	343	3.02	-	0.59	6.36	215	-	0.15 J	0.1 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	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
13-Feb-20	3.70	701.75	7.9	283.7	2.98	102.2	0.91	6.18	283	-	0.176 J	0.1 U	859	-
13-Aug-20	7.73	697.72	13.5	334.3	0.62	58.3	0.51	6.19	238	-	0.711	0.1 U	921	-
10-Dec-20	3.45	702.00	9.8	364	6.11	169	1.56	6.51	297	-	0.296	0.1 U	1260	-
4-Mar-21	3.72	701.73	8.3	304	2.83	137	0.49	6.47	255	-	0.192 J	0.1 U	876	-
10-Jun-21	5.32	700.13	11.9	338.7	1.23	108.5	0.73	6.09	220	-	0.228	0.1 U	787	-
15-Oct-21	7.69	697.76	12.6	341.3	6.91	133.9	20.5	6.37	363 J-	0.18 J	0.99	0.151	1480	4.09
7-Jan-22	3.40	702.05	8.7	248.4	4.37	211.1	3.08	6.29	270	0.2 U	0.383	0.1 U	774 J	1.73
18-Mar-22	3.52	701.93	9.1	340.6	3.26	123.8	1.85	6.63	320	0.2 U	0.279	0.1 U	1140	1.53
22-Jun-22	3.83	701.62	10.1	327.8	1.36	114.5	0.46	6.36	263	0.2 U	0.201	0.1 U	666	1.16
14-Sep-22	8.9	696.55	13.4	389.4	2.46	87.6	2.53	6.02	330	0.2 U	0.385	0.1 U	1080	1.19

Notes:
Top of casing elevation (feet NAVD88): 705.45

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

-	Not measured or not available		
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.		
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-2e: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-5A
Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Jul-05	33.33	577.90	12.02	956	-	-	496	7.34	600	-	2.01	2 U	-	-
10-Nov-05	29.62	581.61	11.24	1212	-	-	27.6	7.32	800	-	8.4	1 U	-	-
15-Feb-06	21.70	589.53	6.45	665	2.59	280.3	11.1	7.86	520 J	-	22.3	1 U	-	-
17-May-06	29.80	581.43	7.74	831	0.88	101.9	8.67	7.79	580	-	11	1 U	-	-
23-Aug-06	33.25	577.98	15.19	737	1.76	33.5	19.6	7.32	660	-	2.53	1 U	-	-
14-Nov-06	17.79	593.44	10.86	699	4.5	76.3	38.7	7.55	490	-	3.15	1 U	-	-
16-Feb-07	27.08	584.15	8.08	630	6.07	2.3	57.6	8.26	500	-	14.4	1 U	-	-
30-May-07	30.75	580.48	9.6	894	2.59	13.3	13.4	7.76	540	-	8.43	1 U	-	-
29-Aug-07	33.60	577.63	9.56	684	7.64	67	-	7.1	670 J	-	1.97	1 U	-	-
29-Nov-07	30.60	580.63	11	1075	3.53	151.5	23.5	8.37	560	-	5.17	1 U	-	-
27-Feb-08	25.68	585.55	-	-	-	-	29.9	-	400	-	10.7	1 U	-	-
20-May-08	29.73	581.50	7.93	768	4.27	180.7	77.8	7.39	480 J	-	5.67	1 U	-	-
27-Aug-08	33.97	577.26	10.17	862	4.07	81.2	-	7.43	540 J	-	1.17	1 U	87500	-
26-Sep-08	*Test Trench Drain Line Installed*													
16-Oct-08	33.55	577.68	8.89	845	5.39	86.3	852	7.53	440 J	-	1.03	1 U	90700	-
20-Nov-08	23.48	587.75	9.34	577	5.27	234.3	9.48	7.5	470	-	6.24	2 U	138000	-
30-Dec-08	20.88	590.35	8.39	510	8.89	99	44.8	8.02	430 J	-	14.2	1.11	138000	-
15-Jan-09	18.50	592.73	4.97	347	8.9	154.8	17.2	8.47	380	-	24.4	1 U	104000	-
12-Feb-09	27.90	583.33	8.47	-	10.21	-	22	7.6	420 J	-	6.11	1 U	99000	-
12-Mar-09	29.19	582.04	7.47	521	6.15	171.7	26.8	7.39	480	-	8.97	1 U	124000	-
16-Apr-09	21.70	589.53	6.99	456	7.6	151.6	72.7	8.66	470	-	28.2	1.01	126000	-
19-May-09	28.37	582.86	8.08	509	6.38	64.4	31.3	8.07	450 J	-	9.19	1 U	105000	-
23-Jun-09	31.95	579.28	8.84	551	5.97	69.1	74.3	8.28	500	-	4.3	2 U	71000	-
25-Aug-09	35.08	576.15	-	-	-	-	-	-	-	-	-	-	-	-
24-Sep-09	35.29	575.94	11.7	714	2.28	371.9	258	7.26	550 J	-	0.76 J	0.17 J	88000	-
15-Dec-09	26.11	585.12	8.6	928	2.89	544	89	7.14	450	-	1.1 J	2 U	110000	-
24-Mar-10	27.86	583.37	8.3	697	3.52	505.1	18.1	7.47	450	-	23	0.46 J	110000	-
16-Jun-10	21.35	589.88	10.7	783	2.07	379	41.4	7.73	340	-	53	0.0021	150000	-
22-Sep-10	33.88	577.35	10.4	938	4.3	467.1	7.93	7.1	620	-	5	2 U	100000	-
7-Dec-10	25.22	586.01	10.2	781	3.86	353.7	11.1	7.39	500	-	12	0.53 J	130000	-
29-Mar-11	23.59	587.64	7	354	3.47	708	22.22	9.52	440 J	-	63	1.4 J	140000	-
21-Jun-11	28.33	582.90	11.6	1000	2.22	285.3	10.6	9.06	1100 J	-	43	1.2 J	180000	-
27-Sep-11	34.70	576.53	12.7	641	1.46	307.2	12.8	7.3	680	-	5 U	0.23 J	100000	-
14-Dec-11	29.46	581.77	9.5	691	1.95	757.1	9.69	7.35	690	-	6.9	0.18 J	180000	-
20-Mar-12	19.50	591.73	6.2	841	3.98	320.2	8.52	8.25	350	-	26	1 J	140000	-
19-Jun-12	27.91	583.32	10.2	800	3.22	365.9	2.76	7.66	510	-	8.7	0.4 U	120000	-
20-Sep-12	34.53	576.70	11	859	0.73	387	46.8	7.64	530	-	2.6	0.4 U	100000	-
19-Dec-12	21.26	589.97	8.9	983	1.73	279	778	7.71	530	-	11	0.62	180000	-
25-Feb-13	27.19	584.04	7.5	682	7.61	330.5	4.36	7.85	380	-	13	0.15 J	74000	-
22-May-13	29.09	582.14	8.8	828	3.88	411.4	8.11	8.29	350	-	25	0.53	100000	-
21-Aug-13	35.15	576.08	17.1	1248	3.41	114.2	144	7.78	1060	-	1.5	0.05 J	95000	-
20-Nov-13	27.45	583.78	10	1032	4.13	196.5	31.7	7.18	699	-	14.5	1.4	202000	-
1-Apr-14	21.08	590.15	8.4	567	3.04	168.2	15.7	10.24	413	-	62.7	1.5	150000	-
21-May-14	26.11	585.12	10.3	670	0.49	198.4	-	7.45	565	-	95	1.6	166000	-
12-Aug-14	34.56	576.67	14.07	812	3.64	87.7	1519	7.51	560	-	3	0.1 U	107000	-
13-Nov-14	29.48	581.75	12.9	1135	3.5	241.7	10.46	7.69	956	-	20.8	0.1	295000	-
11-Feb-15	20.81	590.42	7.7	619	6.17	81.4	18	9.63	430	-	39.2	1.3	126000	-
4-May-15	29.80	581.43	10.5	924	2.54	361.3	8.7	9.74	623	-	42.3	0.5	192000	-
6-Aug-15	36.08	575.15	12.8	781	2.4	129.6	261	7.24	DRY	-	DRY	DRY	DRY	-
4-Nov-15	30.80	580.43	10.7	1234	4.98	205.6	11.8	7.13	1130	-	6.6	0.3	318000	-
10-Feb-16	23.56	587.67	6.4	602	1.62	197.7	11.9	10.19	451	-	132	1.4	148000	-
2-May-16	30.19	581.04	11.5	1008	0.8	110.6	9.76	10.14	751	-	171	2.7 J-	232000	-
23-Aug-16	35.79	575.44	13.1	729	2	436.2	51.4	7.2	1010	-	4.01	0.1 U	137000	-
2-Nov-16	29.06	582.17	10.9	570	4.98	103.1	32.1	7.55	1180	-	11.2	0.56	372000	-
1-Feb-17	26.86	584.37	8.1	992	2.21	99.7	7.19	9.73	632	-	109	0.971	194000	-
30-May-17	26.86	584.37	10.5	814	6.12	5.83	5.74	9.73	487	-	42.5	0.36 J+	168000	-
17-Aug-17	34.23	577.00	11.7	1054	5.43	125.1	5.68	7.65	731	-	6.52	0.1 U	156000	-
10-Nov-17	29.96	581.27	10	1077	4.65	85.2	10.5	7.18	953	-	5.82	0.338	308000	-
27-Feb-18	23.02	588.21	7.7	584	1.91	120.4	12.6	9.96	530	-	86.3	0.642	174000	-
1-May-18	24.85	586.38	9.1	1082	2.16	-	11.8	10.34	682	-	113	0.775 J+	196000	-
21-Aug-18	35.17	576.06	14.83	1095	4.02	131	123	7.4	936	-	3.65	0.1 U	214000	-
6-Nov-18	32.00	579.23	10.3	1192	5.93	198.1	2.35	7.49	1200	-	4.87	0.077 J	363000 J+	-
13-Mar-19	25.12	586.11	7.4	695	2.19	189.7	15.8	9.48	632	-	44.1	0.633	200000	-
8-May-19	27.89	583.34	10.7	844	4.95	60.5	5.19	9.3	697	-	41.9	0.677	182000	-
26-Aug-19	35.02	576.21	11.89	1111	1.52	Note 1	22.9	7.26	995	-	2.46	0.1 U	177000	-
13-Nov-19	33.00	578.23	9.8	932	5.27	66.1	0.02	7.18	776	-	3.89	0.1 U	211000	-
12-Feb-20	18.23	593.00	7	533	7.58	140.4	10.6	8.32	463	-	6.31	0.145	183000	-
12-Aug-20	34.50	576.73	11.2	1381	4	125	2.75	7.52	1250	-	5.37	0.1 U	333000	-
9-Dec-20	29.90	581.33	9.8	1105	4.51	222	8.32	7.29	897	-	3.12	0.295	263000	-
3-Mar-21	24.81	586.42	9.2	899	3.04	225	3.09	7.6	792	-	3.74	0.132	247000	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
9-Jun-21	33.20	578.03	9.3	875	5.23	184	1.26	7.27	700	-	2.62	0.063 J	205000	-
13-Oct-21	31.70	579.53	9.5	1934	5.97	194	9.56	7.22	DRY	DRY	DRY	DRY	DRY	DRY
5-Jan-22	23.00	588.23	9.2	972	4.7	271.1	1.4	7.18	829	6.42	3.38	0.085 J	252000	1.8
16-Mar-22	21.48	589.75	7.8	724	7.0	187	2.65	6.6	711	6.01	4.02	0.11	223000	1.52
23-Jun-22	25.74	585.49	9.6	969	3.5	173.1	1.13	7.38	881	5.49	3.29	0.093 J	251000	1.82
23-Sep-22	35	576.23	11.5	1640	3.45	223.6	1.35	7.42	1720	4.57	3.21	0.156 J	455000	1.58

Notes:
Top of casing elevation (feet NAVD88): 611.23

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

-	Not measured or not available		
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.		
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	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Jul-05	30.89	578.06	15.26	735	-	-	303	7.6	612	-	2 U	2 U	-	-
10-Nov-05	27.25	581.70	11.79	700	-	-	13.7	7.51	460	-	2.16	1 U	-	-
15-Feb-06	19.42	589.53	6.17	759	2	162.9	9.42	8.27	550 J	-	7.54	1 U	-	-
17-May-06	27.55	581.40	11.99	835	1.31	248.3	4.16	7.46	550	-	11	1 U	-	-
23-Aug-06	30.99	577.96	15.92	862	1.6	-26.4	15.5	7.4	810	-	1.34	1 U	-	-
14-Nov-06	15.30	593.65	10.56	712	4.59	84.1	14.5	7.32	500	-	1.71	1 U	-	-
16-Feb-07	24.22	584.73	8.49	581	3.64	38.6	139	7.21	420	-	1.6	1 U	-	-
30-May-07	28.50	580.45	13.93	1092	2.72	180.7	210	7.4	740	-	16.2	1 U	-	-
29-Aug-07	31.34	577.61	10.15	701	4.48	84.8	662	7.8	620 J	-	1.41	1 U	-	-
29-Nov-07	28.32	580.63	11.3	731	6.23	154	-	6.26	420	-	1.78	1 U	-	-
27-Feb-08	23.42	585.53	-	-	-	-	-	-	410	-	1.47	1 U	-	-
20-May-08	27.49	581.46	8.14	791	3.93	176.5	-	7.64	540 J	-	8.18	1 U	-	-
27-Aug-08	31.72	577.23	9.33	776	4.83	142	-	7.32	660 J	-	1.86	1 U	109000	-
26-Sep-08	*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+	-
13-Mar-19	22.90	586.05	5.8	748	5.04	145.7	32	10.55	737	-	39.1	0.455	246000	-
8-May-19	25.63	583.32	9.1	936	5.95	75.9	7.6	10.38	747	-	54.7	1.27	246000	-
26-Aug-19	32.90	576.05	11.18	1622	0.88	Note 1	6.57	8.97	1510	-	18.8	0.507	478000	-
13-Nov-19	30.92	578.03	10.2	1320	1.45	172.7	5.1	8.33	1140	-	6.31	0.1 U	422000	-
12-Feb-20	15.95	593.00	7.7	437.7	1.4	150.6	19.7	8.13	379	-	2.12	0.1 U	122000	-
12-Aug-20	32.30	576.65	11	2360	2.25	162.9	13.4	8.16	2060	-	6.28	0.088 J	709000	-
9-Dec-20	27.60	581.35	10.8	1750	1.95	209	22	8.22	1500	-	3.14	0.984	539000	-
3-Mar-21	22.58	586.37	7.1	760	1.74	208	5.6	8.04	722	-	3.09	0.307	243000	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
9-Jun-21	31.07	577.88	9.8	2077	4.83	197.3	1.81	8.08	1900	-	5.03	0.094 J	707000	-
13-Oct-21	29.39	579.56	11.2	2509	4.77	188.6	13.1	7.64	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	20.72	588.23	7.3	1136	8.21	229.4	2.04	7.98	1040	7.89	2.41	0.115	333000	0.912
16-Mar-22	19.23	589.72	7.3	828	7.3	176.4	3.63	7.57	808	7.90	2.85	0.155	255000	0.935
23-Jun-22	23.49	585.46	11.2	916	3.74	163.1	0.76	7.66	836	7.00	2.09	0.073 J	265000	0.977
23-Sep-22	32.92	576.03	14.8	2281	3.73	199.3	2.05	8.05	2150	7.64	4.97	0.2 U	646000	2.52

Notes:

Top of casing elevation (feet NAVD88): 608.95

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

-	Not measured or not available		
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.		
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-2g: Summary of Lower Disposal Area - Shallow/Alluvial 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 Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
13-Oct-21	13.61	579.08	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
10-Jan-22	4.73	587.96	7.00	467	5.45	197.0	2.99	7.34	419	3.89	2.07	0.1 U	98000	1.04
21-Mar-22	3.21	589.48	7.3	691	6.38	66.2	1.52	7.46	632	6.23	2.88	0.071 J	179000	1.34
22-Jun-22	7.45	585.24	12	541	1.88	107.5	0.47	7.21	387	2.91	1.78	0.1 U	65500	1.19
14-Sep-22	16.9	575.79	13.6	548	4.46	141	0.5	6.31	444	1.63	1.49	0.1 U	54000	1.16

Notes:

Top of casing elevation (feet NAVD88): 592.69

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

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

Table A-2h: Summary of Lower Disposal Area - Shallow/Alluvial 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 Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
13-Oct-21	23.91	577.58	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6-Jan-22	13.55	587.94	9.5	670	3.99	239.1	4.50	7.05	595	5.21	6.64	0.1 U	169000	3.87
21-Mar-22	12.11	589.38	8.0	587	7.13	45	3.32	7.71	536	4.76	7.48	0.1 U	163000	3.84
22-Jun-22	16.4	585.09	9.4	773	2.99	96	0.94	7.22	699	5.17	8.13	0.1 U	197000	4.73
12-Sep-22	26	575.49	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

Notes:
Top of casing elevation (feet NAVD88): 601.49

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)				
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Antimony	Arsenic	Lead	Potassium	Vanadium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Oct-21	4.38	692.91	12.20	956	1.45	-93.2	2.70	7.11	981 J-	0.659	4.79	0.139	16000	1.2
7-Jan-22	2.45	694.84	8.50	381	4.86	189.9	1.43	6.95	404	0.181 J	1.02	0.056 J	2910	1.03
18-Mar-22	2.38	694.91	8.50	423	5.19	138.3	1.17	7.16	403	0.154 J	0.788	0.1 U	2470	0.776
22-Jun-22	2.38	694.91	10.5	485.8	4.42	72.8	0.85	6.89	399	0.244	0.656	0.052 J	2130	0.916
14-Sep-22	8.7	688.59	13.5	509	3.84	130.2	1.09	6.44	441	0.154 J	1.05	0.1 U	2780	1.13

Notes:
Top of casing elevation (feet NAVD88): 697.29

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

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

Table A-2j: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well MW-10A
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 Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Oct-21	19.04	678.98	10.7	390	4.24	-115.0	27.80	7.93	383 J-	0.705	4.04	0.383	9700	2.87
6-Jan-22	5.55	692.47	9.3	168	7.06	94.6	6.90	7.50	141	0.151 J	1.13	0.109	2660	1.03
17-Mar-22	5.39	692.63	9.4	151	7.12	95.1	6.21	6.50	139	0.2 U	0.91	0.061 J	1880	0.807
21-Jun-22	5.89	692.13	11.5	114.9	7.92	191.1	4.48	6.80	116	0.2 U	0.764	0.081 J	1150	1.02
13-Sep-22	14.24	683.78	12	221.3	6.64	189.1	3.74	6.78	195	0.201	1.54	0.082 J	2350	1.56

Notes:

Top of casing elevation (feet NAVD88): 698.02

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

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

Table A-2k: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well P-16
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 Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Oct-21	2.41	700.46	12.30	2622	0.71	-261.2	56.2	12.11	2640 J-	9.16	232	41.1	826000	445
6-Jan-22	2.35	700.52	8.10	2804	1.06	-409.7	1.1	12.75	2420	9.63	109	14.6	809000	292
17-Mar-22	2.73	700.14	8.4	2600	1.16	-421.2	23.5	13.71	2570	8.14	124	10.5	771000	255
22-Jun-22	2.71	700.16	11.6	2757	0.04	-105.8	27.4	12.19	2200	9.62	124	17.1	713000	285
13-Sep-22	4.33	698.54	14.9	2609	1.26	-427.3	31.8	11.63	2160	5.92	103	42.7	756000	431

Notes:

Top of casing elevation (feet NAVD88): 702.87

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

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

Table A-2l: Summary of Lower Disposal Area - Shallow/Alluvial Groundwater Sampling Results - Well P-17
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 Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Oct-21	4.89	715.43	14.00	464	0.98	-97.5	38.1	6.49	444 J-	1 U	16.4	13.1	9700	105
7-Jan-22	3.65	716.67	6.90	389	1.13	-60.4	4.1	6.46	388	1.26	2.81	0.1 U	8030	1.8
18-Mar-22	4.12	716.2	8.4	404.4	1.46	23.7	5.41	7.33	362	1.38	1.34	0.1 U	13300	1.08
22-Jun-22	6.87	713.45	11.7	586	0.26	-57.6	2.87	6.44	398	0.68	6.73	0.2 U	3560	2.99
14-Sep-22	13.31	707.01	14.3	706	1.91	-63.2	2.12	6.1	489	1 U	7.67	0.5 U	3570	2.99

Notes:

Top of casing elevation (feet NAVD88): 720.32

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

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

APPENDIX A-3

Summary of Lower Disposal Area – Bedrock Groundwater Sampling Results

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
19-Dec-06	26.51	678.17	10.96	546	0.43	-115.4	1.05	7.70	310	151	1 U	-
14-Feb-07	26.08	678.60	10.62	397	1.02	-90.8	3.07	7.53	240	160	1 U	-
31-May-07	25.96	678.72	10.83	386	0.36	-172.8	4.20	8.20	220	122	1 U	-
27-Aug-07	25.66	679.02	10.97	372	0.76	-128.2	1.08	7.51	240	89.9	1 U	-
28-Nov-07	26.81	677.87	10.56	371	0.42	-121.2	1.29	8.03	220	88.3	1 U	-
27-Feb-08	25.80	678.88	10.62	371	2.01	-	1.07	-	230	80.9	1 U	3000 U
20-May-08	25.62	679.06	10.61	391	0.36	-53.0	1.11	7.28	230	64.3	1 U	-
27-Aug-08	26.14	678.54	10.58	394	0.50	-63.9	1.02	7.35	230 J	64	1 U	3000 U
19-Nov-08	25.16	679.52	10.33	269	0.45	-88.6	0.48	7.51	230	59.6	1 U	3000 U
11-Feb-09	25.08	679.60	10.04	268	0.48	-	0.97	7.89	230	56	1 U	3000 U
18-May-09	24.83	679.85	10.10	271	0.42	-50.5	1.81	8.05	230 J	46.6	1 U	3000 U
24-Sep-09	26.32	678.36	11.80	323	0.24	202.0	3.59	7.57	260	27	2 U	1100 J
17-Dec-09	25.06	679.62	10.10	370	0.94	179.0	4.16	7.77	<40	34	2 U	1200 J
23-Mar-10	24.83	679.85	10.90	344	0.21	397.4	3.17	7.57	240	25	2 U	1300 J
15-Jun-10	24.38	680.30	10.50	355	0.08	195.5	0.42	7.66	150	27	2 U	1100 J
20-Sep-10	25.74	678.94	10.50	354	0.06	192.9	0.20	7.65	200	22	2 U	1100 J
6-Dec-10	24.59	680.09	10.00	347	0.09	99.3	0.17	7.86	230	22	2 U	1000 J
28-Mar-11	24.01	680.67	10.00	173	0.16	90.6	0.88	7.58	200	22	2 U	1000 J
20-Jun-11	24.11	680.57	10.30	330	0.07	121.5	0.17	7.65	250	22	2 U	900 J
26-Sep-11	25.39	679.29	10.40	2906	0.06	123.6	0.43	7.65	280	15	2 U	1100 J
14-Dec-11	24.61	680.07	9.90	245	0.10	193.8	1.76	7.57	230	21	2 U	1200 J
21-Mar-12	23.70	680.98	10.10	392	0.07	392.0	0.22	7.47	240	23	2 U	1100 J
18-Jun-12	23.90	680.78	10.50	383	0.02	342.8	0.30	7.67	230	20	0.4 U	3300 U
19-Sep-12	25.38	679.30	10.30	402	0.01	151.0	0.44	7.63	220	19	0.4 U	1000 J
18-Dec-12	23.59	681.09	10.10	492	0.00	-45.7	0.16	7.70	92	17	0.4 U	1200 J
25-Feb-13	23.73	680.95	9.90	377	0.00	177.1	0.37	7.53	270 J	19	0.4 U	1000 J
22-May-13	23.85	680.83	9.90	398	0.00	430.4	0.44	7.73	290	17	0.4 U	3300 U
21-Aug-13	25.34	679.34	10.40	467	0.01	-31.7	0.55	7.68	238	16.8	0.08 J	1060
19-Nov-13	24.25	680.43	10.10	361	0.00	70.3	0.32	7.30	232	15.7	0.1 U	1040
31-Mar-14	22.36	682.32	10.70	286	0.01	107.4	0.21	7.79	211	13.8	0.1 U	1020
21-May-14	23.29	681.39	8.54	271	1.35	54.3	-	7.14	198	13.1	0.1 U	1000
12-Aug-14	24.87	679.81	14.79	335	0.41	-16.0	2.02	7.05	216	11.9	0.1 U	1010
11-Nov-14	24.96	679.72	10.10	262	0.79	11.1	1.51	7.49	221	13.6	0.1 U	1090
10-Feb-15	23.23	681.45	10.40	319	0.25	-114.0	0.36	7.70	240	13.3	0.1 U	960
4-May-15	23.62	681.06	10.20	370	0.05	175.1	0.16	7.70	224	11.7	0.1 U	960
4-Aug-15	25.30	679.38	11.00	279	0.06	-30.5	0.72	7.72	234	14.4	0.1 U	990
4-Nov-15	25.35	679.33	10.60	263	0.00	51.2	0.46	7.46	233	11	0.1 U	1150
8-Feb-16	23.03	681.65	10.20	319	0.03	206.5	0.20	7.77	210	12.1	0.1 U	1050
2-May-16	23.49	681.19	Monitored Semi-Annually[1]						Monitored Annually[1]			
22-Aug-16	25.00	679.68	11.10	323	0.02	-55.2	1.10	7.64	Monitored Annually[1]			
1-Nov-16	24.29	680.39	Monitored Semi-Annually[1]						Monitored Annually[1]			
31-Jan-17	23.06	681.62	10.20	391	0.05	169.3	0.13	7.66	223	11.9	0.1 U	1030
30-May-17	22.45	682.23	Monitored Semi-Annually[1]						Monitored Annually[1]			
16-Aug-17	24.27	680.41	10.70	385	0.15	123.4	0.40	7.64	Monitored Annually[1]			
9-Nov-17	23.51	680.27	Monitored Semi-Annually[1]						Monitored Annually[1]			
28-Feb-18	22.04	682.64	10.10	276	0.20	-96.4	0.25	7.44	221	10.8	0.1 U	951
1-May-18	22.11	682.57	Monitored Semi-Annually[1]						Monitored Annually[1]			
22-Aug-18	24.42	680.26	11.37	277	5.25	-59.6	0.18	7.61	Monitored Annually[1]			
6-Nov-18	24.57	680.11	Monitored Semi-Annually[1]						Monitored Annually[1]			
11-Mar-19	22.61	682.07	10.10	248	0.60	-70.8	0.68	7.60	224	8.74	0.1 U	1070
8-May-19	22.68	682.00	Monitored Semi-Annually[1]						Monitored Annually[1]			
27-Aug-19	24.54	680.14	11.45	282	0.58	Note 1	0.04	7.30	Monitored Annually[1]			
13-Nov-19	24.15	680.53	Monitored Semi-Annually[1]						Monitored Annually[1]			
13-Feb-20	22.04	682.64	10.10	280	0.34	-133.4	0.57	7.51	207	8.82	0.1 U	1050
13-Aug-20	23.92	680.76	11.00	284	0.60	-113.5	0.44	7.55	Monitored Annually[1]			
9-Dec-20	23.35	681.33	Monitored Semi-Annually[1]						Monitored Annually[1]			
5-Mar-21	22.01	682.67	10.20	266	0.04	-50.0	0.42	7.64	214	10.5	0.1 U	1120

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
10-Jun-21	23.17	681.51	Monitored Semi-Annually[1]						Monitored Annually[1]			
13-Oct-21	24.41	680.27	10.90	327.2	0.91	-76.1	0.33	7.48	Monitored Annually[1]			
5-Jan-22	22.00	682.68	Monitored Semi-Annually[1]						Monitored Annually[1]			
17-Mar-22	21.89	682.79	10.7	259.6	1.24	-60.4	0.22	6.52	220	8.2	0.1 U	925
21-Jun-22	21.58	683.1	Monitored Semi-Annually[1]						Monitored Annually[1]			
12-Sep-22	23.51	681.17	11.3	263.3	2.86	-7.4	0.37	6.76	Monitored Annually[1]			

Note:

Top of casing elevation (feet NAVD88): 704.68

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
19-Dec-06	36.82	704.84	12.15	394	0.57	114.6	1.84	7.58	230	8.49	1 U	-
14-Feb-07	36.30	705.36	11.69	339	1.40	-85.7	2.72	7.39	200	6.09	1 U	-
31-May-07	36.93	704.73	12.13	346	0.20	-223.7	3.04	8.28	210	6.95	1 U	-
27-Aug-07	37.99	703.67	12.18	336	0.49	-169.7	0.84	7.54	210	7.49	1 U	-
28-Nov-07	37.89	703.77	11.82	338	0.28	-146.6	1.32	7.93	250	6.91	1 U	-
27-Feb-08	37.24	704.42	11.87	340	0.23	-	0.87	7.41	210	7.46	1 U	3000 U
20-May-08	37.31	704.35	11.91	359	0.23	-86.6	0.67	7.27	200	6.31	1 U	-
27-Aug-08	38.37	703.29	11.84	362	0.35	-77.6	0.70	7.21	210 J	6.36	1 U	3000 U
19-Nov-08	37.50	704.16	11.53	254	0.44	-105.9	2.08	7.45	200	5.86	1 U	3000 U
11-Feb-09	37.10	704.56	11.25	254	0.48	-	0.63	7.91	220	5.61	1 U	3000 U
18-May-09	37.00	704.66	11.42	258	0.42	-71.9	1.11	8.00	210 J	5.17	1 U	3000 U
25-Sep-09	38.88	702.78	13.10	297	0.14	140.7	3.09	7.54	230	6.5	2 U	1200 J
17-Dec-09	37.19	704.47	10.80	341	0.51	129.0	4.85	7.71	74	4.3	2 U	1100 J
23-Mar-10	36.60	705.06	12.60	323	0.27	355.0	5.28	7.54	110	7.6	2 U	1200 J
15-Jun-10	36.25	705.41	11.40	326	0.08	171.1	-	7.62	98	8.8	2 U	1100 J
20-Sep-10	37.85	703.81	11.60	324	0.08	144.0	0.16	7.61	160	6.5	2 U	1200 J
6-Dec-10	36.60	705.06	11.00	319	0.21	78.3	0.20	7.81	210	2.9	2 U	900 J
29-Mar-11	35.98	705.68	11.20	156	0.15	215.0	0.75	7.48	200	5.6	2 U	1500 J
21-Jun-11	36.34	705.32	11.80	352	0.06	101.5	0.24	7.59	220	5 U	2 U	1000 J
27-Sep-11	38.14	703.52	11.50	2484	0.06	114.4	0.45	7.60	220	5 U	2 U	1000 J
14-Dec-11	36.91	704.75	11.00	228	0.05	127.2	4.04	7.54	190	6.7	2 U	1200 J
21-Mar-12	35.68	705.98	11.00	359	0.05	93.9	0.30	7.43	210	6.9	2 U	1100 J
18-Jun-12	36.06	705.60	11.70	350	0.02	211.9	0.23	7.62	220	6.2	0.4 U	3300 U
19-Sep-12	38.07	703.59	11.60	367	0.00	102.0	0.34	7.59	200	6.5	0.4 U	1000 J
18-Dec-12	34.88	706.78	10.90	463	0.00	-97.8	0.17	7.81	68	6	0.4 U	1200 J
25-Feb-13	35.70	705.96	10.90	347	0.09	112.6	0.27	7.56	190	6.6	0.4 U	1100 J
22-May-13	36.24	705.42	11.00	412	0.00	412.5	0.43	7.71	190	6	0.4 U	3300 U
20-Aug-13	38.13	703.53	12.20	406	0.02	-41.5	0.64	7.48	211	5.5	0.1 U	1030
19-Nov-13	36.56	705.10	11.10	344	0.01	43.6	0.32	7.35	206	5.2	0.1 U	1090
31-Mar-14	35.36	706.30	11.50	285	0.00	93.1	0.31	7.71	207	5.1	0.1 U	1100
22-May-14	35.80	705.86	10.05	260	0.24	17.5	-	7.22	186	5	0.1 U	1000
13-Aug-14	37.50	704.16	13.10	294	0.57	-37.5	3.28	7.19	190	5.4	0.1 U	1110
11-Nov-14	37.06	704.60	10.10	241	0.68	-39.7	2.10	7.48	206	5.4	0.1 U	1090
10-Feb-15	35.70	705.96	11.40	295	0.11	-123.2	2.11	7.69	206	5.1	0.1 U	1020
4-May-15	36.34	705.32	11.70	336	0.05	340.2	0.72	7.73	204	4.8	0.1 U	1040
4-Aug-15	38.42	703.24	12.70	263	0.04	-81.8	0.77	7.72	204	5.8	0.1 U	1040
4-Nov-15	37.81	703.85	11.60	244	0.04	26.9	2.13	7.45	201	4.7	0.1 U	1070
8-Feb-16	35.68	705.98	11.60	307	0.00	208.4	0.74	7.68	186	5.5	0.1 U	1110
2-May-16	36.03	705.63	Monitored Semi-Annually[1]						Monitored Annually[1]			
22-Aug-16	37.92	703.74	12.20	306	0.02	-137.6	1.58	7.67	Monitored Annually[1]			
1-Nov-16	37.07	704.59	Monitored Semi-Annually[1]						Monitored Annually[1]			
31-Jan-17	36.00	705.66	10.90	348	0.10	120.5	0.86	7.67	195	5.66	0.1 U	1110
30-May-17	35.44	706.22	Monitored Semi-Annually[1]						Monitored Annually[1]			
16-Aug-17	37.69	703.97	12.30	356	0.14	-77.2	3.27	7.67	Monitored Annually[1]			
9-Nov-17	37.11	704.55	Monitored Semi-Annually[1]						Monitored Annually[1]			
28-Feb-18	34.95	706.71	10.90	261	0.21	-115.5	0.80	7.48	205	5.69	0.1 U	992
1-May-18	35.11	706.55	Monitored Semi-Annually[1]						Monitored Annually[1]			
22-Aug-18	37.90	703.76	12.31	262	1.64	-80.3	0.92	7.56	Monitored Annually[1]			
6-Nov-18	37.66	704.00	Monitored Semi-Annually[1]						Monitored Annually[1]			
12-Mar-19	35.68	705.98	10.70	239	0.58	-75.1	0.59	7.48	188	5.5	0.1 U	1080
8-May-19	35.86	705.80	Monitored Semi-Annually[1]						Monitored Annually[1]			
27-Aug-19	37.85	703.81	12.30	265	0.43	Note 1	0.02	7.46	Monitored Annually[1]			
13-Nov-19	37.22	704.44	Monitored Semi-Annually[1]						Monitored Annually[1]			
13-Feb-20	35.10	706.56	10.80	261	0.39	-135.9	0.96	7.50	185	5.45	0.1 U	1150
13-Aug-20	37.21	704.45	11.60	266	0.54	-118.2	1.35	7.50	Monitored Annually[1]			
9-Dec-20	36.55	705.11	Monitored Semi-Annually[1]						Monitored Annually[1]			
5-Mar-21	35.02	706.64	11.10	255	0.04	-80.0	2.29	7.65	176	5.52	0.1 U	1090

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
10-Jun-21	36.29	705.37	Monitored Semi-Annually[1]						Monitored Annually[1]			
13-Oct-21	37.76	703.90	11.70	308	3.66	-44.7	0.32	7.43	Monitored Annually[1]			
5-Jan-22	35.31	706.35	Monitored Semi-Annually[1]						Monitored Annually[1]			
17-Mar-22	34.52	707.14	11.6	244.3	2.84	-60.6	3.21	6.56	201	5.53	0.071 J	1060
21-Jun-22	34.7	706.96	Monitored Semi-Annually[1]						Monitored Annually[1]			
23-Sep-22	37	704.66	12.1	243.1	3.88	-17.8	0.54	7.47	Monitored Annually[1]			

Note:
Top of casing elevation (feet NAVD88): 741.66
Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected		
-	Not available		
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.		
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-3c: Summary of Lower Disposal Area - Bedrock Groundwater Sampling Results - Well MWB-3LDA Ravensdale Site, Ravensdale, Washington

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
19-Dec-06	7.08	737.11	11.37	670	0.42	-171.2	1.20	9.23	500	25.7	1 U	-
23-Jan-07	5.62	738.57	13.07	383	0.51	-275.0	1.53	8.63	270	18.4	1 U	-
14-Feb-07	5.81	738.38	12.57	328	1.09	-158.2	115.00	7.86	310	15.1	1 U	-
29-Mar-07	4.78	739.41	12.44	458	0.57	-140.8	4.25	7.78	260 J	37.9	1 U	-
17-Apr-07	4.86	739.33	12.79	389	0.27	-102.4	1.22	7.46	240	23	1 U	-
31-May-07	6.39	737.80	12.98	394	0.29	-223.8	3.32	8.14	240	21.2	1 U	-
20-Jun-07	6.86	737.33	13.41	412	6.10	-128.5	1.35	8.02	230 J	23.8	1 U	-
31-Jul-07	7.96	736.23	13.47	417	0.77	-174.1	0.92	7.64	250	18.9	1 U	-
27-Aug-07	8.50	735.69	12.84	395	0.46	-132.4	1.97	7.43	250	17.6	1 U	-
27-Sep-07	9.58	734.61	12.68	294	0.51	-133.8	0.53	7.87	250	19.3	1 U	-
26-Oct-07	9.65	734.54	12.49	288	0.84	-111.9	9.83	7.60	240 J	11	1 U	-
28-Nov-07	10.23	733.96	11.95	362	0.64	-86.1	1.58	7.87	200	17.8	1 U	-
12-Dec-07	9.66	734.53	11.83	334	0.26	-93.2	0.63	7.63	280 J	17.4	1 U	-
24-Jan-08	8.20	735.99	11.09	335	0.44	-108.3	-	7.46	220	19.2	1 U	-
26-Feb-08	7.61	736.58	12.26	337	0.48	-	2.40	7.45	210	22	1 U	3000 U
25-Mar-08	7.22	736.97	11.94	337	1.01	-48.6	2.80	7.51	210	17.8	1 U	-
29-Apr-08	6.75	737.44	12.53	332	0.77	-50.3	1.95	7.41	200 J	18.2	1 U	-
19-May-08	7.17	737.02	12.37	336	0.57	-57.2	2.19	7.34	200 J	18.7	1 U	-
18-Jun-08	7.26	736.93	12.11	323	0.48	-64.1	0.83	7.13	190 J	19.5	1 U	-
26-Aug-08	8.78	735.41	12.31	329	1.16	-36.5	2.89	7.30	200 J	17.7	1 U	3000 U
19-Nov-08	9.03	735.16	11.91	243	0.52	-93.1	1.69	7.40	190	18.2	1 U	3000 U
11-Feb-09	7.07	737.12	11.74	227	0.65	-	1.03	7.76	180	17.7	1 U	3000 U
18-May-09	6.50	737.69	12.11	225	0.67	-63.9	1.51	7.83	190 J	12.9	1 U	3000 U
25-Sep-09	10.47	733.72	13.50	260.1	0.36	215.3	4.14	7.61	220	17	0.94 J	12000
17-Dec-09	8.39	735.80	11.50	301.0	0.44	110.0	3.10	7.71	270	23	2 U	1300 J
23-Mar-10	6.46	737.73	12.20	294.8	0.43	332.5	3.52	7.57	150 J	27	2 U	1300 J
16-Jun-10	5.34	738.85	11.10	281.7	0.05	117.0	-	7.71	160	27	2 U	1300 J
21-Sep-10	7.72	736.47	11.80	276.3	0.06	169.5	0.36	7.54	140	23	2 U	1300 J
7-Dec-10	6.48	737.71	11.00	263.0	0.15	77.2	0.38	7.58	180	20	2 U	1200 J
28-Mar-11	4.42	739.77	10.80	134.0	0.44	75.6	1.06	7.46	160 J	21	2 U	1700 J
20-Jun-11	4.76	739.43	12.10	252.7	0.07	68.4	0.13	7.48	200 J	16	2 U	1000 J
27-Sep-11	7.86	736.33	11.90	2064.0	0.04	102.6	0.37	7.48	170	18	2 U	1100 J
14-Dec-11	7.17	737.02	11.00	188.2	0.03	140.8	1.87	7.50	770	22	2 U	1300 J
21-Mar-12	4.68	739.51	10.70	297.8	0.07	130.6	0.41	7.39	170	21	2 U	1100 J
18-Jun-12	4.75	739.44	11.60	289.0	0.16	271.3	0.55	7.54	150 J+	19	0.4 U	3300 U
19-Sep-12	7.65	736.54	12.60	299.9	0.10	121.0	0.42	7.50	160	18	0.4 U	1100 J
18-Dec-12	5.58	738.61	10.90	384.0	0.03	15.6	1.39	7.50	200	19	0.4 U	1300 J
25-Feb-13	4.80	739.39	10.60	284.2	0.03	140.4	0.30	7.53	150	22	0.4 U	1200 J
22-May-13	4.81	739.38	11.00	294.9	0.14	387.7	0.52	7.61	160	18	0.4 U	3300 U
20-Aug-13	7.63	736.56	12.60	383.0	0.81	-8.4	0.80	7.26	164	16.7	0.1 U	1060
19-Nov-13	7.11	737.08	11.30	218.1	0.14	54.3	0.73	7.20	169	16.6	0.1 U	1130
1-Apr-14	4.08	740.11	10.70	222.6	0.15	158.5	1.12	7.50	168	13.3	0.1 U	1070
22-May-14	4.21	739.98	9.98	206.0	1.59	27.1	-	7.17	158	11.2	0.1 U	1000
13-Aug-14	6.95	737.24	13.50	237.0	1.14	9.8	4.70	6.92	154	10.5	0.1 U	990
12-Nov-14	6.04	738.15	8.40	185.1	0.28	-10.1	3.42	7.36	162	16.1	0.1 U	1050
11-Feb-15	4.62	739.57	11.50	205.1	1.20	68.1	1.32	7.41	169	9	0.1 U	1100
4-May-15	4.93	739.26	12.20	262.0	1.64	190.2	0.84	7.43	168	10.9	0.1 U	1010
4-Aug-15	7.44	736.75	13.20	211.3	1.62	81.9	2.02	7.39	173	6.8	0.1 U	1020
5-Nov-15	8.14	736.05	12.50	186.0	1.49	166.9	1.87	7.10	162	3.5	0.1 U	1040
8-Feb-16	3.20	740.99	11.70	240.5	2.13	196.9	0.88	7.23	150	11.2	0.1 U	980
2-May-16	3.77	740.42	Monitored Semi-Annually[1]						Monitored Annually[1]			
22-Aug-16	6.81	737.38	13.10	238.0	2.40	168.5	2.39	7.41	Monitored Annually[1]			
1-Nov-16	6.59	737.60	Monitored Semi-Annually[1]						Monitored Annually[1]			
31-Jan-17	4.02	740.17	11.30	265.8	2.79	218.2	1.39	7.34	154	3.23	0.1 U	953
30-May-17	2.32	741.87	Monitored Semi-Annually[1]						Monitored Annually[1]			
16-Aug-17	5.48	738.71	13.20	258.4	3.54	92.2	2.50	7.41	Monitored Annually[1]			
9-Nov-17	6.00	738.19	Monitored Semi-Annually[1]						Monitored Annually[1]			
28-Feb-18	1.13	743.06	10.80	186.9	4.11	142.0	1.83	7.18	159	2.53	0.1 U	848
1-May-18	1.60	742.59	Monitored Semi-Annually[1]						Monitored Annually[1]			
22-Aug-18	5.93	738.26	13.55	194	7.63	16.9	0.77	7.11	Monitored Annually[1]			
6-Nov-18	6.78	737.41	Monitored Semi-Annually[1]						Monitored Annually[1]			
12-Mar-19	2.32	741.87	10.50	166	4.32	167.7	1.34	7.14	149	1.87	0.1 U	953
8-May-19	2.57	741.62	Monitored Semi-Annually[1]						Monitored Annually[1]			
27-Aug-19	5.76	738.43	13.62	192	3.94	Note 1	0.02	7.09	Monitored Annually[1]			
13-Nov-19	6.00	738.19	Monitored Semi-Annually[1]						Monitored Annually[1]			

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
13-Feb-20	1.69	742.50	10.70	180	3.20	88.5	1.21	7.11	140	1.69	0.1 U	915
13-Aug-20	4.59	739.60	13.60	188.7	4.26	50.3	1.60	7.19	Monitored Annually[1]			
9-Dec-20	4.22	739.97	Monitored Semi-Annually[1]						Monitored Annually[1]			
5-Mar-21	1.06	743.13	10.90	172.0	3.43	132	0.69	7.26	136	1.84	0.1 U	877
10-Jun-21	3.46	740.73	Monitored Semi-Annually[1]						Monitored Annually[1]			
13-Oct-21	6.17	738.02	12.90	215.1	4.10	148.3	0.96	7.05	Monitored Annually[1]			
5-Jan-22	0.80	743.39	Monitored Semi-Annually[1]						Monitored Annually[1]			
17-Mar-22	0.2	743.99	11.4	166.1	5.44	58.3	0.79	7.54	151	1.58	0.1 U	1200
21-Jun-22	0.54	743.65	Monitored Semi-Annually[1]						Monitored Annually[1]			
23-Sep-22	4	740.19	13.8	178.6	5.66	172	5.55	6.63	Monitored Annually[1]			

Note:

Top of casing elevation (feet NAVD88): 744.19

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

1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected
-	Not available
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.
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

APPENDIX A-4

Summary of Dale Strip Pit – Bedrock Groundwater Sampling Results

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
2-Dec-02	69.87	866.42	9.5	1690	-	-	-	7.29	910	46.6	2.68	-
3-Mar-03	36.83	899.46	11.5	1260	-	-	24.10	7.15	860	9.73	-	-
3-May-03	34.88	901.41	12.8	1520	-	-	38.00	7.09	950	-	-	-
3-Aug-03	52.02	884.27	19.19	1460	-	-	11.40	7.01	990	-	-	-
1-Nov-03	53.61	882.68	11.60	915	-	-	8.97	7.19	1010	8.58	0.695	-
1-Feb-04	32.75	903.54	11.52	1033	-	-	7.36	6.78	1060	-	-	-
1-May-04	42.50	893.79	14.87	1126	-	-	7.53	7.23	1020	-	-	-
1-Aug-04	49.26	887.03	13.72	1234	-	-	8.07	6.98	981	-	-	-
1-Nov-04	42.81	893.48	11.88	1429	-	-	9.06	6.92	1060	10	1 U	-
1-Feb-05	33.62	902.67	13.06	1615	-	-	7.11	7.01	1020	-	-	-
1-May-05	34.88	901.41	12.91	1459	-	-	6.54	6.85	1000	-	-	-
1-Aug-05	43.80	892.49	10.40	1472	-	-	10.40	6.80	1090	-	-	-
1-Nov-05	52.80	883.49	10.40	1458	-	-	6.02	6.64	1100	10.3	1 U	-
1-Feb-06	42.70	893.59	10.40	1343	1.10	48.3	11.10	7.08	1100 J	-	-	-
1-May-06	37.81	898.48	11.52	1686	1.64	49.2	10.50	6.83	1100	-	-	-
1-Aug-06	46.11	890.18	14.10	1357	2.33	43.0	10.70	7.11	1100	-	-	-
1-Nov-06	46.47	889.82	-	-	-	-	-	-	-	-	-	-
28-Dec-06	33.20	903.09	-	-	-	-	-	-	-	-	-	-
7-Feb-07	34.50	901.79	-	-	-	-	-	-	-	-	-	-
7-May-07	36.48	899.81	15.19	1484	0.52	-83.4	6.78	7.60	1100	-	-	-
7-Aug-07	47.57	888.72	11.21	1488	8.80	107.4	9.53	6.51	1200	-	-	-
27-Nov-07	51.25	885.04	13.60	1483	1.82	-129.5	434.00	7.11	1000 J	5.72	1 U	-
8-Feb-08	35.12	901.17	14.71	1489	3.11	-	10.20	6.97	1100	-	-	-
8-May-08	37.60	898.69	14.50	1594	3.99	112.5	4.71	6.90	1200 J	-	-	-
8-Aug-08	46.98	889.31	13.27	1617	2.49	105.3	5.32	6.96	1200 J	7.82	1 U	5570
1-Nov-08	43.35	892.94	11.17	1096	7.29	127.1	47.30	7.70	1100	9.8	1 U	5610
11-Feb-09	37.00	899.29	10.28	1112	4.15	-	7.68	7.25	1100	7.52	1 U	5560
9-May-09	36.53	899.76	13.87	1209	2.93	89.0	5.45	7.41	990 J	7.57	1 U	5580
24-Sep-09	53.61	882.68	12.10	1328	1.98	331.0	3.26	6.92	1200	7.9	2 U	5700
14-Dec-09	33.72	902.57	10.20	1519	0.55	393.0	2.82	6.99	1100	3.4	2 U	5700
22-Mar-10	35.11	901.18	10.90	1463	-	508.0	3.95	6.94	1200	10	2 U	5600
15-Jun-10	33.26	903.03	11.00	1485	0.20	210.3	1.50	7.02	1100	11	2 U	5900
20-Sep-10	45.81	890.48	11.30	1484	0.06	159.7	0.91	6.98	1100	9.1	0.48 J	6000
6-Dec-10	36.20	900.09	10.70	1494	0.08	35.4	0.24	7.21	1200	6.8	0.48 J	5200
28-Mar-11	35.07	901.22	10.70	749	0.08	136.8	0.16	6.88	1100	6.8	2 U	5500
20-Jun-11	38.53	897.76	11.40	1439	0.08	-19.2	0.21	6.99	1400	4.6 J	2 U	5500
26-Sep-11	50.43	885.86	11.20	1249	0.07	38.5	0.41	7.01	1200	4.5 J	2 U	5700
13-Dec-11	51.30	884.99	10.40	1308	0.06	50.3	2.03	7.07	530	7.6	2 U	6100
22-Mar-12	43.75	892.54	10.60	1695	0.08	125.1	0.28	6.99	1200	12	2 U	5700
18-Jun-12	44.86	891.43	Monitored Semiannually[1]									
18-Sep-12	55.74	880.55	12.90	1506	0.05	99.5	0.36	7.08	1300	10	0.4 U	5800
18-Dec-12	41.94	894.35	Monitored Semiannually[1]									
21-Feb-13	37.86	898.43	10.40	1730	0.02	131.5	0.41	7.27	1200	13	0.4 U	6300
22-May-13	39.34	896.95	Monitored Semiannually[1]									
20-Aug-13	49.40	886.89	11.90	1707	0.05	-37.6	0.69	7.00	1240	10.2	0.1 U	6000
19-Nov-13	44.94	891.35	Monitored Semiannually[1]									
31-Mar-14	33.31	902.98	11.20	1256	0.01	103.5	0.27	7.00	1200	13.1	0.1 U	6580
21-May-14	33.37	902.92	Monitored Semiannually[1]									
15-Aug-14	45.31	890.98	13.43	1467	0.71	-1.1	2.32	6.79	1150	13.4	0.1 U	6100
14-Nov-14	44.83	891.46	Monitored Semiannually[1]									
10-Feb-15	35.97	900.32	11.00	1423	0.04	-109.4	2.16	7.00	1200	13	0.1 U	6260
4-May-15	38.67	897.62	Monitored Semiannually[1]									
4-Aug-15	49.21	887.08	12.50	1253	0.04	-100.7	0.26	7.07	1230	13.9	0.1 U	6070
5-Nov-15	56.85	879.44	11.20	1159	0.02	57.4	0.91	6.75	1190	14.9	0.1 U	6990
8-Feb-16	33.02	903.27	11.60	1429	0.00	167.6	0.10	7.05	1190	19.4	0.1 U	6730
2-May-16	37.48	898.81	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-16	49.78	886.51	12.10	1232	0.06	-143.8	0.77	7.00	Monitored Annually[2]			
1-Nov-16	47.49	888.80	Monitored Semiannually[2]						Monitored Annually[2]			
31-Jan-17	35.57	900.72	11.10	1620	0.05	-241.6	0.24	6.99	1260	21.8	0.1 U	6690
30-May-17	34.70	901.59	Monitored Semiannually[2]						Monitored Annually[2]			
16-Aug-17	44.32	891.97	11.90	1621	0.12	-144.5	0.47	6.97	Monitored Annually[2]			
9-Nov-17	44.71	891.58	Monitored Semiannually[2]						Monitored Annually[2]			
28-Feb-18	32.04	904.25	10.70	1278	0.16	-58.5	0.11	6.82	1244	22.4	0.1 U	6530
1-May-18	33.99	902.30	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-18	47.95	888.34	11.97	1246	1.17	4.10	0.17	6.88	Monitored Annually[2]			

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
6-Nov-18	52.94	883.35	Monitored Semiannually[2]						Monitored Annually[2]			
12-Mar-19	33.09	903.20	10.40	1157	0.55	-23.0	0.62	6.81	1200	20.7	0.1 U	951
8-May-19	34.37	901.92	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	47.88	888.41	12.51	1314	0.15	Note 1	0.39	6.80	Monitored Annually[2]			
13-Nov-19	47.03	889.26	Monitored Semiannually[2]						Monitored Annually[2]			
14-Feb-20	31.08	905.21	10.60	1249	0.38	-82.2	0.10	6.61	1230	18.3	0.1 U	6360
13-Aug-20	43.99	892.30	11.70	1176	0.56	-67.7	0.18	6.78	Monitored Annually[2]			
9-Dec-20	39.67	896.62	Monitored Semiannually[2]						Monitored Annually[2]			
5-Mar-21	34.96	901.33	11.00	1257	0.26	-38	0.24	6.95	1200	19.5	0.1 U	6150
10-Jun-21	42.65	893.64	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	55.97	880.32	11.7	858	0.86	-92.3	0.48	6.84	Monitored Annually[2]			
5-Jan-22	33.64	902.65	Monitored Semiannually[2]						Monitored Annually[2]			
18-Mar-22	38.2	898.09	11.5	1096	1.17	-40.8	0.31	7.18	1260	16.6	0.1 U	6400
21-Jun-22	35.46	900.83	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	44.37	891.92	11.8	1122	2.97	6.4	4.73	6.42	Monitored Annually[2]			

Notes:
Top of casing elevation (feet NAVD88): 936.29

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

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

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
6-Nov-18	65.30	870.07	Monitored Semiannually[2]						Monitored Annually[2]			
12-Mar-19	46.35	889.02	9.80	707	0.58	-119.9	0.16	7.24	668	4.96	0.1 U	4210
8-May-19	47.20	888.17	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	59.87	875.50	11.95	762	0.39	Note 1	0.02	7.20	Monitored Annually[2]			
13-Nov-19	60.20	875.17	Monitored Semiannually[2]						Monitored Annually[2]			
14-Feb-20	44.28	891.09	10.30	760	0.30	-169.3	1.09	7.11	717	4.56	0.1 U	4070
13-Aug-20	57.57	877.80	11.10	739	0.91	-145.8	0.31	7.17	Monitored Annually[2]			
9-Dec-20	54.25	881.12	Monitored Semiannually[2]						Monitored Annually[2]			
5-Mar-21	48.74	886.63	10.70	724	0.27	-222	0.61	7.36	592	4.06	0.1 U	3880
10-Jun-21	59.90	875.47	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	67.32	868.05	11.60	561	0.83	-149	0.33	7.23	Monitored Annually[2]			
5-Jan-22	47.77	887.60	Monitored Semiannually[2]						Monitored Annually[2]			
18-Mar-22	48.37	887	11.3	741	1.2	-93.4	0.39	7.52	781	4.64	0.1 U	4240
21-Jun-22	49.68	885.69	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	57.47	877.9	11.9	778	2.5	-91	0.45	6.84	Monitored Annually[2]			

Notes:
Top of casing elevation (feet NAVD88): 935.37

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
18-Dec-06	20.56	914.49	11.30	1054	0.59	-10.5	6.76	7.01	630	4.46	1 U	-
7-Jan-07	18.48	916.57	12.53	700	0.61	-70.6	33.50	7.11	540	5.19	1 U	-
7-Feb-07	21.53	913.52	11.59	557	0.57	-59.1	33.50	6.88	530	5.19	1 U	-
7-Mar-07	15.34	919.71	11.71	817	0.45	-2.4	91.20	6.52	550 J	4.91	1 U	-
7-Apr-07	17.97	917.08	11.96	909	0.25	0.2	121.00	6.91	560	4.75	1 U	-
1-May-07	26.92	908.13	12.55	880	4.20	-14.3	63.70	7.13	540	4.9	1 U	-
7-Jun-07	29.94	905.11	13.12	1016	3.20	-5.6	3.58	7.52	600 J	4.37	1 U	-
7-Jul-07	35.27	899.78	13.00	910	1.74	-27.4	9.97	7.24	550	4.91	1 U	-
7-Aug-07	39.55	895.50	12.40	1065	0.92	-14.6	4.62	6.99	590	4.46	1 U	-
7-Sep-07	44.69	890.36	12.36	696	0.68	-33.3	3.22	7.29	590	4.92	1 U	-
26-Oct-07	38.90	896.15	11.46	667	0.56	-18.3	22.60	6.98	620 J	4.43	1 U	-
27-Nov-07	38.79	896.26	11.71	914	0.56	-46.7	3.32	6.91	560 J	4.9	1 U	-
12-Dec-07	35.33	899.72	12.61	909	0.53	-27.3	4.28	6.87	820	4.09	1 U	-
24-Jan-08	28.97	906.08	10.72	872	0.78	-49.1	-	7.14	550	4.72	1 U	-
8-Feb-08	26.00	909.05	11.25	888	0.44	-	4.18	6.85	550	4.5	1 U	-
8-Mar-08	26.03	909.02	10.94	915	0.59	-95.6	3.19	6.89	550	5.21	1 U	-
8-Apr-08	25.03	910.02	11.27	931	0.61	-20.1	3.44	6.89	550 J	4.88	1 U	-
8-May-08	27.33	907.72	11.68	949	0.68	-6.7	5.37	6.62	580 J	5.34	1 U	-
8-Jun-08	28.38	906.67	11.40	948	0.75	-50.4	1.59	6.68	580 J	4.45	1 U	-
8-Aug-08	39.80	895.25	11.80	970	0.68	-78.6	1.72	6.84	610 J	4.64	1 U	3000 U
1-Nov-08	33.96	901.09	11.20	682	0.63	-115.4	0.95	6.82	540	4.8	1 U	3000 U
10-Feb-09	25.56	909.49	10.54	671	0.71	-71.7	0.98	7.05	610	4.73	1 U	3000 U
9-May-09	25.79	909.26	11.23	682	0.55	-5.8	0.86	7.68	560 J	3.4	1 U	3000 U
22-Sep-09	46.68	888.37	18.70	737	0.64	214.5	0.99	6.91	580 J	3.9	2 U	2700 J
14-Dec-09	30.45	904.60	9.80	901	0.18	200.0	0.70	6.96	450	1.7 J	2 U	2500 J
23-Mar-10	19.92	915.13	11.30	773	0.25	148.0	4.40	6.86	510	5.6	2 U	2600 J
15-Jun-10	16.74	918.31	11.00	838	0.10	202.3	2.89	7.01	860 J	8.2	2 U	2800 J
20-Sep-10	33.31	901.74	11.20	852	0.09	174.7	0.60	6.97	540	6.2	2 U	2700 J
6-Dec-10	19.81	915.24	10.80	838	0.10	30.5	0.47	7.17	530	3.8	2 U	2300 J
28-Mar-11	17.16	917.89	10.80	403	0.15	48.4	1.13	6.89	500 J	2.3	2 U	2300 J
20-Jun-11	18.95	916.10	11.10	775	0.05	-29.1	0.37	7.01	610 J	5 U	2 U	2400 J
26-Sep-11	33.71	901.34	11.20	690	0.03	-8.7	0.54	7	560	4.1 J	2 U	2800 J
13-Dec-11	24.48	910.57	10.50	730	0.05	93.6	1.92	7.07	520	6.1	2 U	2800 J
21-Mar-12	15.54	919.51	10.70	883	0.06	106.9	0.34	6.9	500	6.5	2 U	2400 J
19-Jun-12	17.01	918.04	Monitored Semiannually[1]									
19-Sep-12	29.82	905.23	11.90	877	0.00	122.0	0.47	7.08	490	6.9	0.4 U	2600 J
18-Dec-12	17.39	917.66	Monitored Semiannually[1]									
21-Feb-13	18.84	916.21	10.60	875	0.05	103.3	0.40	7.32	510	5.9	0.4 U	2600 J
22-May-13	20.25	914.80	Monitored Semiannually[1]									
20-Aug-13	30.15	904.90	12.10	530	0.06	-50.3	0.75	6.98	510	5.6	0.1 U	2500
19-Nov-13	22.73	912.32	Monitored Semiannually[1]									
31-Mar-14	15.50	919.55	11.30	574	0.06	95.7	0.53	7.15	447	5.6	0.1 U	2720
21-May-14	14.83	920.22	Monitored Semiannually[1]									
15-Aug-14	25.16	909.89	14.49	741	0.48	-24.0	2.92	6.87	477	5.9	0.1 U	2550
14-Nov-14	22.25	912.80	Monitored Semiannually[1]									
10-Feb-15	15.98	919.07	11.40	693	0.04	-117.5	0.80	7.13	503	5.9	0.1 U	2560
4-May-15	20.05	915.00	Monitored Semiannually[1]									
4-Aug-15	31.90	903.15	11.90	620	0.16	-71.1	0.47	7.13	517	6.4	0.1 U	2670
5-Nov-15	32.00	903.05	11.40	605	0.00	37.5	1.16	6.84	511	5.3	0.1 U	3060
8-Feb-16	17.13	917.92	11.80	720	0.00	160.4	0.08	7.34	480	6	0.1 U	3020
2-May-16	23.31	911.74	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-16	34.07	900.98	12.50	571	0.00	-	0.66	7.11	Monitored Annually[2]			
1-Nov-16	26.04	909.01	Monitored Semiannually[2]						Monitored Annually[2]			
31-Jan-17	19.36	915.69	12.20	808	0.07	-219.2	0.30	7.21	509	6.76	0.1 U	2840
30-May-17	17.31	917.74	Monitored Semiannually[2]						Monitored Annually[2]			
16-Aug-17	28.13	906.92	12.40	826	0.12	-71.9	0.66	7.10	Monitored Annually[2]			
9-Nov-17	27.17	907.88	Monitored Semiannually[2]						Monitored Annually[2]			
28-Feb-18	16.55	918.50	10.90	657	0.15	-97.6	0.35	7.02	528	5.39	0.1 U	2550
1-May-18	17.69	917.36	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-18	32.63	902.42	12.46	655	0.81	-46.4	0.26	7.01	Monitored Annually[2]			
6-Nov-18	32.44	902.61	Monitored Semiannually[2]						Monitored Annually[2]			
12-Mar-19	18.84	916.21	10.90	597	0.56	-28.1	0.86	6.96	512	4.51	0.1 U	2890
8-May-19	19.75	915.30	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	33.26	901.79	13.08	688	0.26	Note 1	0.02	6.89	Monitored Annually[2]			

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
13-Nov-19	33.03	902.02	Monitored Semiannually[2]						Monitored Annually[2]			
14-Feb-20	16.70	918.35	10.90	626	0.34	-99.8	0.33	6.88	524	4.31	0.1 U	2650
13-Aug-20	27.37	907.68	11.80	619	0.55	-70.6	0.40	6.89	Monitored Annually[2]			
9-Dec-20	24.68	910.37	Monitored Semiannually[2]						Monitored Annually[2]			
5-Mar-21	16.91	918.14	11.30	641	0.19	-77.0	0.45	7.09	473	4.84	0.1 U	2450
10-Jun-21	24.68	910.37	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	29.11	905.94	11.9	440.1	0.87	-86.2	0.35	6.96	Monitored Annually[2]			
5-Jan-22	16.88	918.17	Monitored Semiannually[2]						Monitored Annually[2]			
21-Mar-22	17.14	917.91	11.3	601	1.28	-42.9	0.82	6.26	513	4.79	0.1 U	2560
21-Jun-22	17.25	917.8	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	27.19	907.86	12.3	606	2.54	-3.7	1.49	6.74	Monitored Annually[2]			

Notes:
Top of casing elevation (feet NAVD88): 935.05

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
18-Dec-06	8.13	897.82	9.93	525	0.54	-54.5	0.61	7.78	300	5.37	1 U	-
7-Feb-07	9.40	896.55	11.79	479	1.19	-30.0	7.40	7.41	330	6.01	1 U	-
7-May-07	10.73	895.22	12.26	729	2.83	-103.6	16.40	7.63	480	10.1	1 U	-
7-Aug-07	15.14	890.81	11.42	882	0.75	-11.5	1.82	7.10	470	3.25	1 U	-
27-Nov-07	16.16	889.79	10.98	748	0.37	-47.9	0.83	6.99	440 J	2.82	1 U	-
8-Feb-08	9.66	896.29	11.01	645	0.31	-	0.90	7.05	380	2.68	1 U	-
8-May-08	10.34	895.61	11.27	665	0.64	13.4	1.52	6.93	380 J	2.40	1 U	-
8-Aug-08	14.17	891.78	11.23	683	0.72	-8.2	2.49	7.05	390 J	2.18	1 U	3000 U
1-Nov-08	12.98	892.97	10.61	488	0.60	-45.6	1.35	6.80	380	2.04	1 U	3000 U
10-Feb-09	9.64	896.31	10.32	398	0.52	-57.0	1.20	7.31	350	2.00	1 U	3000 U
9-May-09	9.91	896.04	10.50	405	0.73	-4.0	1.26	7.77	320 J	1.69	1 U	3000 U
23-Sep-09	17.16	888.79	12.50	541	0.25	216.2	5.38	7.14	400 J	0.91 J	2 U	1300 J
14-Dec-09	12.73	893.22	9.10	580	0.47	231.0	2.70	7.23	270	2 U	2 U	1300 J
22-Mar-10	9.62	896.33	10.90	504	-	321.7	3.50	7.22	320	2.00	2 U	1200 J
15-Jun-10	8.30	897.65	11.00	495	0.11	205.1	1.41	7.29	320	4.20	2 U	1300 J
20-Sep-10	14.90	891.05	10.90	560	0.10	187.2	0.28	7.29	270	3.00	2 U	1400 J
6-Dec-10	10.47	895.48	10.50	515	0.12	87.8	0.14	7.47	300	2 U	2 U	1100 J
28-Mar-11	8.71	897.24	10.30	241	0.19	58.9	1.86	7.19	300	2 U	2 U	1100 J
20-Jun-11	9.87	896.08	10.80	477	0.06	141.2	0.20	7.27	340	5 U	2 U	1100 J
26-Sep-11	14.82	891.13	10.80	467	0.05	114.8	0.92	7.26	380	5 U	2 U	1500 J
13-Dec-11	13.02	892.93	10.20	491	0.06	131.3	1.69	7.29	340	5 U	2 U	1600 J
21-Mar-12	8.13	897.82	10.20	550	0.09	160.0	0.07	7.14	310	2.50	0.4 U	1200 J
18-Jun-12	-	-	Monitored Semiannually[1]									
18-Sep-12	14.76	891.19	12.50	587	0.00	122.0	0.35	7.31	370	2.80	0.4 U	1300 J
18-Dec-12	8.16	897.79	Monitored Semiannually[1]									
21-Feb-13	8.45	897.50	10.10	594	0.02	152.7	0.28	7.49	300	1.90	0.4 U	1300 J
22-May-13	9.36	896.59	Monitored Semiannually[1]									
20-Aug-13	13.28	892.67	11.70	478	0.01	-43.8	0.54	7.22	349 J	1.60	0.1 U	1300
19-Nov-13	9.71	896.24	Monitored Semiannually[1]									
31-Mar-14	8.42	897.53	10.70	455	0.06	166.1	0.27	7.35	315	1.40	0.1 U	1290
21-May-14	5.99	899.96	Monitored Semiannually[1]									
14-Aug-14	12.03	893.92	13.45	512	0.56	-21.4	1.99	6.95	317	1.70	0.1 U	1270
14-Nov-14	10.68	895.27	Monitored Semiannually[1]									
10-Feb-15	7.39	898.56	10.90	482	0.03	-86.2	0.59	7.32	337	1.40	0.1 U	1230
4-May-15	9.17	896.78	Monitored Semiannually[1]									
4-Aug-15	13.64	892.31	12.40	449	0.18	-81.7	0.27	7.33	385	1.70	0.1 U	1280
5-Nov-15	13.98	891.97	11.50	435	2.23	85.2	1.09	7.04	354	1.30	0.1 U	1470
8-Feb-16	6.74	899.21	11.50	495	0.03	187.2	0.25	7.39	297	1.40	0.1 U	1350
2-May-16	8.64	897.31	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-16	13.27	892.68	12.20	559	0.03	-52.7	0.80	7.28	Monitored Annually[2]			
1-Nov-16	11.36	894.59	Monitored Semiannually[2]						Monitored Annually[2]			
31-Jan-17	7.91	898.04	10.90	539	0.08	124.4	0.18	7.31	321	1.48	0.1 U	1300
30-May-17	2.65	903.30	Monitored Semiannually[2]						Monitored Annually[2]			
16-Aug-17	12.08	893.87	12.10	573	0.12	-46.9	1.39	7.26	Monitored Annually[2]			
9-Nov-17	11.70	894.25	Monitored Semiannually[2]						Monitored Annually[2]			
28-Feb-18	6.50	899.45	11.00	423	0.19	-61.0	0.18	7.12	138	1.56	0.1 U	1200
1-May-18	6.80	899.15	Monitored Semiannually[2]						Monitored Annually[2]			
22-Aug-18	13.47	892.48	11.61	441	7.44	26.6	0.21	7.11	Monitored Annually[2]			
6-Nov-18	13.96	891.99	Monitored Semiannually[2]						Monitored Annually[2]			
12-Mar-19	7.30	898.65	10.30	363	0.56	-25.1	0.27	7.16	294	1.47	0.1 U	1340
8-May-19	7.77	898.18	Monitored Semiannually[2]						Monitored Annually[2]			
27-Aug-19	13.16	892.79	12.19	454	0.45	Note 1	0.02	7.05	Monitored Annually[2]			
13-Nov-19	26.35	894.30	Monitored Semiannually[2]						Monitored Annually[2]			
13-Feb-20	20.79	899.86	10.60	387	0.39	-76.5	1.05	7.13	313	1.40	0.1 U	1330
13-Aug-20	25.94	894.71	11.70	403	0.65	-64.3	0.60	7.07	Monitored Annually[2]			
9-Dec-20	24.06	896.59	Monitored Semiannually[2]						Monitored Annually[2]			
4-Mar-21	21.56	899.09	10.80	363	0.16	-9.0	1.29	7.30	280	1.10	0.1 U	1240

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
10-Jun-21	24.55	896.10	Monitored Semiannually[2]						Monitored Annually[2]			
18-Oct-21	28.08	892.57	11.6	273.8	0.96	-73.8	1.38	7.15	Monitored Annually[2]			
5-Jan-22	21.36	899.29	Monitored Semiannually[2]						Monitored Annually[2]			
21-Mar-22	20.7	899.95	10.9	348.2	1.41	102.1	1.4	6.42	297	1.06	0.1 U	1090
21-Jun-22	21.51	899.14	Monitored Semiannually[2]						Monitored Annually[2]			
13-Sep-22	Well Damaged - Unable to Sample											

Notes:

Top of casing elevation (feet NAVD88) prior to raising casing: 905.95

Top of casing elevation (feet NAVD88) after raising casing (post-Q3 2019): 920.65

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

-	Not measured or not available
	Orange shaded values indicate parameter results above the Preliminary Screening Level (PSL), except for pH, which could be above or below the PSL.
1	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated May 16, 2012
2	Reduction in monitoring frequency approved by Public Health – Seattle and King County in a letter to Golder Associates Inc. dated April 7, 2016. Field parameters collected semi-annually, analytical samples collected annually. Sampling schedule follows the Golder 2021 RI Work Plan starting in Q3 2021.
a	Preliminary Cleanup Level (PCUL) provided by Ecology 30 Sept 2022
U	Data validation code; not detected at the Reporting Limit (RL)
J	Data validation code; estimated value
J+	Data validation code; estimated value with positive bias
°C	Degrees Celsius
Note 1	ORP measurements not available due to faulty sensor.

µmhos/cm	Micromhos per centimeter	mg/L	Milligrams per liter
feet bmp	Feet below measuring point	mV	Millivolts
feet NAVD88	Feet NAVD88 Datum	NTU	Nephelometric Turbidity Unit

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
1-Mar-02	-	-	-	653	-	-	-	7.29	586	-	-	-
1-Jun-02	-	-	12	920	-	-	-	7.20	583	-	-	-
1-Sep-02	-	-	11	920	-	-	-	7.10	651	-	-	-
2-Dec-02	-	-	9.1	900	-	-	-	7.03	570	4.44	0.5 U	-
3-Mar-03	-	-	10.1	873	-	-	-	7.09	530	-	-	-
3-May-03	-	-	11.2	981	-	-	10.00	6.94	590	-	-	-
3-Aug-03	-	-	12.78	1030	-	-	13.00	7.17	630	-	-	-
1-Nov-03	-	-	10.2	569	-	-	4.65	7.53	592	3.33	0.5 U	-
1-Feb-04	-	-	9.31	568	-	-	5.41	6.85	560	-	-	-
1-May-04	-	-	10.93	952	-	-	5.98	7.12	615	-	-	-
1-Aug-04	-	-	12.10	835	-	-	6.29	7.11	601	-	-	-
1-Nov-04	-	-	10.20	941	-	-	6.58	6.94	656	3.41	1 U	-
1-Feb-05	-	-	10.52	889	-	-	8.72	7.41	541	-	-	-
1-May-05	-	-	13.08	953	-	-	8.15	7.31	548	-	-	-
1-Aug-05	-	-	11.08	988	-	-	7.40	7.23	644	-	-	-
1-Nov-05	-	-	9.53	958	-	-	8.58	7.61	640	3.15	1 U	-
1-Feb-06	-	-	9.23	669	7.88	*	7.93	6.78	450 J	-	-	-
1-May-06	-	-	11.49	947	7.60	38.5	10.40	7.01	570	-	-	-
1-Aug-06	-	-	10.52	835	8.82	-39.8	14.10	7.26	640	-	-	-
1-Nov-06	-	-	9.41	740	9.57	-32.2	12.50	7.23	510	2.45	1 U	-
7-Feb-07	-	-	9.90	815	10.99	-6.2	27.80	7.74	510	-	-	-
7-May-07	-	-	18.39	810	11.05	-6.2	11.80	7.61	510	-	-	-
7-Aug-07	-	-	10.42	870	8.72	-44.9	25.20	7.42	560	-	-	-
30-Nov-07	-	-	9.41	783	9.56	-18.7	48.30	-	520	3.17	1 U	-
8-Feb-08	-	-	10.02	708	10.04	-	50.00	7.20	420	-	-	-
8-May-08	-	-	10.83	815	12.13	0.1	7.28	7.29	480 J	-	-	-
8-Aug-08	-	-	10.63	906	11.05	-5.6	11.00	7.05	560 J	3.69	1 U	41600
1-Nov-08	-	-	9.79	553	10.70	-21.1	16.90	7.40	460	3.2	1 U	35500
11-Feb-09	-	-	9.16	488	6.99	-	15.40	7.52	430	2.97	1 U	34200
9-May-09	-	-	9.64	522	10.56	13.4	9.77	7.39	440 J	2.01	1 U	32400
23-Sep-09	-	-	10.70	745	8.95	271.7	14.70	6.88	570	2 U	2 U	40000
15-Dec-09	-	-	8.60	713	5.20	279.0	12.50	6.67	350	2 U	2 U	30000
24-Mar-10	-	-	9.90	681	6.14	370.7	-	6.57	470	4.2	2 U	39000
17-Jun-10	-	-	10.00	623	9.58	-	26.30	7.50	380	5.9	2 U	28000
22-Sep-10	-	-	10.00	783	9.02	225.9	17.40	7.00	510	5.2	2 U	42000
7-Dec-10	-	-	9.90	662	9.15	186.0	13.60	6.95	450	2 U	2 U	32000
29-Mar-11	-	-	9.90	292	5.90	370.8	4.44	6.73	360 J	4.1	2 U	25000
20-Jun-11	-	-	10.50	591	6.42	219.1	4.44	7.01	420	5 U	2 U	26000
26-Sep-11	-	-	10.70	623	5.76	240.5	11.90	6.83	520	5 U	2 U	39000
15-Dec-11	-	-	8.80	472	4.92	310.4	7.32	6.78	430	4.7 J	2 U	32000
21-Mar-12			8.90	611	5.24	313.3	9.16	6.49	330	4.8	0.4 U	20000
18-Jun-12	Monitored Semiannually[1]											
18-Sep-12	-	-	14.20	652	9.70	148.0	20.80	7.48	450	5	0.4 U	29000
18-Dec-12	Monitored Semiannually[1]											
25-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	5	0.4 U	25000
25-Feb-13	Monitored Semiannually[1]											
21-Feb-13	-	-	9.20	648	10.10	209.6	4.12	7.58	300	5	0.4 U	25000
22-May-13	Monitored Semiannually[1]											
20-Aug-13	-	-	10.80	635	9.31	170.1	8.46	7.11	458	3.9	0.1 U	32300
19-Nov-13	Monitored Semiannually[1]											
31-Mar-14	-	-	10.60	448	9.29	213.5	87.20	7.30	321	3.7	0.18 J	21100

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet msl)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
21-May-14	Monitored Semiannually[1]											
15-Aug-14	-	-	10.01	595	10.01	-35.2	6.43	6.99	427	3.5	0.1 U	31500
14-Nov-14	Monitored Semiannually[1]											
10-Feb-15	-	-	10.60	515	9.88	183.5	6.84	7.26	363	2.8	0.07 J	27200
4-May-15	Monitored Semiannually[1]											
4-Aug-15	-	-	10.90	554	9.98	95.8	8.68	7.48	438	2.6	0.1 U	34700
5-Nov-15	-	-	10.30	503	10.24	177.6	13.40	7.46	449	2.8	0.1 U	31800
8-Feb-16	-	-	9.30	541	11.30	215.0	5.12	7.30	293	3.2	0.1 U	23100
-	Monitored Semiannually[2]								Monitored Annually[2]			
24-Aug-16	-	-	13.40	585	9.32	410.0	8.50	7.23	Monitored Annually[2]			
1-Nov-16	-	-	10.90	242	9.13	51.4	7.57	7.41	Monitored Annually[2]			
31-Jan-17	-	-	8.90	663	10.87	-57.4	6.23	7.50	3390	3.97	0.1 U	29200
-	Monitored Semiannually[2]								Monitored Annually[2]			
17-Aug-17	-	-	11.40	712	9.67	-12.4	9.87	7.30	Monitored Annually[2]			
9-Nov-17	Monitored Semiannually[2]								Monitored Annually[2]			
27-Feb-18	-	-	9.50	427	9.94	-46.4	16.70	7.72	354	4.11	0.1 U	20400
1-May-18	Monitored Semiannually[2]								Monitored Annually[2]			
21-Aug-18	-	-	13.13	582	12.46	-23.0	23.10	7.24	Monitored Annually[2]			
6-Nov-18	Monitored Semiannually[2]								Monitored Annually[2]			
12-Mar-19	-	-	8.00	406	11.35	-2.8	10.70	7.97	388	1.56	0.1 U	24700
8-May-19	Monitored Semiannually[2]								Monitored Annually[2]			
27-Aug-19	-	-	10.55	576	11.80	Note 1	154.00	6.78	Monitored Annually[2]			
13-Nov-19	Monitored Semiannually[2]								Monitored Annually[2]			
13-Feb-20	-	-	9.20	382	9.19	-1.3	13.40	6.93	259	3.65	0.1 U	16700
13-Aug-20	-	-	10.10	569	10.01	-27.0	12.20	7.12	Monitored Annually[2]			
9-Dec-20	Monitored Semiannually[2]								Monitored Annually[2]			
4-Mar-21	-	-	9.30	416	5.80	33.0	17.1	6.89	364	4.14	0.1 U	20000
10-Jun-21	Monitored Semiannually[2]								Monitored Annually[2]			
18-Oct-21	-	-	10.9	386.7	5.11	-28.4	86.1	6.45	Monitored Annually[2]			
5-Jan-22	Monitored Semiannually[2]								Monitored Annually[2]			
16-Mar-22	-	-	12	402.9	6.78	70.7	19.8	5.81	348	5.32	0.1 U	18800
21-Jun-22	Monitored Semiannually[2]								Monitored Annually[2]			
14-Sep-22	-	-	12	521	7.29	39.1	93.8	6.7	Monitored Annually[2]			

Notes:

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
1-Mar-02	-	-	-	542	-	-	-	7.22	467	-	-	-
1-Jun-02	197.34	735.48	12.00	750	-	-	-	7.10	459	-	-	-
1-Sep-02	199.29	733.53	14.00	660	-	-	-	6.90	499	-	-	-
2-Dec-02	200.09	732.73	10.80	675	-	-	-	6.89	440	1 U	0.5 U	-
3-Mar-03	190.21	742.61	11.90	763	-	-	-	6.98	450	-	-	-
3-May-03	191.78	741.04	12.30	730	-	-	233.00	6.98	550	-	-	-
3-Aug-03	199.82	733.00	16.50	848	-	-	17.00	6.92	520	-	-	-
1-Nov-03	199.97	732.85	11.60	559	-	-	9.20	7.04	522	0.98	0.5 U	-
1-Feb-04	188.78	744.04	11.96	608	-	-	4.86	6.68	560	-	-	-
1-May-04	198.45	734.37	13.69	614	-	-	6.17	6.80	478	-	-	-
1-Aug-04	199.17	733.65	14.38	731	-	-	5.48	6.71	460	-	-	-
1-Nov-04	197.92	734.90	11.62	785	-	-	12.30	6.75	512	1 U	1 U	-
1-Feb-05	186.36	746.46	11.64	806	-	-	1.47	6.94	487	-	-	-
1-May-05	-	-	12.87	790	-	-	15.80	6.89	338	-	-	-
1-Aug-05	196.10	736.72	15.01	603	-	-	45.70	6.44	388	-	-	-
1-Nov-05	196.78	736.04	9.91	549	-	-	13.30	6.66	350	1 U	1 U	-
1-Feb-06	193.93	738.89	8.10	641	2.11	269.2	35.70	6.82	400 J	-	-	-
1-May-06	197.90	734.92	10.88	798	1.67	27.3	5.38	6.50	380	-	-	-
1-Aug-06	198.80	734.02	11.44	534	2.52	205.7	8.74	6.67	360	-	-	-
1-Nov-06	187.36	745.46	10.77	680	2.12	-19.9	18.90	7.06	430	1 U	1 U	-
28-Dec-06	192.37	740.45	-	-	-	-	-	-	-	-	-	-
7-Feb-07	197.46	735.36	10.24	621	0.64	-16.7	27.80	6.89	420	-	-	-
7-May-07	198.49	734.33	-	-	-	-	-	-	-	-	-	-
1-Aug-07	198.45	734.37	-	-	-	-	-	-	-	-	-	-
27-Nov-07	196.48	736.34	-	-	-	-	-	-	-	-	-	-
8-Feb-08	191.30	741.52	-	-	-	-	-	-	-	-	-	-
8-May-08	193.95	738.87	-	-	-	-	-	-	-	-	-	-
27-Sep-11	197.32	735.50	-	-	-	-	-	-	-	-	-	-
13-Dec-11	192.15	740.67	9.6	421	2.10	313.0	16.10	7.49	-	-	-	-
22-Mar-12	183.35	751.47	8.9	546	12.83	166.3	0.56	7.47	-	-	-	-
18-Jun-12	192.54	742.28	-	-	-	-	-	-	-	-	-	-
18-Sep-12	199.51	735.31	16.2	508	2.21	120.0	1.27	7.58	-	-	-	-
18-Dec-12	184.52	750.30	-	-	-	-	-	-	-	-	-	-
21-Feb-13	190.65	744.17	7.6	678	5.33	342.6	6.61	8.02	-	-	-	-
22-May-13	198.05	736.77	-	-	-	-	-	-	-	-	-	-
20-Aug-13	200.47	734.35	13.0	488	3.26	90.2	8.47	7.42	-	-	-	-
19-Nov-13	196.59	738.23	-	-	-	-	-	-	-	-	-	-
31-Mar-14	186.78	748.04	11.4	421	7.28	195.1	1.70	7.47	-	-	-	-
21-May-14	192.27	742.55	-	-	-	-	-	-	-	-	-	-
15-Aug-14	199.97	734.85	18.9	492	0.97	1.4	52.50	7.01	-	-	-	-
14-Nov-14	196.60	738.22	-	-	-	-	-	-	-	-	-	-
10-Feb-15	183.97	750.85	10.2	450	7.65	121.4	1.02	7.34	-	-	-	-
4-May-15	194.19	740.63	-	-	-	-	-	-	-	-	-	-
4-Aug-15	198.35	736.47	13.6	432	3.07	18.6	0.27	7.47	-	-	-	-
3-Nov-15	198.25	736.57	10.3	405	2.57	106.2	7.07	7.35	-	-	-	-
8-Feb-16	188.43	746.39	12.5	536	2.77	189.8	0.25	7.78	-	-	-	-
2-May-16	195.72	739.10	Monitored Semiannually[1]						-	-	-	-
22-Aug-16	197.89	736.93	14.0	418	1.27	-123.1	4.36	7.32	-	-	-	-
1-Nov-16	195.49	739.33	Monitored Semiannually[1]						-	-	-	-
31-Jan-17	186.94	747.88	9.2	506	5.26	-45.4	0.38	7.45	-	-	-	-
30-May-17	190.62	744.20	Monitored Semiannually[1]						-	-	-	-
16-Aug-17	197.55	737.27	13.3	540	2.31	37.3	3.42	7.37	-	-	-	-
9-Nov-17	197.11	737.71	Monitored Semiannually[1]						-	-	-	-
28-Feb-18	185.96	748.86	10.1	390	5.95	204.7	1.62	7.15	-	-	-	-
1-May-18	184.95	749.87	Monitored Semiannually[1]						-	-	-	-
22-Aug-18	197.40	737.42	13.7	412	3.10	85.5	1.66	7.27	-	-	-	-
6-Nov-18	197.94	736.88	Monitored Semiannually[1]						-	-	-	-
12-Mar-19	182.84	751.98	8.7	332	6.25	148.4	1.93	7.28	-	-	-	-
8-May-19	185.36	749.46	Monitored Semiannually[1]						-	-	-	-
27-Aug-19	196.56	738.26	11.92	411	8.82	Note 1	0.02	7.28	-	-	-	-
13-Nov-19	196.74	738.08	Monitored Semiannually[1]						-	-	-	-
13-Feb-20	177.10	757.72	9.3	453	3.03	91.0	2.31	7.56	-	-	-	-
13-Aug-20	200.97	733.85	12.2	422	3.04	35.0	0.96	7.42	-	-	-	-
9-Dec-20	197.86	736.96	Monitored Semiannually[1]						-	-	-	-

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
5-Mar-21	197.42	737.40	10.0	398	3.79	112.0	1.17	7.37	-	-	-	-
10-Jun-21	199.94	734.88	Monitored Semiannually[1]						-	-	-	-
18-Oct-21	200.24	734.58	12.6	307.7	6.06	161.4	12.3	7.35	-	-	-	-
5-Jan-22	192.66	742.16	Monitored Semiannually[1]						-	-	-	-
21-Mar-22	193.68	741.14	9.6	369	7.04	125.6	5.95	6.63	-	-	-	-
21-Jun-22	191.33	743.49	Monitored Semiannually[1]						-	-	-	-
13-Sep-22	200.03	734.79	12.6	404.7	8.66	252.7	10.5	6.91	-	-	-	-

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

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

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

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

Date Sampled	Field Parameters								Gen. Chem.	Metals (ug/L)		
	Depth to Water (feet btoc)	Groundwater Elevation (feet NAVD88)	Temperature (°C)	Conductivity (µmhos/cm)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (Rel mV)	Turbidity (NTU)	pH (standard units)	Total Dissolved Solids (mg/L)	Arsenic	Lead	Potassium
Preliminary Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	8	2.1	-
26-Sep-11	25.77	906.64	11.40	553	0.86	197.2	-	7.21	-	-	-	-
13-Dec-11	24.94	907.47	9.70	625	1.73	658.0	22.70	7.68	-	-	-	-
22-Mar-12	23.80	908.61	9.60	785	3.71	242.6	8.14	7.30	-	-	-	-
19-Jun-12	24.09	908.32	-	-	-	-	-	-	-	-	-	-
18-Sep-12	25.68	906.73	16.50	664	2.37	150.0	19.20	7.34	-	-	-	-
18-Dec-12	23.02	909.39	-	-	-	-	-	-	-	-	-	-
21-Feb-13	23.50	908.91	10.00	840	6.55	352.4	3.42	7.42	-	-	-	-
22-May-13	23.84	908.57	-	-	-	-	-	-	-	-	-	-
20-Aug-13	25.08	907.33	13.50	539	2.91	45.1	1.87	7.22	-	-	-	-
19-Nov-13	22.76	909.65	-	-	-	-	-	-	-	-	-	-
31-Mar-14	21.39	911.02	12.20	511	6.31	197.3	1.38	7.58	-	-	-	-
21-May-14	19.82	912.59	-	-	-	-	-	-	-	-	-	-
15-Aug-14	24.00	908.41	12.81	647	0.82	7.5	5.42	6.62	-	-	-	-
14-Nov-14	22.28	910.13	-	-	-	-	-	-	-	-	-	-
10-Feb-15	21.10	911.31	12.30	636	2.56	-71.9	1.11	7.11	-	-	-	-
4-May-15	22.65	909.76	-	-	-	-	-	-	-	-	-	-
5-Aug-15	24.65	907.76	13.50	563	3.21	116.4	55.20	7.42	-	-	-	-
3-Nov-15	23.87	908.54	12.20	493	4.65	114.4	5.78	7.52	-	-	-	-
8-Feb-16	19.39	913.02	15.80	670	3.92	163.5	5.06	7.59	-	-	-	-
2-May-16	20.99	911.42	Monitored Semiannually[1]						-	-	-	-
22-Aug-16	24.42	907.99	17.60	527	5.01	106.0	1.39	7.44	-	-	-	-
1-Nov-16	21.31	911.10	Monitored Semiannually[1]						-	-	-	-
31-Jan-17	21.11	911.30	12.10	680	2.75	-146.1	1.48	7.35	-	-	-	-
30-May-17	18.49	913.92	Monitored Semiannually[1]						-	-	-	-
17-Aug-17	22.58	909.83	12.60	673	5.22	177.8	1.97	7.15		-	-	-
9-Nov-17	20.72	911.69	Monitored Semiannually[1]						-	-	-	-
28-Feb-18	17.09	915.32	11.10	509	8.34	29.0	0.72	7.37	-	-	-	-
1-May-18	17.76	914.65	Monitored Semiannually[1]						-	-	-	-
22-Aug-18	Could not be safely accessed due to wasp nests.								-	-	-	-
6-Nov-18	21.70	910.71	Monitored Semiannually[1]						-	-	-	-
12-Mar-19	18.30	914.11	10.10	215	9.65	18.9	0.39	7.86	-	-	-	-
8-May-19	19.09	913.32	Monitored Semiannually[1]						-	-	-	-
27-Aug-19	22.85	909.56	14.79	562	8.59	Note 1	3.60	7.80	-	-	-	-
13-Nov-19	21.95	910.46	Monitored Semiannually[1]						-	-	-	-
13-Feb-20	16.60	915.81	10.80	458	8.74	68.0	1.98	7.83	-	-	-	-
13-Aug-20	21.96	910.45	12.60	503	8.74	-39.8	1.89	7.83	-	-	-	-
9-Dec-20	20.58	911.83	Monitored Semiannually[1]						-	-	-	-
5-Mar-21	17.69	914.72	11.30	497	6.84	90.0	1.46	7.91	-	-	-	-
10-Jun-21	21.47	910.94	Monitored Semiannually[1]						-	-	-	-
18-Oct-21	23.22	909.19	13.5	368.9	8.47	130.8	1.36	7.63	-	-	-	-
5-Jan-22	17.66	914.75	Monitored Semiannually[1]						-	-	-	-
21-Mar-22	16.7	915.71	10.7	456.3	9.94	115.5	2.79	7.05	-	-	-	-
21-Jun-22	17.95	914.46	Monitored Semiannually[1]						-	-	-	-
13-Sep-22	21.6	910.81	15.3	531	7.87	90.3	1.45	7.53	-	-	-	-

Notes:
Top of casing elevation (feet NAVD88) prior to DSP Cover Upgrade: 939.42
Top of casing elevation (feet NAVD88) after DSP Cover Upgrade (completed July 2011): 932.41

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

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

\- Not measured or not available

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

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

°C Degrees Celsius

Note 1 ORP measurements not available due to faulty sensor.

µmhos/cm Micromhos per centimeter

feet bmp Feet below measuring point

feet NAVD88 Feet NAVD88 Datum

mg/L Milligrams per liter

mV Millivolts

NTU Nephelometric Turbidity Unit

APPENDIX A-5

Summary of Lower Disposal Area – Disposal Area Groundwater Sampling Results

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

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

Date Sampled	Field Parameters								Gen. Chem.	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 Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
11-Dec-20	32.53	740.79	11.6	18697	0.12	-61.2	17.9	13.30	6560	-	263	19.6	2540000	-
3-Mar-21	29.44	743.88	12.0	12836	0.05	-87.0	1.54	13.09	4060	-	84.1	9.64	1490000	-
10-Jun-21	33.57	739.75	12.9	18706	0.67	-175.2	1.88	13.06	6400	-	242	3.44	2460000	-
13-Oct-21	33.57	739.75	12.7	23225	0.77	-139.7	0.75	13.18	7240 J-	131	292	2.47	2560000	24.2
7-Jan-22	27.73	745.59	11.9	9778	0.96	-112.9	1.86	13.30	4850	51.8	76.3	9.19	1480000	6.77
21-Mar-22	27.5	745.82	12.5	11725	1.27	-25.3	2.18	14.52	4110	46.1	74.8	41.3	1430000	6.68
23-Jun-22	28.65	744.67	13.5	18219	0.05	-88.6	2.04	12.93	6160	130	238	6.56	2250000	21.9
14-Sep-22	34.22	739.1	13.2	17395	1.72	-127.9	1.7	13.21	6510	130	235	6.3	2570000	20.5

Notes:
Top of casing elevation (feet NAVD88): 773.32
Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included as COPCs for surface water locations and shallow/alluvial groundwater monitoring wells at the Site beginning in Q3 2021.

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

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

Date Sampled	Field Parameters								Gen. Chem.	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 Screening Level[a]	-	-	-	-	-	-	-	6.5-8.5	-	5.6	8	2.1	-	140
15-Oct-21	30.03	726.52	13.00	15815	1.72	-147.5	5.08	13.17	7180 J-	2 U	6.57	94	2390000	3.65
7-Jan-22	15.32	741.23	10.20	7227	1.03	-116.3	1.84	13.28	3420	5.17	6.34	101	884000	0.515 J
17-Mar-22	14.44	742.11	11.8	9351	1.11	-70	1.88	14.60	3060	3.08	5.63	109	970000	0.406
22-Jun-22	18.39	738.16	13	10563	0.14	-71	2.19	12.95	3300	2.22	5.37	100	924000	1.14
14-Sep-22	28.82	727.73	13.8	14297	6.41	-17.7	4.71	12.99	5340	4 U	3.68 J	269	1790000	0.624

Notes:

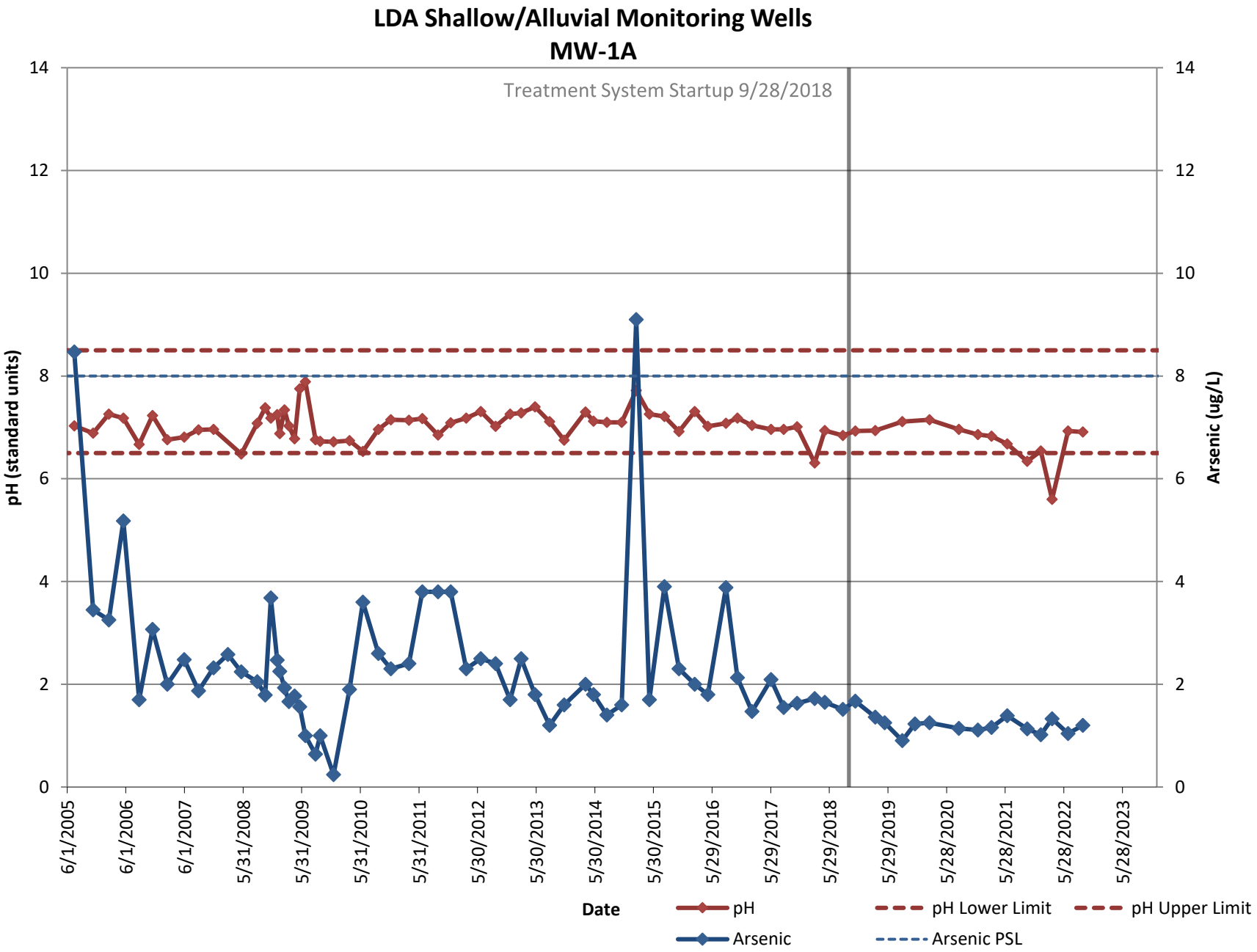
Top of casing elevation (feet NAVD88): 756.55

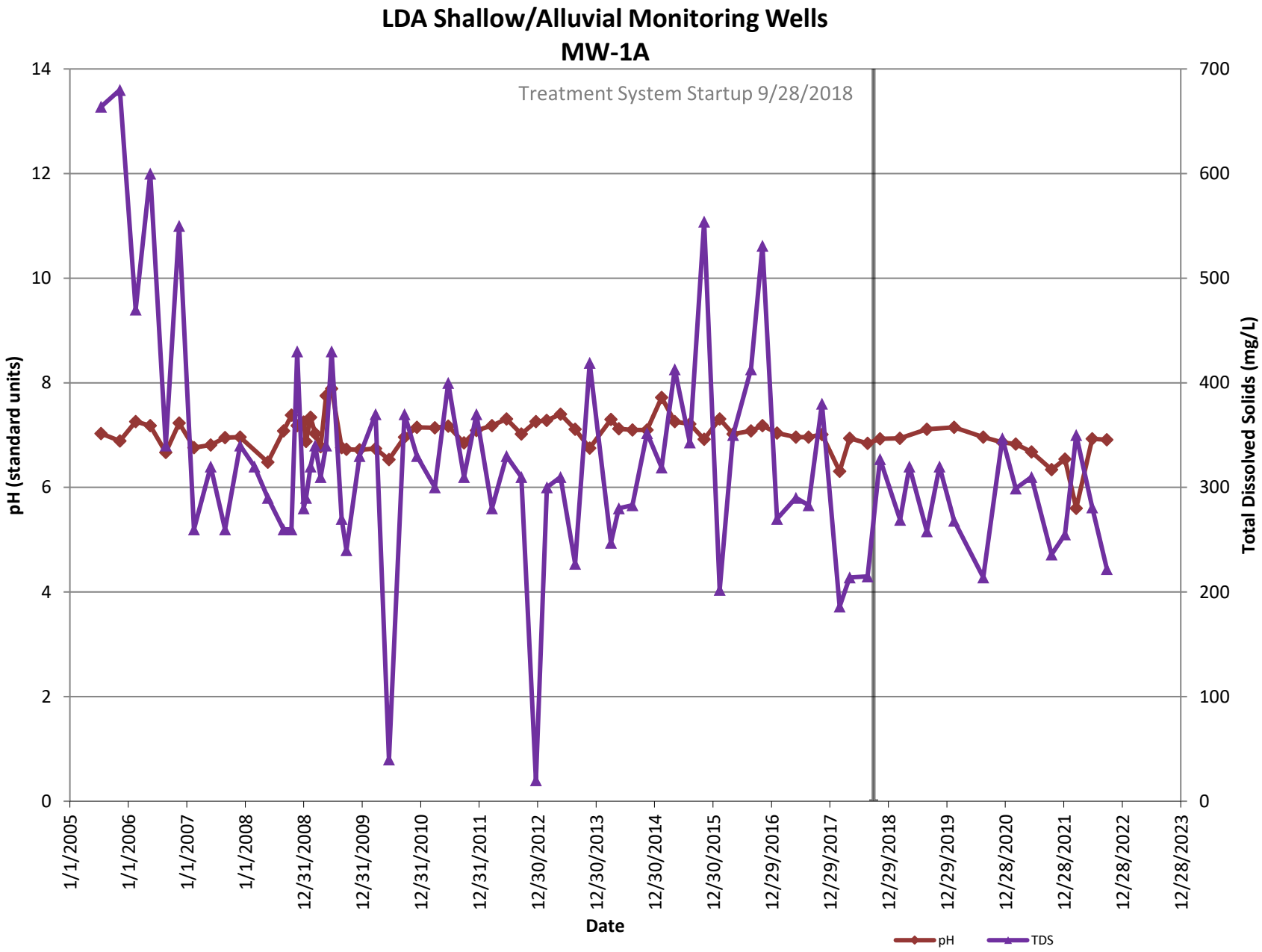
Dissolved metals were analyzed at the Site until December 2020 (Q4 2020). Total metals were analyzed for Q4 2020 and will continue to be analyzed moving forward. Iron and manganese are not included in the COPCs at the Site and are not analyzed beginning in Q2 2021. Antimony and Vanadium were included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

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

APPENDIX B

LDA Shallow/Alluvial Monitoring Wells Data Graphs


LDA Shallow/Alluvial Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
0
2
4
6
8
10
12
14
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
Date
pH
pH Lower Limit
pH Upper Limit
Arsenic
Arsenic PSL


LDA Shallow/Alluvial Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
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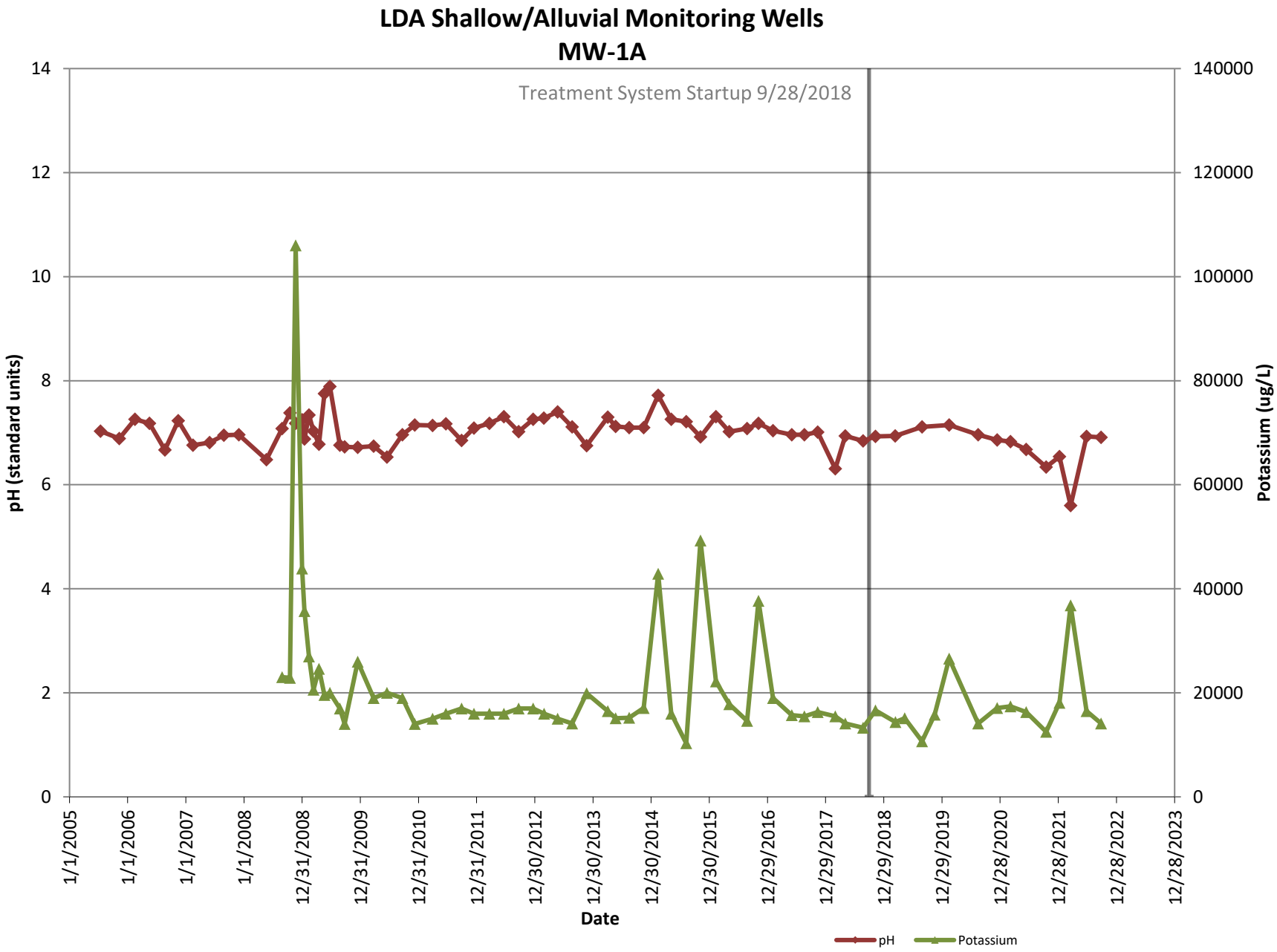
12/28/2021
12/28/2022
12/28/2023


LDA Shallow/Alluvial Monitoring Wells
MW-1A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
20000
40000
60000
80000
100000
120000
140000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
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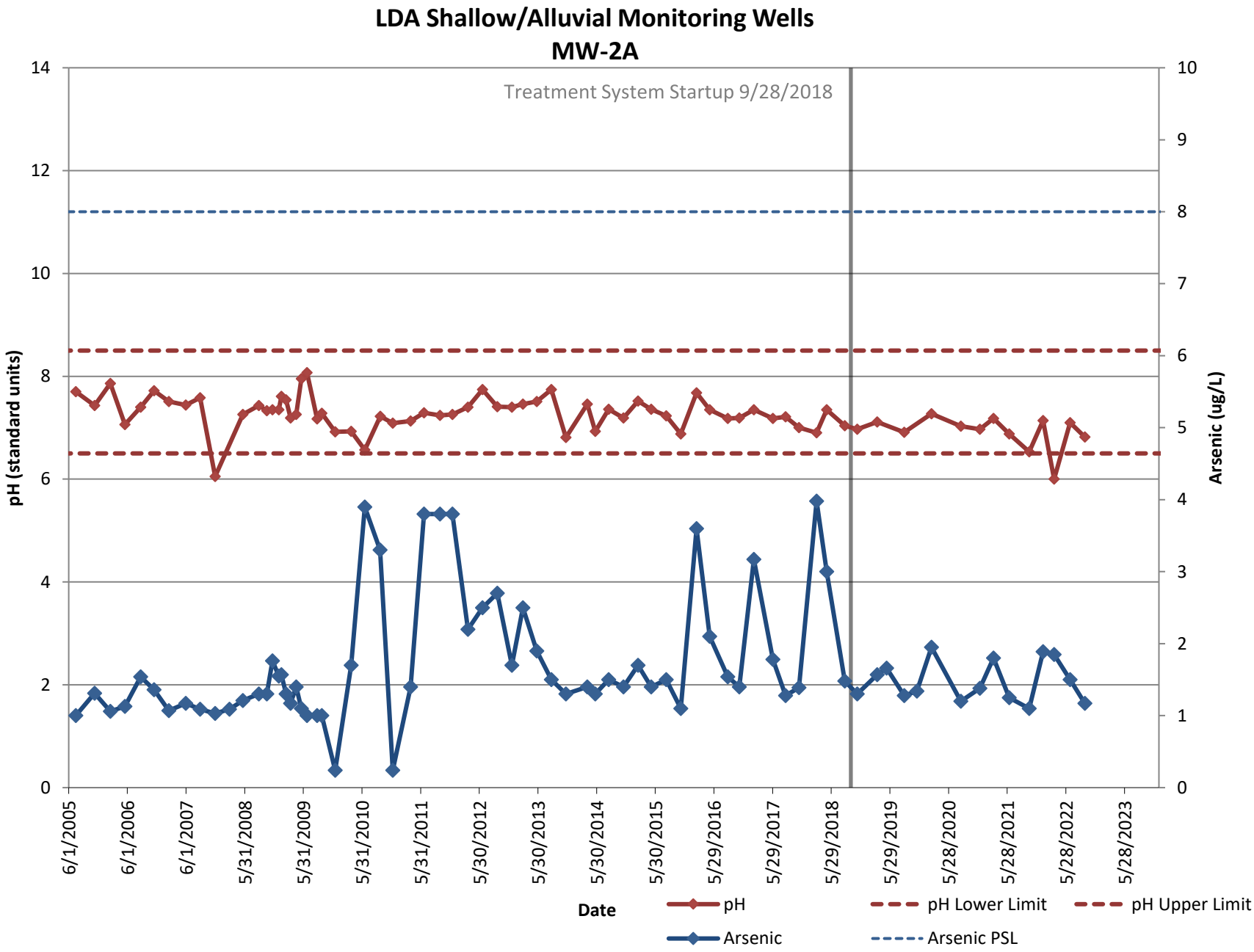
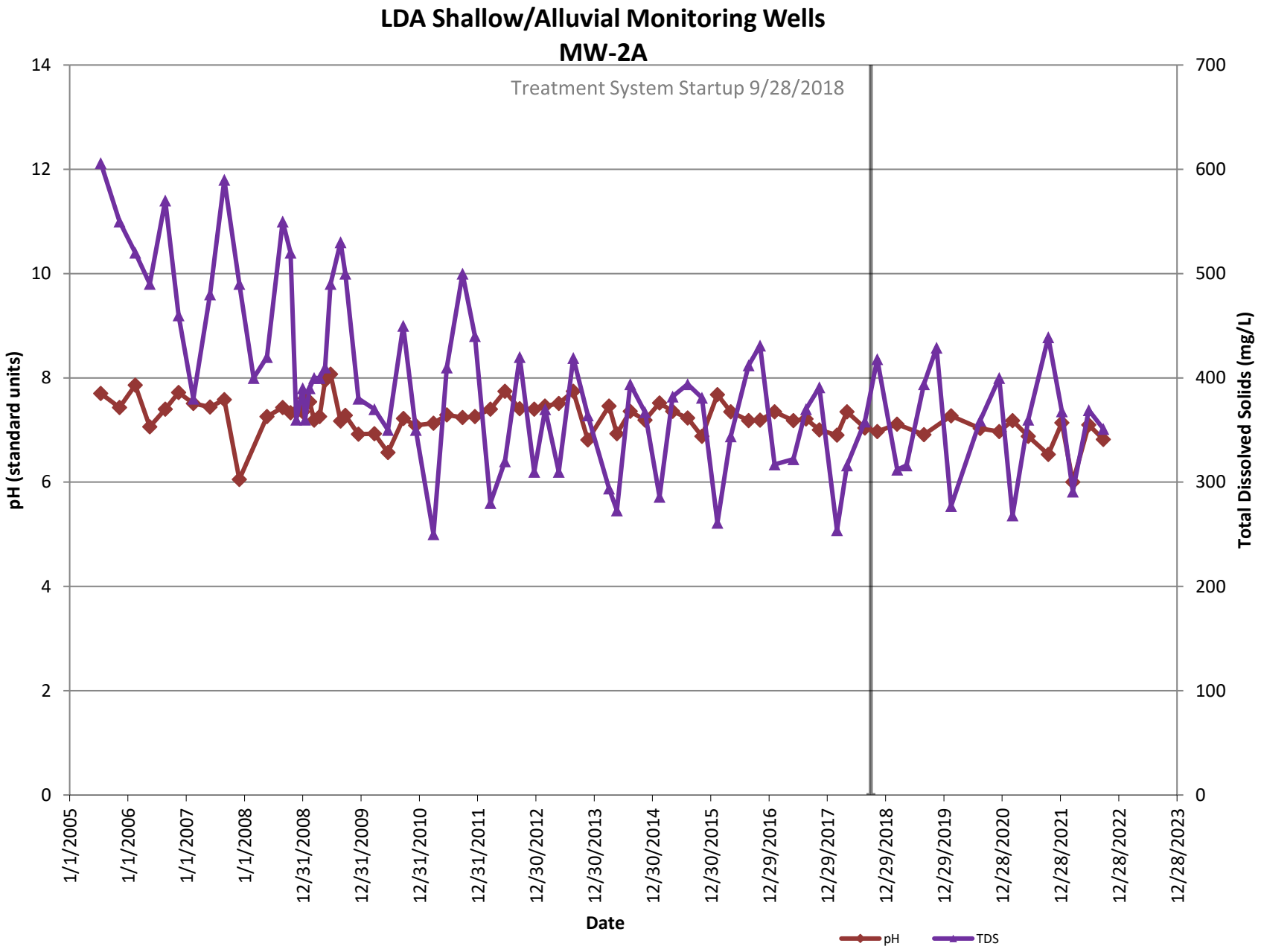
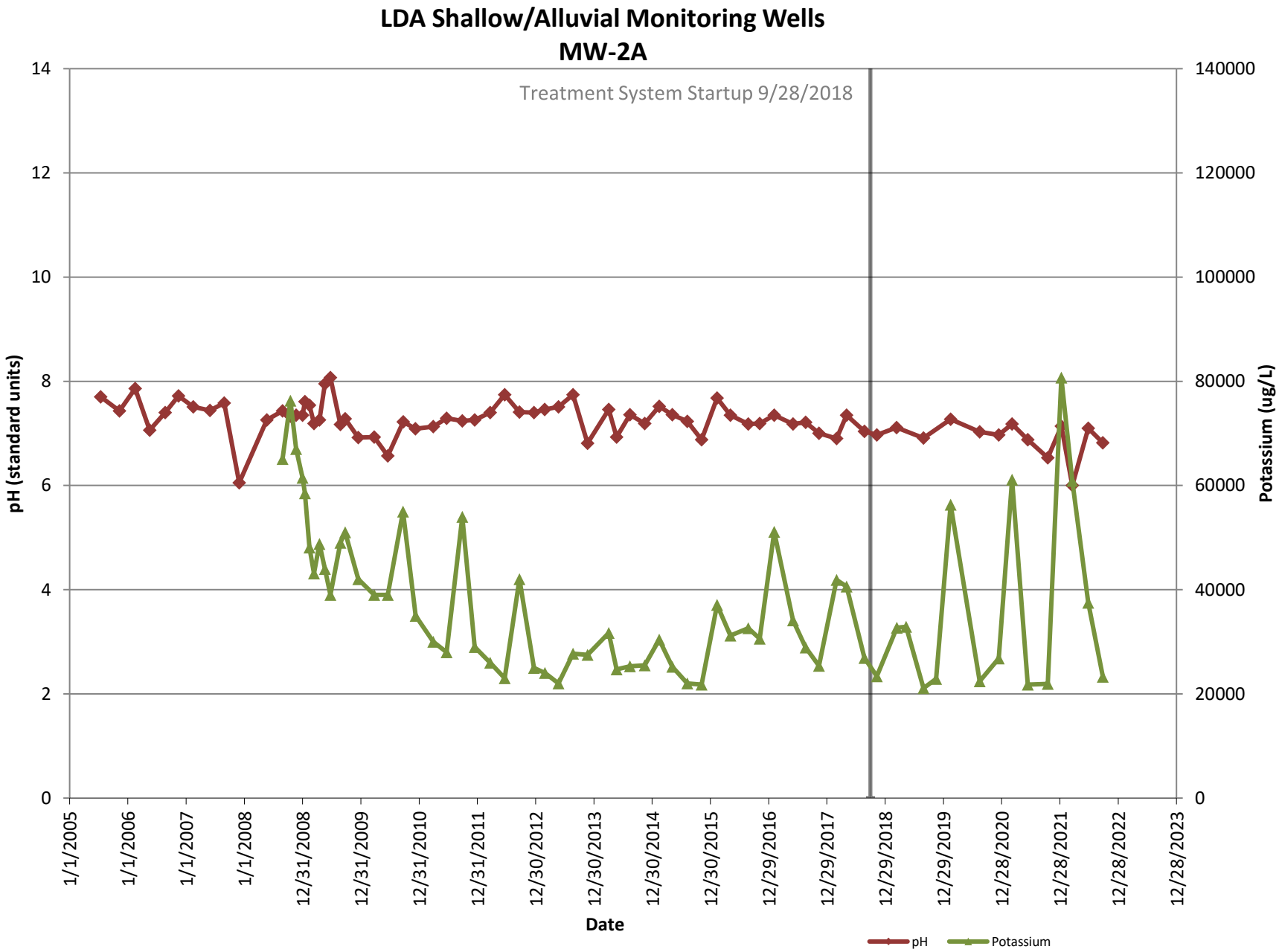
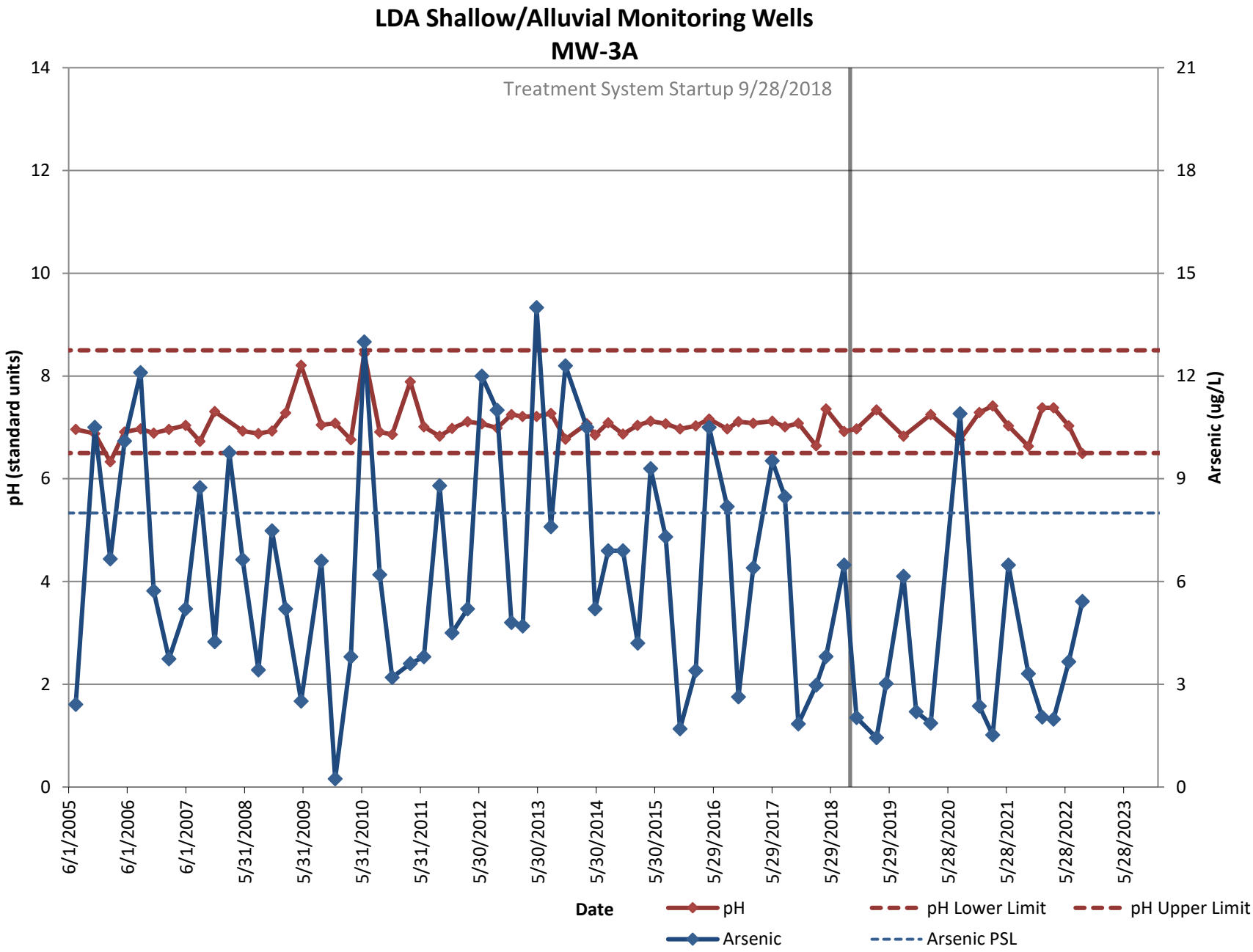
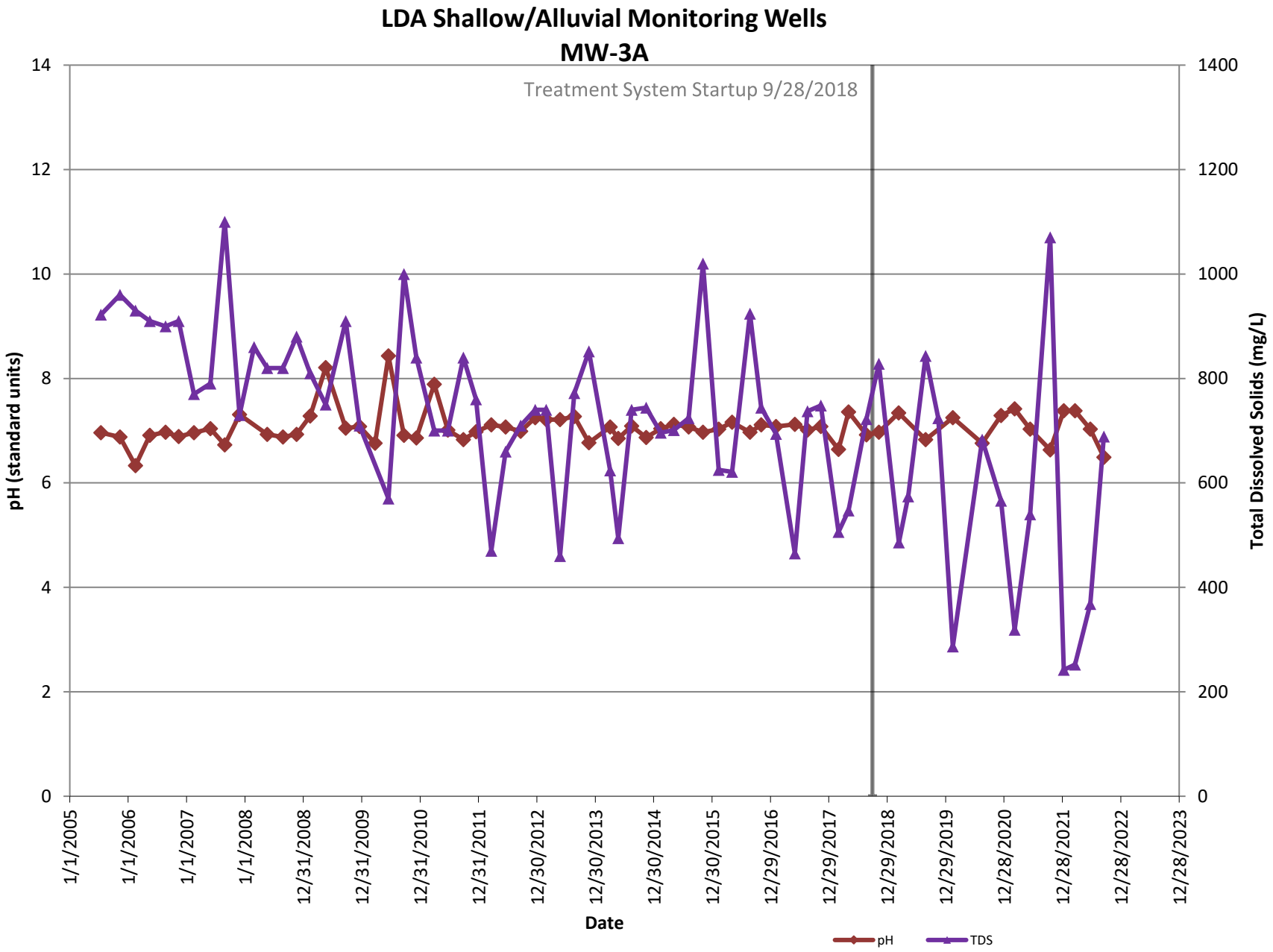
12/28/2021
12/28/2022
12/28/2023

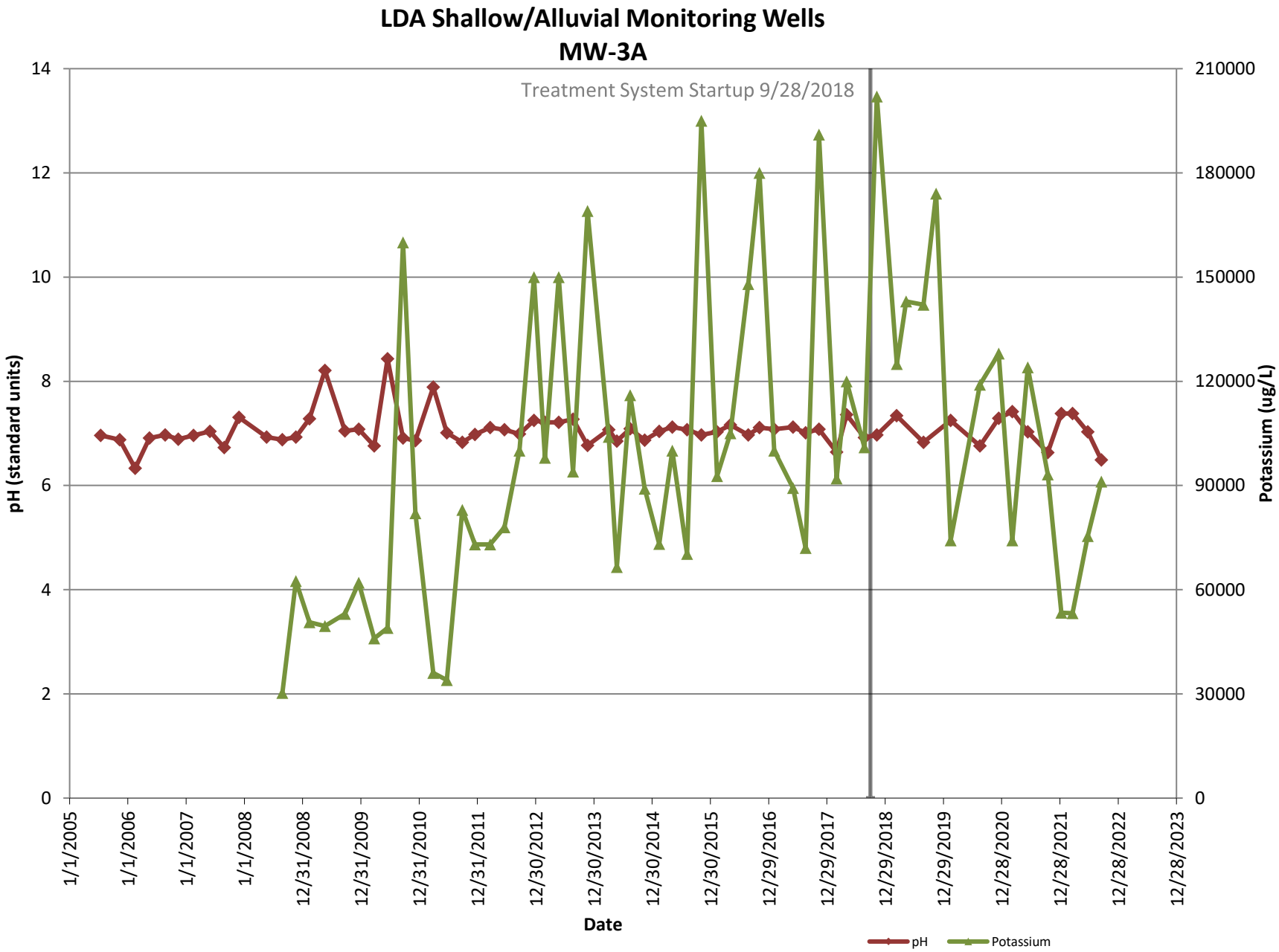

LDA Shallow/Alluvial Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
10
9
8
7
6
5
4
3
2
1
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
Date
pH
pH Lower Limit
pH Upper Limit
Arsenic
Arsenic PSL

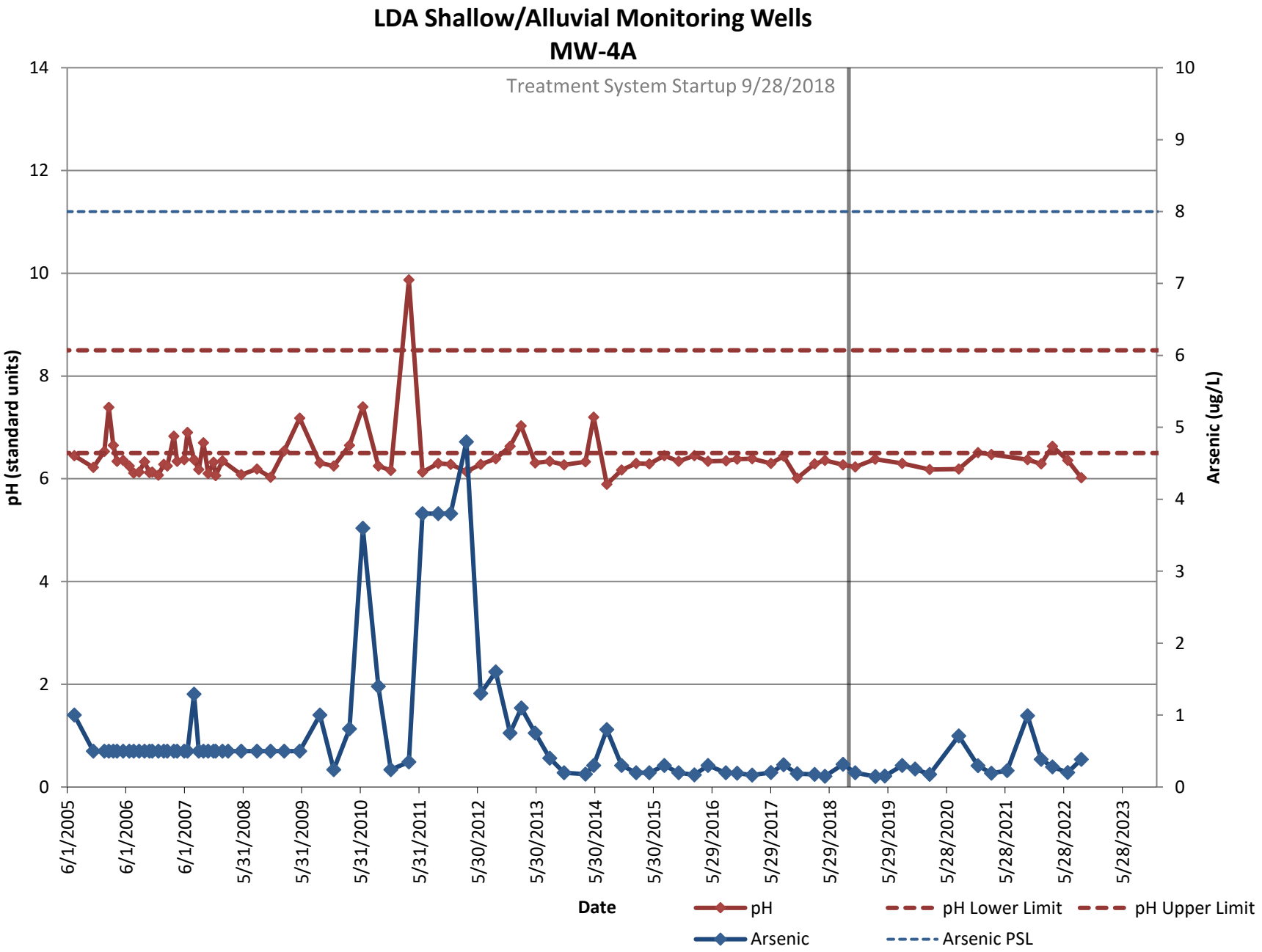

LDA Shallow/Alluvial Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023

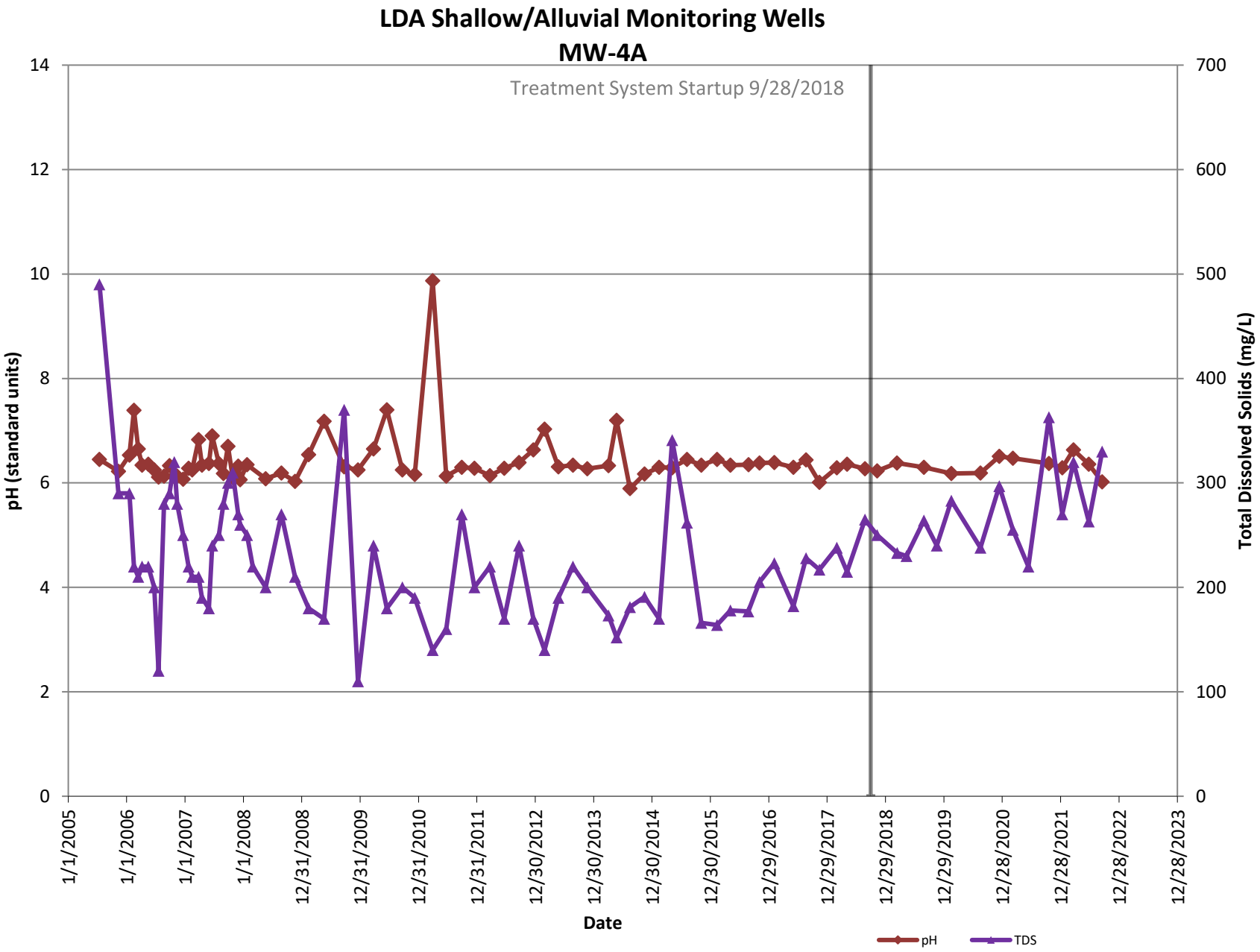

LDA Shallow/Alluvial Monitoring Wells
MW-2A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
20000
40000
60000
80000
100000
120000
140000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023

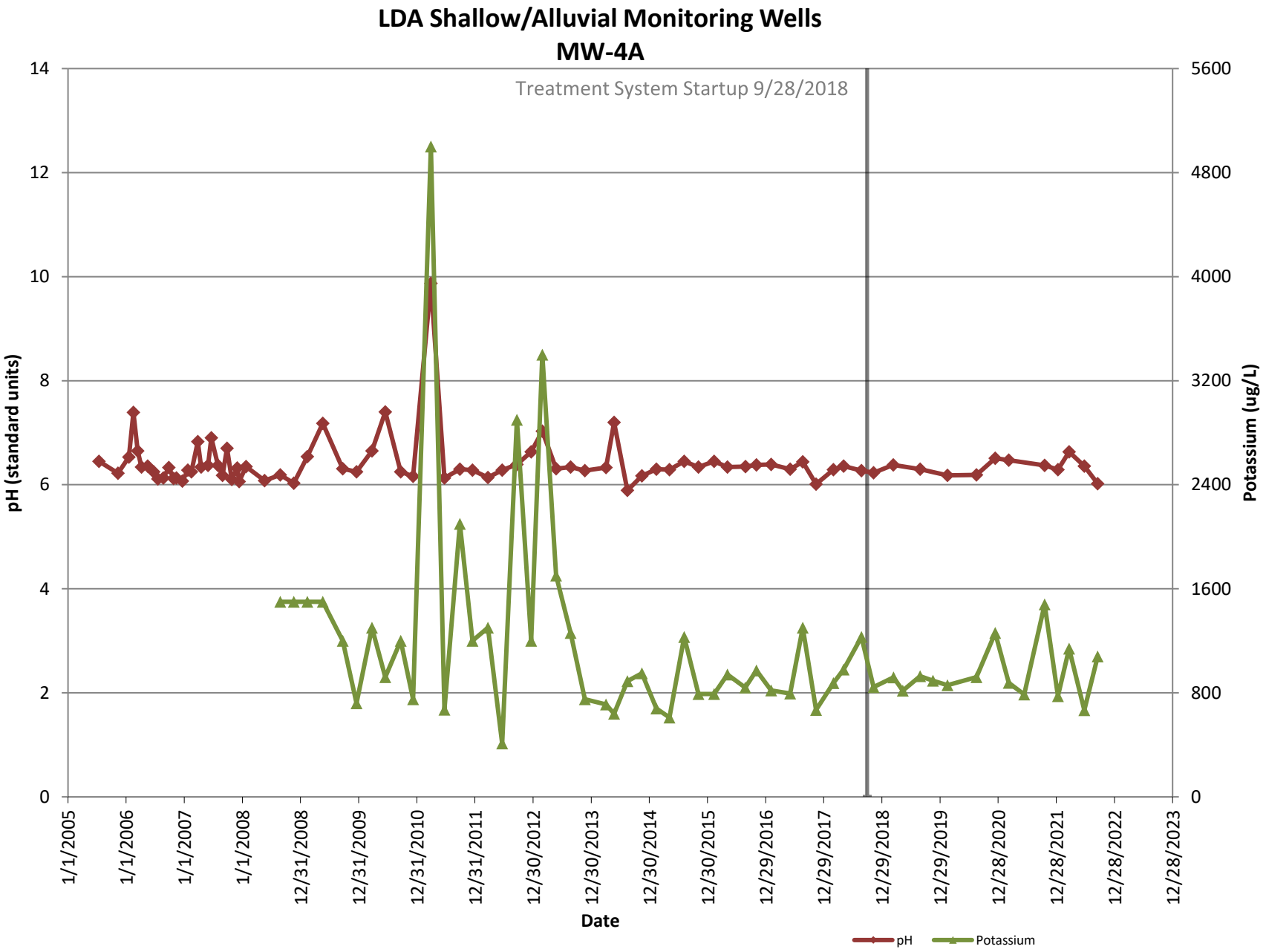

LDA Shallow/Alluvial Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
21
18
15
12
9
6
3
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
Date
pH
pH Lower Limit
pH Upper Limit
Arsenic
Arsenic PSL

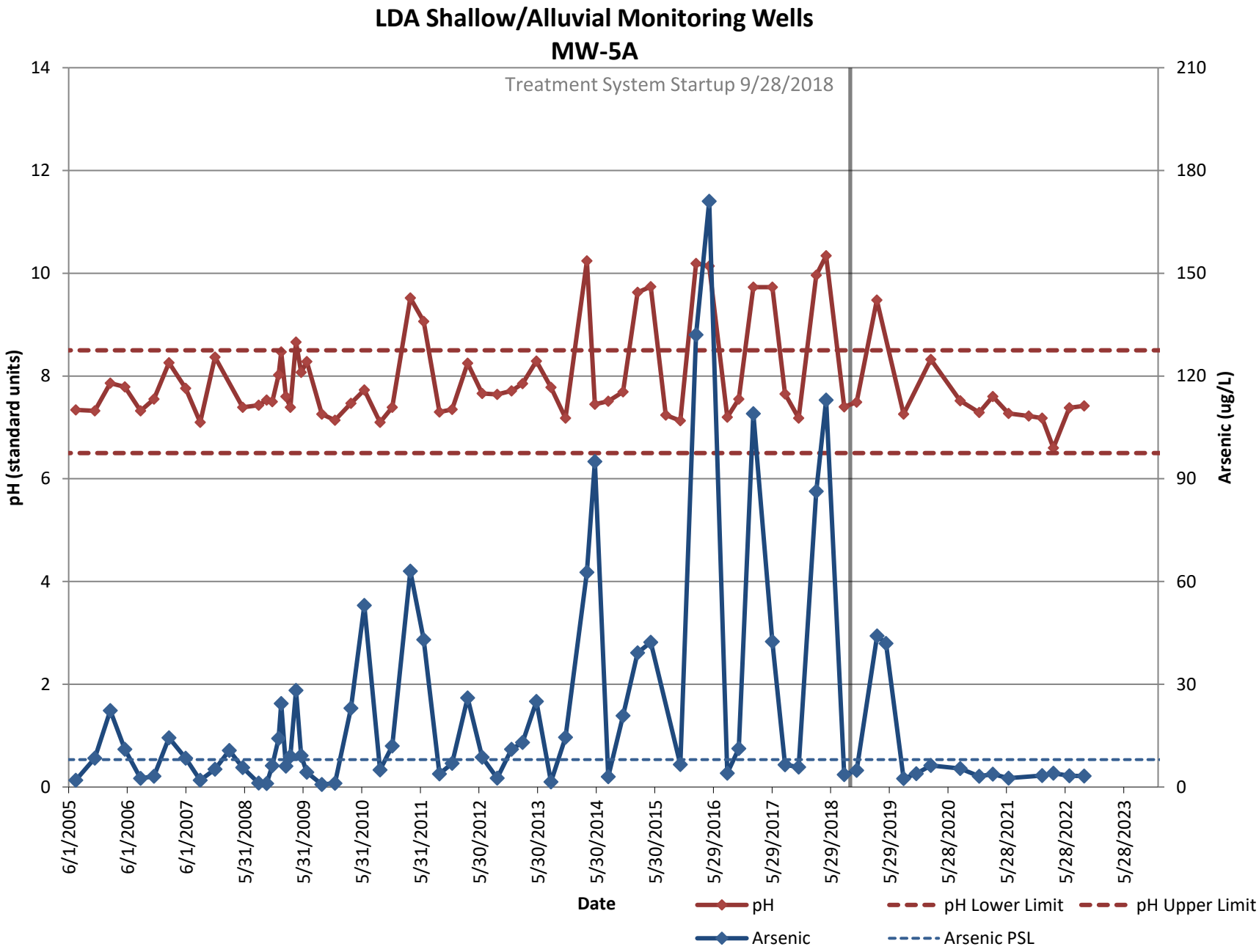

LDA Shallow/Alluvial Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
200
400
600
800
1000
1200
1400
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023

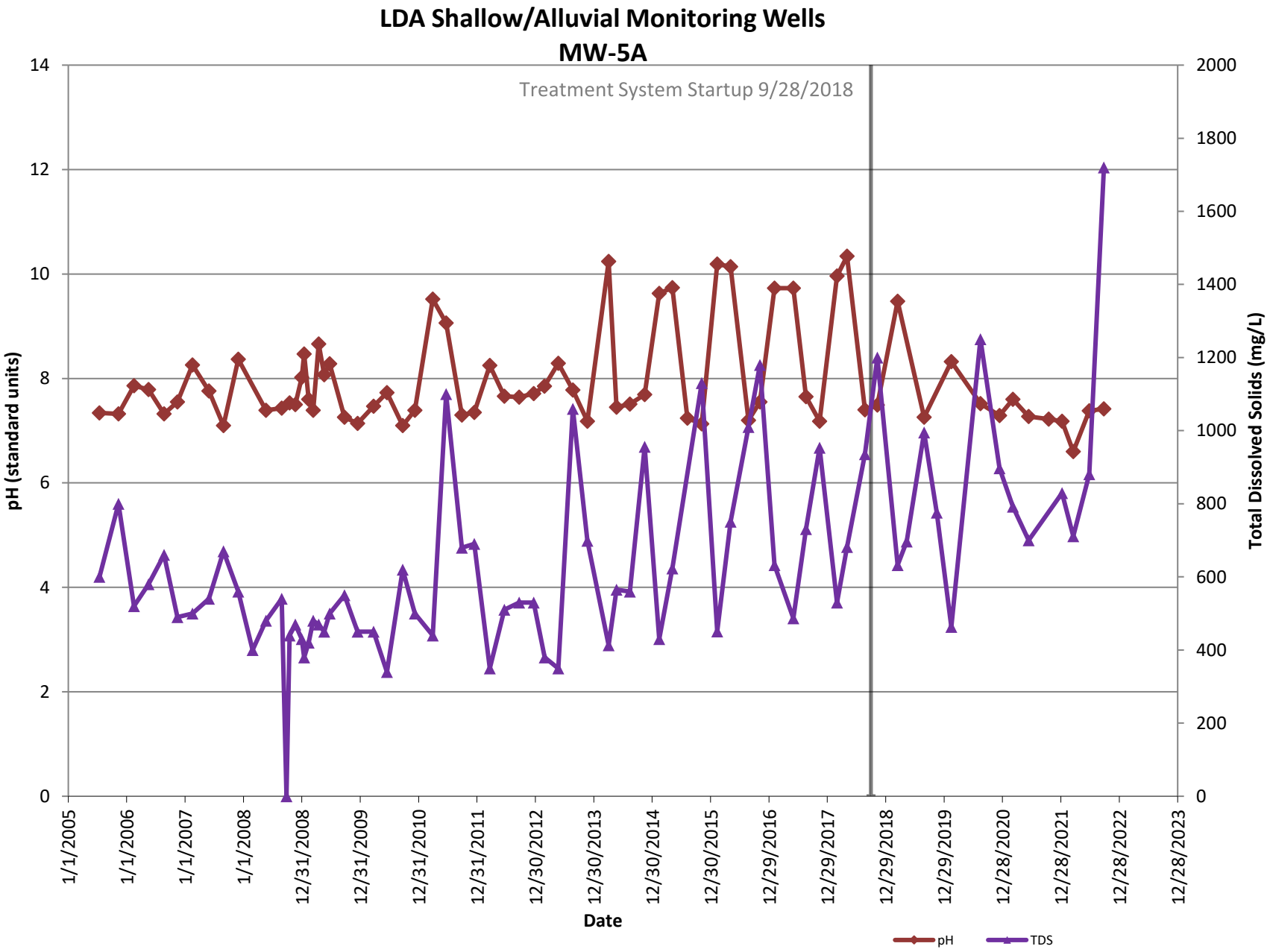

LDA Shallow/Alluvial Monitoring Wells
MW-3A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
30000
60000
90000
120000
150000
180000
210000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023

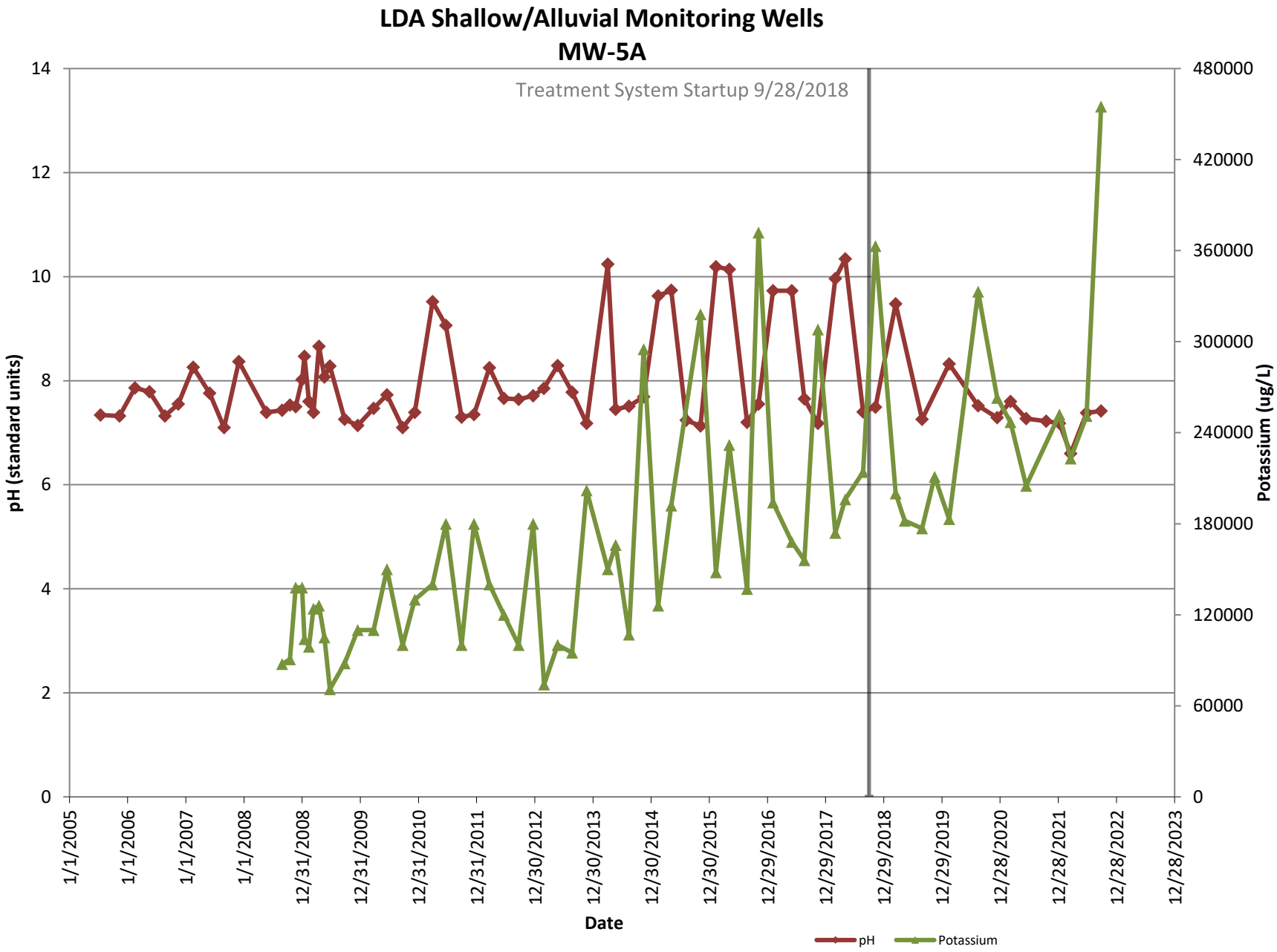

LDA Shallow/Alluvial Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
10
9
8
7
6
5
4
3
2
1
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
Date
pH
pH Lower Limit
pH Upper Limit
Arsenic
Arsenic PSL

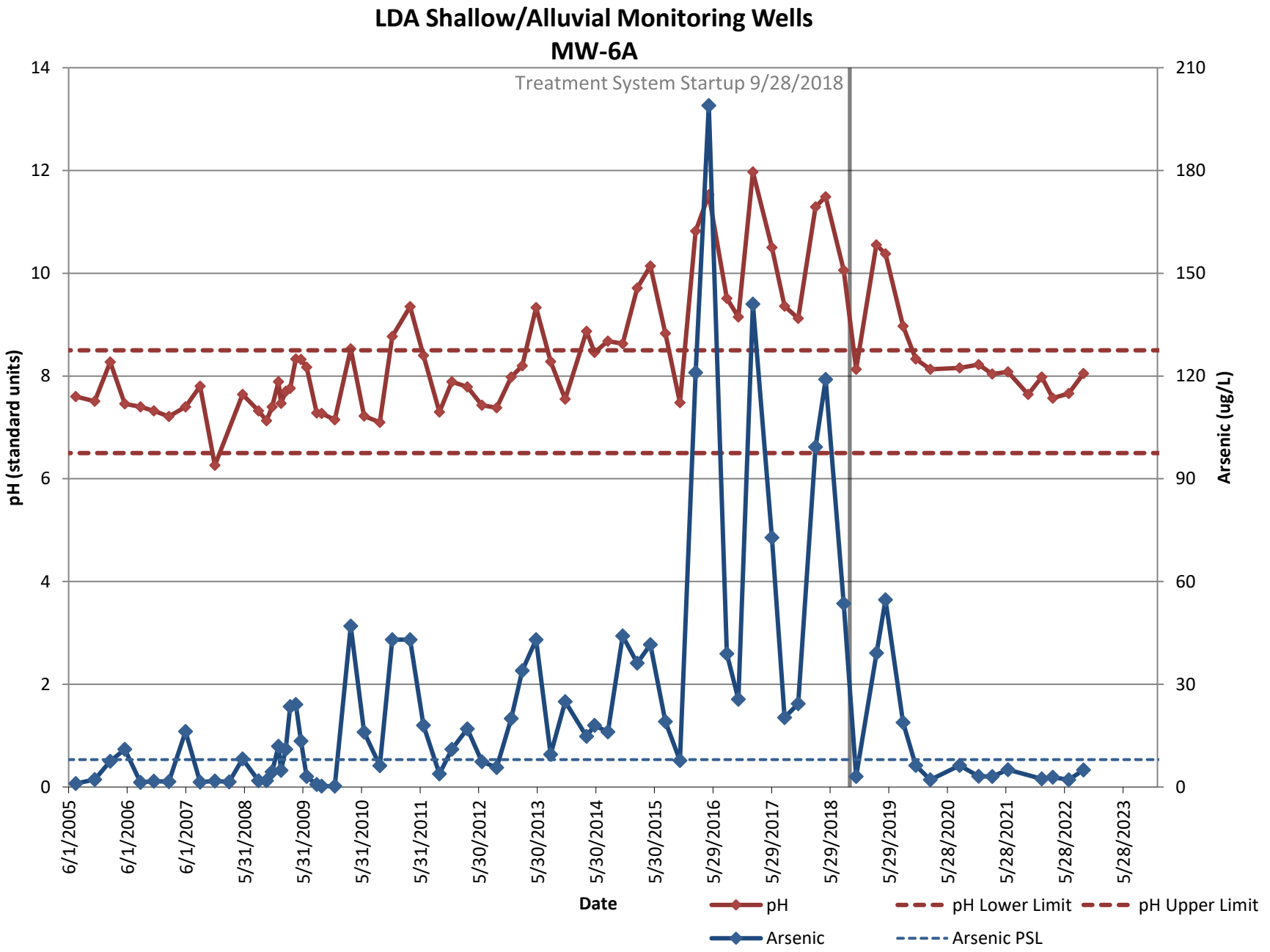

LDA Shallow/Alluvial Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
100
200
300
400
500
600
700
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023

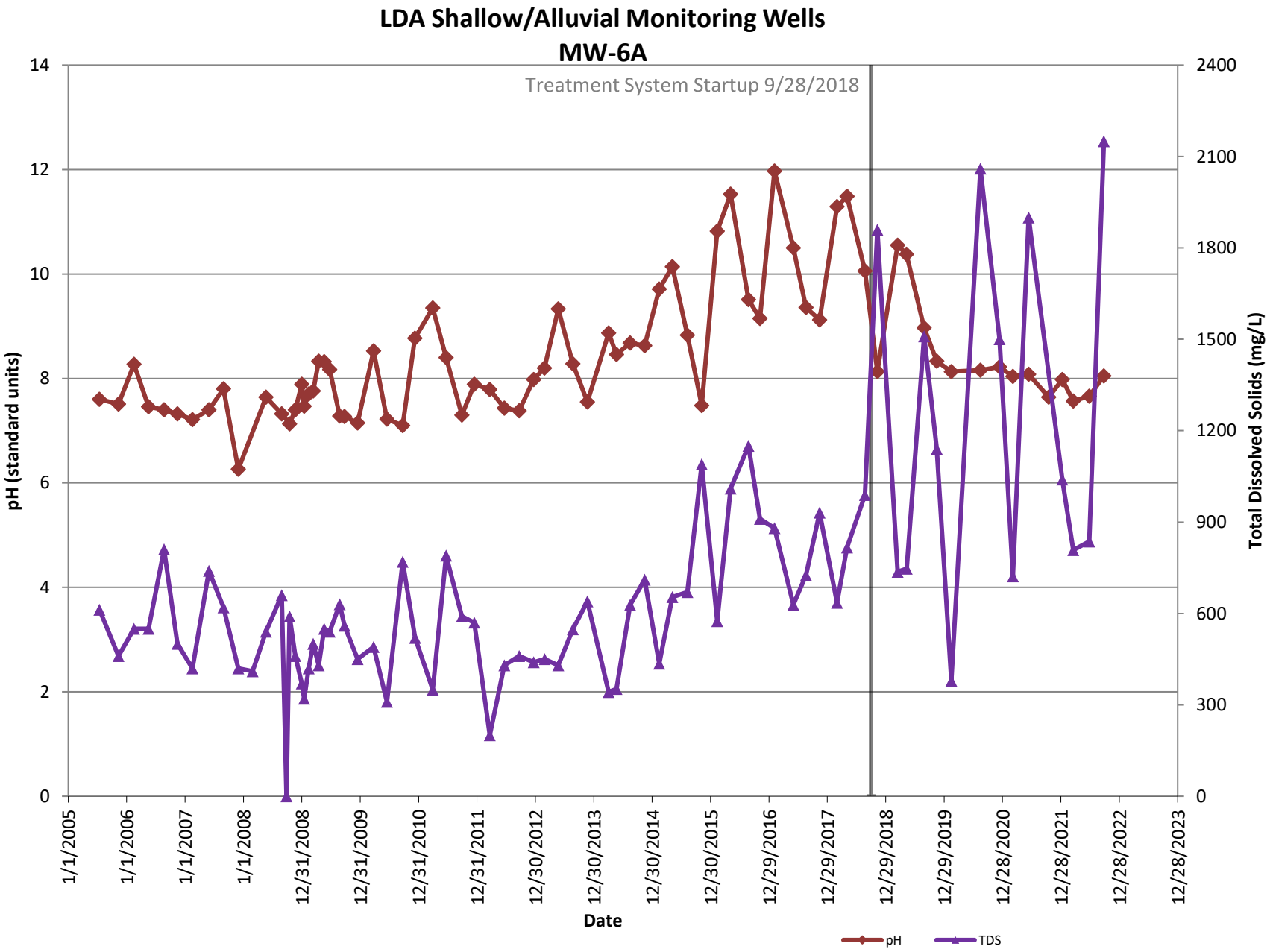

LDA Shallow/Alluvial Monitoring Wells
MW-4A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
800
1600
2400
3200
4000
4800
5600
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023

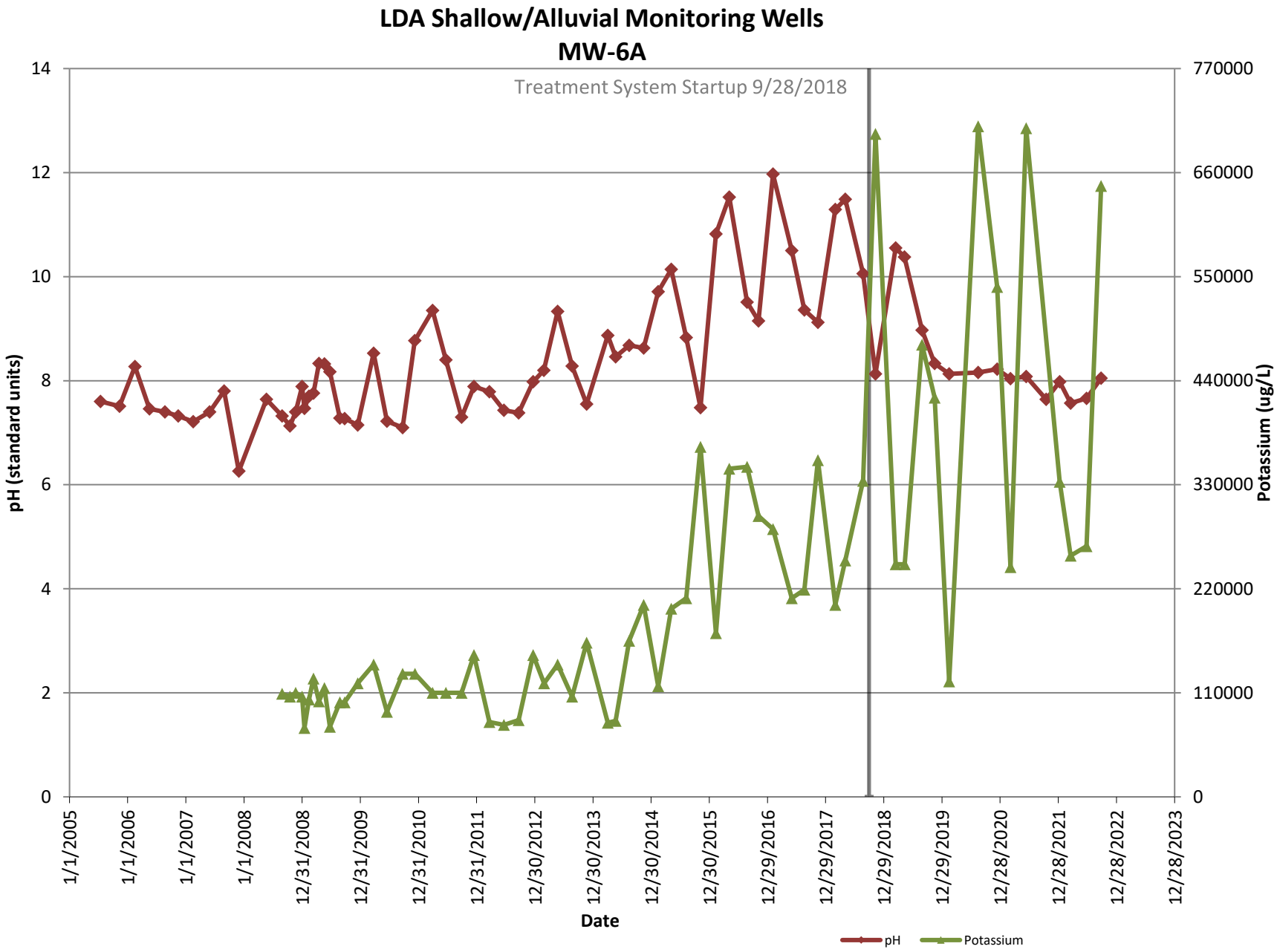

LDA Shallow/Alluvial Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
210
180
150
120
90
60
30
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
Date
pH
pH Lower Limit
pH Upper Limit
Arsenic
Arsenic PSL


LDA Shallow/Alluvial Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
200
400
600
800
1000
1200
1400
1600
1800
2000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023


LDA Shallow/Alluvial Monitoring Wells
MW-5A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
60000
120000
180000
240000
300000
360000
420000
480000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023


LDA Shallow/Alluvial Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Arsenic (ug/L)
14
12
10
8
6
4
2
0
210
180
150
120
90
60
30
0
6/1/2005
6/1/2006
6/1/2007
5/31/2008
5/31/2009
5/31/2010
5/31/2011
5/30/2012
5/30/2013
5/30/2014
5/30/2015
5/29/2016
5/29/2017
5/29/2018
5/29/2019
5/28/2020
5/28/2021
5/28/2022
5/28/2023
Date
pH
pH Lower Limit
pH Upper Limit
Arsenic
Arsenic PSL


LDA Shallow/Alluvial Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Total Dissolved Solids (mg/L)
Date
pH
TDS
0
2
4
6
8
10
12
14
0
300
600
900
1200
1500
1800
2100
2400
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023


LDA Shallow/Alluvial Monitoring Wells
MW-6A
Treatment System Startup 9/28/2018
pH (standard units)
Potassium (ug/L)
Date
pH
Potassium
0
2
4
6
8
10
12
14
0
110000
220000
330000
440000
550000
660000
770000
1/1/2005
1/1/2006
1/1/2007
1/1/2008
12/31/2008
12/31/2009
12/31/2010
12/31/2011
12/30/2012
12/30/2013
12/30/2014
12/30/2015
12/29/2016
12/29/2017
12/29/2018
12/29/2019
12/28/2020
12/28/2021
12/28/2022
12/28/2023

APPENDIX C

Data Validation Report and Laboratory Analytical Results

DATA VALIDATION CHECKLIST

Project Name:	Ravensdale Project
Project Number:	GL152030402/004.0003
Sample Identification(s):	MW-3A-0922, MW-10A-0922, P-16-0922, Still Well-0922, P-15-0922, P-14-0922, Interceptor Trench-0922, P-17-0922, MW-4A-0922, MW-9A-0922, MW-7A-0922, MW-99-1-0922, MW-5A-0922, MW-6A-0922, MW-2A-0922, MW-45A-0922, MW-1A-0922, Infiltration Pond-0922, MW-35A-0922
Sample Date(s):	9/13/22, 9/14/22, 9/23/22, 9/28/22
Sample Team:	Sean Johnson, Golder Associates
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)
Laboratory Report No.:	22I0226, 22I0402, 22I0483

FIELD DATA PACKAGE DOCUMENTATION

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

QC – quality control

COMMENTS:

Performance was acceptable, with no exceptions.

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, with the following notes:

- In report 22I0226, the cooler temperatures were below 0 Celsius (-1.1 and -1.0 Celsius) The lab did not note any ice formation upon arrival. No further action is required other than to note.
- In report 22I0483, samples Infiltration Pond-0922 and MW-35A-0922 failed preservation requirements for total metals upon receival, however it was confirmed by the lab it was adjusted it to a pH <2. No further action is required other than to note.

INORGANIC ANALYSES

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

%R – percent recovery RPD – relative percent difference

COMMENTS:

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

- There was a detection in one of the method blanks (report 22I0483) and the equipment blank as shown below. When the blank concentration was less than the RL and associated sample results were greater than the RL no qualifications were required. If both the blank and sample result are above the RL and the sample result is greater than ten times the blank, no qualification is required.

Sample ID	Method	Type	Analyte	Blank Result	Reporting Limit	Units
BKJ0158-BLK1	6010D	Method	Potassium	0.129J	0.50	mg/L
MW-99-1-0622	6010D	Equipment	Potassium	48.7	20	ug/L

- There was a project specific MS/MSD for sample MW-4A-0922. Recovery and RPDs were within QC limits and no qualifications were required.

- There was a project specific lab duplicate (MW-4A-0922). Recovery and RPDs were within QC limits and no qualifications were required.

- Field duplicates are as followed: MW-35A-0922 is a duplicate to Infiltration Ponds-0922 and MW-45A-0922 is a field duplicate to MW-2A-0922. All were within RPD limits, and no qualifications were required.

GENERAL WET CHEMISTRY

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

%R – percent recovery RPD – relative percent difference

COMMENTS:

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

- The holding time was exceeded for samples Infiltration Pond-0922 and MW-35A-0922 (report 22I0483). Total dissolved solids holding time is 7 days. The above samples were analyzed 12 days after being sampled. Using professional judgement, associated detects were qualified as estimated (J).

- There was a project specific MS/MSD for sample MW-4A-0922. Recovery and RPDs were within QC limits and no qualifications were required.

- There was a project specific lab duplicate (MW-4A-0922). Recovery and RPDs were within QC limits and no qualifications were required.

- Field duplicates are as followed: MW-35A-0922 is a duplicate to Infiltration Ponds-0922 and MW-45A-0922 is a field duplicate to MW-2A-0922. All were within RPD limits, and no qualifications were required.

DATA VALIDATION CHECKLIST

SUMMARY AND DATA QUALIFIER CODES

Project Name:	Ravensdale Project
Project Number:	GL152030402/004.0003
Sample Identification(s):	MW-3A-0922, MW-10A-0922, P-16-0922, Still Well-0922, P-15-0922, P-14-0922, Interceptor Trench-0922, P-17-0922, MW-4A-0922, MW-9A-0922, MW-7A-0922, MW-99-1-0922, MW-5A-0922, MW-6A-0922, MW-2A-0922, MW-45A-0922, MW-1A-0922, Infiltration Pond-0922, MW-35A-0922
Sample Date(s):	9/13/22, 9/14/22, 9/23/22, 9/28/22
Sample Team:	Sean Johnson, Golder Associates
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)
Laboratory Report No.:	22I0226, 22I0402, 22I0483

Sample ID	Analyte(s)	Old Result	Old Qualifier	New Result	New Qualifier	Reason(s)
MW-35A-0922	TDS	-	-	-	J	Holding time exceeded
Infiltration Pond-0922	TDS	-	-	-	J	Holding time exceeded

VALIDATION PERFORMED BY:	Julia Campbell, Golder Associates
DATE:	November 16, 2022
PEER REVIEW PERFORMED BY:	**Michael Shadle, WSP**
DATE:	December 6, 2022

		Infiltration Ponds	**MW-35A Duplicate**					
Client_Sample_ID	Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
Infiltration Ponds-0922	Antimony	24	24.4	2%	mg/L		1	0.505
Infiltration Ponds-0922	Lead	1.11	0.995	11%	mg/L		0.5	0.257
Infiltration Ponds-0922	Vanadium	0.516	0.528	2%	mg/L		0.2	0.0556
Infiltration Ponds-0922	Arsenic	5.88	5.77	2%	mg/L		1	0.187
Infiltration Ponds-0922	Potassium	1040	1040	0%	mg/L		2.5	0.534
Infiltration Ponds-0922	Total Dissolved Solids	2730	2700	1%	mg/L	J	50	50

		MW-2A	**MW-45A Duplicate**					
Client_Sample_ID	Analyte	Result	Result	RPD	Unit	Qualifier	RL	MDL
MW-2A-0922	Antimony	0.923	0.921	0%	ug/L		0.2	0.101
MW-2A-0922	Lead	0.13	0.156	18%	ug/L		0.1	0.0513
MW-2A-0922	Vanadium	1.18	1.24	5%	ug/L		0.2	0.0556
MW-2A-0922	Arsenic	1.17	1.24	6%	ug/L		0.2	0.0373
MW-2A-0922	Potassium	23.3	22.7	3%	mg/L		0.5	0.107
MW-2A-0922	Total Dissolved Solids	351	354	1%	mg/L		10	10

Analytical Resources, LLC
Analytical Chemists and Consultants

12 October 2022

Gary Zimmerman
Golder Associates
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333

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)	Associated SDG ID(s)
22I0226	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.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 22I0226	Turn-around Requested: Standard	Date: 9/15/22	
ARI Client Company: Golder	Phone: (425) 883-0777	Page: 1 of 2	
Client Contact: Gary Zimmerman		No. of Coolers:	Cooler Temps:
Client Project Name: Ravensdale 2022 Q3 Sampling			
Client Project #: 152030402.004	Samplers: Sean Johnson and Ryan Kober		

Analytical Resources, Incorporated
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: Total Metals: As, Pb, Sb, V, K	Analysis Requested: TDS	Notes/Comments
MW-3A-0922	9/13/22	14:20	GW	2	X	X	
MW-10A-0922	↓	15:15	↓	2	X	X	
P-16-0922	↓	16:30	↓	2	X	X	
STILL-WELL-0922	9/14/22	8:35	SW	2	X	X	
P-15-0922	↓	10:40	GW	2	X	X	
P-14-0922	↓	12:15	GW	2	X	X	
INTERCEPTOR TRENCH-0922	↓	12:50	SW	1		X	
P-17-0922	↓	13:45	GW	2	X	X	
MW-4A-0922	↓	14:35	GW	6	X	X	MS/MSD

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Analyze in accordance with MSA between Golder and ARI.	Printed Name: SEAN JOHNSON	Printed Name: Phillip Bates	Printed Name:	Printed Name:
Ecology EIM EDD.	Company: GOLDER	Company: AR	Company:	Company:
	Date & Time: 9/15/22 9:18	Date & Time: 9/15/22 9:19	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, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

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

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 221022	Turn-around Requested: Standard	Date: 9/15/22	
ARI Client Company: Golder	Phone: (425) 883-0777	Page: 2 of 2	
Client Contact: Gary Zimmerman		No. of Coolers:	Cooler Temps:
Client Project Name: Ravensdale 2022 Q3 Sampling			
Client Project #: 152030402.004	Samplers: Sean Johnson and Ryan Kober		

Analytical Resources, Incorporated
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: Total Metals: As, Pb, Sb, V, K	Analysis Requested: TDS	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Notes/Comments
MW-9A-0922	9/14/22	15:25	GW	2	X	X							
MW-7A-0922	"	16:40	GW	2	X	X							
MW-99-1-0922	"	16:50	DI	2	X	X							

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Analyze in accordance with MSA between Golder and ARI.	Printed Name: Sean Johnson	Printed Name: Phillip Bates	Printed Name:	Printed Name:
Ecology EIM EDD.	Company: Golder	Company: AR	Company:	Company:
	Date & Time: 9/15/22 9:18	Date & Time: 9/15/22 9:19	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, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

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

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-3A-0922	22I0226-01	Water	13-Sep-2022 14:20	15-Sep-2022 09:19
MW-10A-0922	22I0226-02	Water	13-Sep-2022 15:15	15-Sep-2022 09:19
P-16-0922	22I0226-03	Water	13-Sep-2022 16:30	15-Sep-2022 09:19
Still-Well-0922	22I0226-04	Water	14-Sep-2022 08:35	15-Sep-2022 09:19
P-15-0922	22I0226-05	Water	14-Sep-2022 10:40	15-Sep-2022 09:19
P-14-0922	22I0226-06	Water	14-Sep-2022 12:15	15-Sep-2022 09:19
Intercepter Trench-0922	22I0226-07	Water	14-Sep-2022 12:50	15-Sep-2022 09:19
P-17-0922	22I0226-08	Water	14-Sep-2022 13:45	15-Sep-2022 09:19
MW-4A-0922	22I0226-09	Water	14-Sep-2022 14:35	15-Sep-2022 09:19
MW-9A-0922	22I0226-10	Water	14-Sep-2022 15:25	15-Sep-2022 09:19
MW-7A-0922	22I0226-11	Water	14-Sep-2022 16:40	15-Sep-2022 09:19
MW-99-1-0922	22I0226-12	Water	14-Sep-2022 16:50	15-Sep-2022 09:19

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Work Order Case Narrative

Total Metals - EPA Method 200.8

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

Initial and continuing calibrations were within method requirements.

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

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

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

Wet Chemistry

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

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.

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 9/15/2022 4:34:47PM

WORK ORDER

22I0226

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

Client: Golder Associates **Project Manager: Kelly Bottem**

Project: Ravensdale **Project Number: Ravensdale**

Preservation Confirmation

Container ID	Container Type	pH	
22I0226-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-01 B	HDPE NM, 1000 mL		
22I0226-02 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-02 B	HDPE NM, 1000 mL		
22I0226-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-03 B	HDPE NM, 1000 mL		
22I0226-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-04 B	HDPE NM, 1000 mL		
22I0226-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-05 B	HDPE NM, 1000 mL		
22I0226-06 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-06 B	HDPE NM, 1000 mL		
22I0226-07 A	HDPE NM, 1000 mL		
22I0226-08 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-08 B	HDPE NM, 1000 mL		
22I0226-09 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-09 B	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-09 C	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-09 D	HDPE NM, 1000 mL		
22I0226-09 E	HDPE NM, 1000 mL		
22I0226-09 F	HDPE NM, 1000 mL		
22I0226-10 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-10 B	HDPE NM, 1000 mL		
22I0226-11 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-11 B	HDPE NM, 1000 mL		
22I0226-12 A	HDPE NM, 500 mL, 1:1 HNO3	<2	P
22I0226-12 B	HDPE NM, 1000 mL		

SD — Preservation Confirmed By

09/17/22 — Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder | Project Name: Ravensdale 2022 Q3 Sampling

COC No(s): NA | Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: 22D022 | 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) (recommended 2.0-6.0 °C for chemistry)

Time 9:18 | -1.1 -1.6

If cooler temperature is out of compliance fill out form 00070F | Temp Gun ID#: Thermo 3

Cooler Accepted by: Phillip Bates | Date: 9/15/22 | Time: 9:20

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:			
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		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: SD | Date: 09/15/22 | Time: 1620 | Labels checked by:

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-3A-0922

22I0226-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/13/2022 14:20
Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-01 A 01
Preparation Batch: BKI0590 — Sample Size: 25 mL
Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.973	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.137	ug/L	
Potassium	7440-09-7	100	1090	2000	91100	ug/L	D
Vanadium	7440-62-2	1	0.0556	0.200	0.507	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-3A-0922

22I0226-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/13/2022 14:20
Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-01 A 01
Preparation Batch: BKI0590 — Sample Size: 25 mL
Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	5.42	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-3A-0922

22I0226-01 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/13/2022 14:20

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-01

Preparation Batch: BKI0362 — Sample Size: 100 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	689	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-10A-0922

22I0226-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/13/2022 15:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-02 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.201	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.0820	ug/L	J
Potassium	7440-09-7	1	10.9	20.0	2350	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	1.56	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-10A-0922

22I0226-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/13/2022 15:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-02 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.54	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-10A-0922

22I0226-02 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/13/2022 15:15

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-02

Preparation Batch: BKI0362 — Sample Size: 200 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	195	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-16-0922

22I0226-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/13/2022 16:30

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 22:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-03 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	2.02	4.00	5.92	ug/L	D
Lead	7439-92-1	20	1.03	2.00	42.7	ug/L	D
Potassium	7440-09-7	100	1090	2000	756000	ug/L	D
Vanadium	7440-62-2	20	1.11	4.00	431	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-16-0922

22I0226-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/13/2022 16:30

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 22:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-03 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.746	4.00	103	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-16-0922

22I0226-03 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/13/2022 16:30

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-03

Preparation Batch: BKI0362 — Sample Size: 50 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	2160	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Still-Well-0922

22I0226-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 08:35

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 18:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-04 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	2.02	4.00	7.82	ug/L	D
Lead	7439-92-1	20	1.03	2.00	6.96	ug/L	D
Vanadium	7440-62-2	1	0.0556	0.200	3.47	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Still-Well-0922

22I0226-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 08:35

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 18:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-04 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.746	4.00	52.3	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Still-Well-0922

22I0226-04 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 08:35

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-04

Preparation Batch: BKI0362 — Sample Size: 10 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	100	100	2480	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Still-Well-0922

22I0226-04RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 08:35

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 19:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-04RE1 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	100	1090	2000	669000	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-15-0922

22I0226-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 10:40

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 18:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-05 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	2.02	4.00	ND	ug/L	U
Lead	7439-92-1	20	1.03	2.00	269	ug/L	D
Vanadium	7440-62-2	1	0.0556	0.200	0.624	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-15-0922

22I0226-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 10:40

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 18:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-05 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.746	4.00	3.68	ug/L	J, D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-15-0922

22I0226-05 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 10:40

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-05

Preparation Batch: BKI0362 — Sample Size: 10 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	100	100	5340	mg/L	

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Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-15-0922

22I0226-05RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 10:40

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 19:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-05RE1 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	100	1090	2000	1790000	ug/L	D

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Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-14-0922

22I0226-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 12:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 18:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-06 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	20	2.02	4.00	130	ug/L	D
Lead	7439-92-1	20	1.03	2.00	6.30	ug/L	D
Vanadium	7440-62-2	2	0.111	0.400	20.5	ug/L	D

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Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-14-0922

22I0226-06 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 12:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 18:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-06 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	0.746	4.00	235	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-14-0922

22I0226-06 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 12:15

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-06

Preparation Batch: BKI0362 — Sample Size: 10 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	100	100	6510	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-14-0922

22I0226-06RE1 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 12:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 19:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-06RE1 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	500	5450	10000	2570000	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Intercepter Trench-0922

22I0226-07 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 12:50
Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-07
Preparation Batch: BKI0362 — Sample Size: 100 mL
Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	330	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-17-0922

22I0226-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 13:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-08 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	ND	ug/L	U
Lead	7439-92-1	5	0.257	0.500	ND	ug/L	U
Potassium	7440-09-7	5	54.5	100	3570	ug/L	D
Vanadium	7440-62-2	5	0.278	1.00	2.99	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-17-0922

22I0226-08 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 13:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-08 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	7.67	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

P-17-0922

22I0226-08 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 13:45

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-08

Preparation Batch: BKI0362 — Sample Size: 100 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	489	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-4A-0922

22I0226-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 14:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-09 C 01
Preparation Batch: BKI0590 — Sample Size: 25 mL
Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Potassium	7440-09-7	1	10.9	20.0	1080	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	1.19	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-4A-0922

22I0226-09 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 14:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/26/2022 23:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-09 C 01
Preparation Batch: BKI0590 — Sample Size: 25 mL
Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	0.385	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-4A-0922

22I0226-09 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 14:35

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-09

Preparation Batch: BKI0362 — Sample Size: 100 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	330	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-9A-0922

22I0226-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 15:25
Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 00:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-10 A 01
Preparation Batch: BKI0590 — Sample Size: 25 mL
Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.154	ug/L	J
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Potassium	7440-09-7	1	10.9	20.0	2780	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	1.13	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-9A-0922

22I0226-10 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 15:25
Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 00:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-10 A 01
Preparation Batch: BKI0590 — Sample Size: 25 mL
Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.05	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-9A-0922

22I0226-10 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 15:25

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-10

Preparation Batch: BKI0362 — Sample Size: 100 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	441	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-7A-0922

22I0226-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 16:40
Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 00:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-11 A 01
Preparation Batch: BKI0590 — Sample Size: 25 mL
Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	1.63	ug/L	
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Potassium	7440-09-7	10	109	200	54000	ug/L	D
Vanadium	7440-62-2	1	0.0556	0.200	1.16	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-7A-0922

22I0226-11 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 16:40

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 00:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-11 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.49	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-7A-0922

22I0226-11 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 16:40

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-11

Preparation Batch: BKI0362 — Sample Size: 100 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	444	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-99-1-0922

22I0226-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/14/2022 16:50

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 00:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-12 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Potassium	7440-09-7	1	10.9	20.0	48.7	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-99-1-0922

22I0226-12 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/14/2022 16:50

Instrument: ICPMS1 Analyst: MCB — Analyzed: 09/27/2022 00:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0226-12 A 01

Preparation Batch: BKI0590 — Sample Size: 25 mL

Prepared: 09/26/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	ND	ug/L	U

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

MW-99-1-0922

22I0226-12 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/14/2022 16:50

Instrument: BAL2 Analyst: KM — Analyzed: 09/16/2022 12:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0226-12

Preparation Batch: BKI0362 — Sample Size: 200 mL

Prepared: 09/16/2022 — Final Volume: 200 mL

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

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKI0590 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0590-BLK1)					Prepared: 26-Sep-2022 Analyzed: 26-Sep-2022 17:32							
Antimony	121	ND	0.101	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Potassium	39	ND	10.9	20.0	ug/L							U
Vanadium	51a	ND	0.0556	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
LCS (BKI0590-BS1)					Prepared: 26-Sep-2022 Analyzed: 26-Sep-2022 17:37							
Antimony	121	25.3	0.101	0.200	ug/L	25.0		101	80-120			
Lead	208	24.3	0.0513	0.100	ug/L	25.0		97.2	80-120			
Potassium	39	5080	10.9	20.0	ug/L	5000		102	80-120			
Vanadium	51a	24.6	0.0556	0.200	ug/L	25.0		98.4	80-120			
Arsenic	75a	25.2	0.0373	0.200	ug/L	25.0		101	80-120			
Duplicate (BKI0590-DUP1)			**Source: 22I0226-09**		Prepared: 26-Sep-2022 Analyzed: 26-Sep-2022 23:15							
Antimony	121	ND	0.101	0.200	ug/L		ND					U
Lead	208	ND	0.0513	0.100	ug/L		ND					U
Potassium	39	1110	10.9	20.0	ug/L		1080			2.41	20	
Vanadium	51a	1.23	0.0556	0.200	ug/L		1.19			2.90	20	
Arsenic	75a	0.336	0.0373	0.200	ug/L		0.385			13.60	20	
Matrix Spike (BKI0590-MS1)			**Source: 22I0226-09**		Prepared: 26-Sep-2022 Analyzed: 26-Sep-2022 23:20							
Antimony	121	24.9	0.101	0.200	ug/L	25.0	ND	99.6	75-125			
Lead	208	22.5	0.0513	0.100	ug/L	25.0	ND	89.9	75-125			
Potassium	39	5840	10.9	20.0	ug/L	5000	1080	95.2	75-125			
Vanadium	51a	23.7	0.0556	0.200	ug/L	25.0	1.19	90.0	75-125			
Arsenic	75a	25.3	0.0373	0.200	ug/L	25.0	0.385	99.6	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKI0590-MSD1)			**Source: 22I0226-09**		Prepared: 26-Sep-2022 Analyzed: 26-Sep-2022 23:27							
Antimony	121	26.1	0.101	0.200	ug/L	25.0	ND	104	75-125	4.70	20	
Lead	208	24.8	0.0513	0.100	ug/L	25.0	ND	99.1	75-125	9.68	20	
Potassium	39	5980	10.9	20.0	ug/L	5000	1080	98.1	75-125	2.39	20	
Vanadium	51a	24.3	0.0556	0.200	ug/L	25.0	1.19	92.5	75-125	2.70	20	
Arsenic	75a	25.1	0.0373	0.200	ug/L	25.0	0.385	99.0	75-125	0.60	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BKI0362 - SM 2540 C-97

Instrument: BAL2 Analyst: KM

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0362-BLK1)				Prepared: 16-Sep-2022 Analyzed: 16-Sep-2022 12:27							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BKI0362-BS1)				Prepared: 16-Sep-2022 Analyzed: 16-Sep-2022 12:27							
Dissolved Solids	481	10	10	mg/L	501		96.1	90-110			
Duplicate (BKI0362-DUP2)		**Source: 22I0226-09**		Prepared: 16-Sep-2022 Analyzed: 16-Sep-2022 12:27							
Dissolved Solids	325	10	10	mg/L		330			1.53	20	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	12-Oct-2022 09:46

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Potassium-39	NELAP,DoD-ELAP,WADOE
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51b	NELAP,DoD-ELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
SM 2540 C-97 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023

Golder Associates	Project:	Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number:	Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager:	Gary Zimmerman	12-Oct-2022 09:46

Notes and Definitions

D	The reported value is from a dilution
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.

Analytical Resources, LLC
Analytical Chemists and Consultants

13 October 2022

Gary Zimmerman
Golder Associates
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333

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)	Associated SDG ID(s)
22I0402	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.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 22F0402	Turn-around Requested: Standard	Date: 9/23/22
ARI Client Company: Golder	Phone: (425) 883-0777	Page: 1 of 1
Client Contact: Gary Zimmerman		No. of Coolers: Cooler Temps:
Client Project Name: Ravensdale 2022 Q3 Sampling		
Client Project #: 152030402.004	Samplers: Sean Johnson and Ryan Kober	

Analytical Resources, Incorporated
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: Total Metals: As, Pb, Sb, V, K	Analysis Requested: TDS	Notes/Comments
MW-5A-0922	9/23/22	9:01	GW	2	X	X	
MW-6A-0922		~~10:33~~ 10:33		2	X	X	
MW-2A-0922		11:56		2	X	X	
MW-45A-0922		11:56		2	X	X	
MW-1A-0922		13:23		2	X	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Analyze in accordance with MSA between Golder and ARI.	Printed Name: Sean Johnson	Printed Name: Phillip Bales	Printed Name:	Printed Name:
Ecology EIM EDD.	Company: Golder	Company: AR	Company:	Company:
	Date & Time: 9/23/22 15:50	Date & Time: 9/23/22 15:51	Date & Time:	Date & Time:

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5A-0922	22I0402-01	Water	23-Sep-2022 09:01	23-Sep-2022 15:53
MW-6A-0922	22I0402-02	Water	23-Sep-2022 10:33	23-Sep-2022 15:53
MW-2A-0922	22I0402-03	Water	23-Sep-2022 11:56	23-Sep-2022 15:53
MW-45A-0922	22I0402-04	Water	23-Sep-2022 11:56	23-Sep-2022 15:53
MW-1A-0922	22I0402-05	Water	23-Sep-2022 13:23	23-Sep-2022 15:53

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

Work Order Case Narrative

Total Metals - EPA Method 200.8 and 6010D

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

Initial and continuing calibrations were within method requirements.

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

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

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.

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 9/24/2022 11:28:49AM

WORK ORDER

22I0402

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

Client: Golder Associates **Project Manager:** Kelly Bottem

Project: Ravensdale **Project Number:** Ravensdale

Preservation Confirmation

Container ID	Container Type	pH	
22I0402-01 A	HDPE NM, 1000 mL		
22I0402-01 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
22I0402-02 A	HDPE NM, 1000 mL		
22I0402-02 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
22I0402-03 A	HDPE NM, 1000 mL		
22I0402-03 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
22I0402-04 A	HDPE NM, 1000 mL		
22I0402-04 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
22I0402-05 A	HDPE NM, 1000 mL		
22I0402-05 B	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass

IB — Preservation Confirmed By

9/24/22 — Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Golder

Project Name: Ravensdale

COC No(s): _____ (NA)

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

Assigned ARI Job No: 22IQ402

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) (recommended 2.0-6.0 °C for chemistry)

Time 15:53 — 3.8

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: K00 817

Cooler Accepted by: PB Date: 9/23/22 Time: 15:53

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?			(NO)
What kind of packing material was used? ... Bubble Wrap (Wet Ice) (Gel Packs) (Baggies) Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	(Grouped)	Not
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(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: JSw Date: 9/24/22 Time: 1123 Labels checked by: JSw

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-5A-0922

22I0402-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2022 09:01
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 04:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-01 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	4.57	ug/L	
Lead	7439-92-1	2	0.103	0.200	0.156	ug/L	J, D
Vanadium	7440-62-2	1	0.0556	0.200	1.58	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-5A-0922

22I0402-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2022 09:01
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 19:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-01 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	3.21	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-5A-0922

22I0402-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/23/2022 09:01
Instrument: ICP2 Analyst: SKD — Analyzed: 10/11/2022 17:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 22I0402-01 B 02
Preparation Batch: BKJ0069 — Sample Size: 25 mL
Prepared: 10/04/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	455	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-5A-0922

22I0402-01 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/23/2022 09:01

Instrument: BAL2 Analyst: UW — Analyzed: 09/29/2022 10:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0402-01

Preparation Batch: BKI0676 — Sample Size: 50 mL

Prepared: 09/29/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	1720	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-6A-0922

22I0402-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2022 10:33
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 19:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-02 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	2	0.202	0.400	7.64	ug/L	D
Lead	7439-92-1	2	0.103	0.200	ND	ug/L	U
Vanadium	7440-62-2	1	0.0556	0.200	2.52	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-6A-0922

22I0402-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2022 10:33
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 19:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-02 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.0746	0.400	4.97	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-6A-0922

22I0402-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/23/2022 10:33
Instrument: ICP2 Analyst: SKD — Analyzed: 10/11/2022 17:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 22I0402-02 B 02
Preparation Batch: BKJ0069 — Sample Size: 25 mL
Prepared: 10/04/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	2	0.214	1.00	646	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-6A-0922

22I0402-02 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/23/2022 10:33

Instrument: BAL2 Analyst: UW — Analyzed: 09/29/2022 10:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0402-02

Preparation Batch: BKI0676 — Sample Size: 50 mL

Prepared: 09/29/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	2150	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-2A-0922

22I0402-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2022 11:56
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 04:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-03 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.923	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.130	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	1.18	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-2A-0922

22I0402-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2022 11:56
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 04:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-03 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.17	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-2A-0922

22I0402-03 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/23/2022 11:56
Instrument: ICP2 Analyst: SKD — Analyzed: 10/10/2022 19:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 22I0402-03 B 02
Preparation Batch: BKJ0069 — Sample Size: 25 mL
Prepared: 10/04/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	23.3	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-2A-0922

22I0402-03 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/23/2022 11:56

Instrument: BAL2 Analyst: UW — Analyzed: 09/29/2022 10:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0402-03

Preparation Batch: BKI0676 — Sample Size: 100 mL

Prepared: 09/29/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	351	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-45A-0922

22I0402-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2022 11:56

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 04:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-04 B 01

Preparation Batch: BKJ0086 — Sample Size: 25 mL

Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.921	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.156	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	1.24	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-45A-0922

22I0402-04 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2022 11:56

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 04:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-04 B 01

Preparation Batch: BKJ0086 — Sample Size: 25 mL

Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.24	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-45A-0922

22I0402-04 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/23/2022 11:56

Instrument: ICP2 Analyst: SKD — Analyzed: 10/10/2022 19:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 22I0402-04 B 02

Preparation Batch: BKJ0069 — Sample Size: 25 mL

Prepared: 10/04/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	22.7	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-45A-0922

22I0402-04 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/23/2022 11:56

Instrument: BAL2 Analyst: UW — Analyzed: 09/29/2022 10:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0402-04

Preparation Batch: BKI0676 — Sample Size: 100 mL

Prepared: 09/29/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	10	10	354	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-1A-0922

22I0402-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/23/2022 13:23
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 04:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-05 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.830	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.137	ug/L	
Vanadium	7440-62-2	1	0.0556	0.200	0.786	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-1A-0922

22I0402-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/23/2022 13:23
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 04:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0402-05 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.20	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-1A-0922

22I0402-05 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/23/2022 13:23
Instrument: ICP2 Analyst: SKD — Analyzed: 10/10/2022 19:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 22I0402-05 B 02
Preparation Batch: BKJ0069 — Sample Size: 25 mL
Prepared: 10/04/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	1	0.107	0.500	14.1	mg/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

MW-1A-0922

22I0402-05 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/23/2022 13:23
Instrument: BAL2 Analyst: UW — Analyzed: 09/29/2022 10:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0402-05
Preparation Batch: BKI0676 — Sample Size: 200 mL
Prepared: 09/29/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	5	5	222	mg/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0069 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0069-BLK1)				Prepared: 04-Oct-2022 Analyzed: 06-Oct-2022 19:07							
Potassium	ND	0.107	0.500	mg/L							U
LCS (BKJ0069-BS1)				Prepared: 04-Oct-2022 Analyzed: 06-Oct-2022 19:09							
Potassium	10.4	0.107	0.500	mg/L	10.0		104	80-120			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0086 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0086-BLK1)					Prepared: 05-Oct-2022 Analyzed: 05-Oct-2022 22:07							
Antimony	121	ND	0.101	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Blank (BKJ0086-BLK2)					Prepared: 05-Oct-2022 Analyzed: 06-Oct-2022 17:04							
Vanadium	51a	ND	0.0556	0.200	ug/L							U
LCS (BKJ0086-BS1)					Prepared: 05-Oct-2022 Analyzed: 05-Oct-2022 22:12							
Antimony	121	23.5	0.101	0.200	ug/L	25.0		94.1	80-120			
Lead	208	24.1	0.0513	0.100	ug/L	25.0		96.2	80-120			
Arsenic	75a	24.1	0.0373	0.200	ug/L	25.0		96.2	80-120			
LCS (BKJ0086-BS2)					Prepared: 05-Oct-2022 Analyzed: 06-Oct-2022 17:09							
Vanadium	51a	23.2	0.0556	0.200	ug/L	25.0		93.0	80-120			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BKI0676 - SM 2540 C-97

Instrument: BAL2 Analyst: UW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0676-BLK1)				Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 10:31							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BKI0676-BS1)				Prepared: 29-Sep-2022 Analyzed: 29-Sep-2022 10:31							
Dissolved Solids	475	5	5	mg/L	501		94.9	90-110			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	13-Oct-2022 09:48

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51b	NELAP,DoD-ELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010D in Water	
Potassium	WADOE,NELAP,DoD-ELAP
SM 2540 C-97 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023

Golder Associates	Project:	Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number:	Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager:	Gary Zimmerman	13-Oct-2022 09:48

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
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.

Analytical Resources, LLC
Analytical Chemists and Consultants

08 November 2022

Gary Zimmerman
Golder Associates
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333

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)	Associated SDG ID(s)
22I0483	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.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 221083	Turn-around Requested: STANDARD	Page: 1 of 1	
ARI Client Company: Golder/WSP	Phone: (425) 883-0777	Date: 9/28/22	Ice Present? Yes
Client Contact: GARY ZIMMERMAN		No. of Coolers: 1	Cooler Temps: 1.6
Client Project Name: RAVENSDALE 2022 Q3 SAMPLING			
Client Project #: 152030402.004	Samplers: SJ + AP		

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: Total Metals (As, Pb, Sb, V, Ni)	Analysis Requested: TDS	Notes/Comments
INFILTRATION POND-0922	9/28/22	16:40	SW	2	X	X	
MW-35A-0922	9/28/22	16:40	SW	2	X	X	

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
ANALYZE IN ACCORDANCE WITH MSA BETWEEN GOLDER AND ARI.	(Signature) Sean Johnson	(Signature)	(Signature)	(Signature)
	Printed Name: SEAN JOHNSON	Printed Name: Jacob Leffler	Printed Name:	Printed Name:
ECOLOGY EIM EDD	Company: GOLDER	Company: ARI	Company:	Company:
	Date & Time: 9/29/22 8:47	Date & Time: 9/29/22 @847	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, not withstanding 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.

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Infiltration Pond-0922	22I0483-01	Water	28-Sep-2022 16:40	29-Sep-2022 08:47
MW-35A-0922	22I0483-02	Water	28-Sep-2022 16:40	29-Sep-2022 08:47

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Work Order Case Narrative

Total Metals - EPA Method 200.8 and 6010D

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

Initial and continuing calibrations were within method requirements.

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

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

Wet Chemistry

The sample(s) were prepared and analyzed outside of the recommended holding times due to an analyst error. The associated samples have been flagged with a "H" qualifer.

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.

Analytical Resources, LLC
Analytical Chemists and Consultants

Printed: 9/29/2022 4:31:39PM

WORK ORDER

22I0483

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

Client: Golder Associates | **Project Manager:** Kelly Bottem

Project: Ravensdale | **Project Number:** Ravensdale

Preservation Confirmation

Container ID	Container Type	pH
22I0483-01 A	HDPE NM, 1000 mL	
22I0483-01 B	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail
22I0483-02 A	HDPE NM, 1000 mL	
22I0483-02 B	HDPE NM, 500 mL, 1:1 HNO3	>2 Fail

Preservation Confirmed By

Date 9/29/22

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Calder

Project Name: Ravensdale 2022

COC No(s): (NA)

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

Assigned ARI Job No: 2210483

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) (recommended 2.0-6.0 °C for chemistry)

Time 0847 1.6

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: IR9708

Cooler Accepted by: JB Date: 09/29/22 Time: 0847

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?			(NO)
What kind of packing material was used?	Bubble Wrap ~~Wet Ice~~ Gel Packs ~~Baggies~~ Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
How were bottles sealed in plastic bags?	Individually	(Grouped)	Not
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(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: LB Date: 9/29/22 Time: 1627 Labels checked by:

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Infiltration Pond-0922

22I0483-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/28/2022 16:40
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 18:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0483-01 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	24.0	ug/L	D
Lead	7439-92-1	5	0.257	0.500	1.11	ug/L	D
Vanadium	7440-62-2	1	0.0556	0.200	0.516	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Infiltration Pond-0922

22I0483-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/28/2022 16:40
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 18:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0483-01 B 01
Preparation Batch: BKJ0086 — Sample Size: 25 mL
Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	5.88	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Infiltration Pond-0922

22I0483-01 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/28/2022 16:40
Instrument: ICP2 Analyst: SKD — Analyzed: 10/12/2022 19:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 22I0483-01 B 02
Preparation Batch: BKJ0158 — Sample Size: 25 mL
Prepared: 10/07/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	1040	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Infiltration Pond-0922

22I0483-01 (Water)

Wet Chemistry

Method: SM 2540 C-97
Instrument: BAL2 Analyst: DAG

Sampled: 09/28/2022 16:40
Analyzed: 10/10/2022 15:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BKJ0231
Prepared: 10/10/2022
Sample Size: 50 mL
Final Volume: 200 mL

Extract ID: 22I0483-01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	20	20	2730	mg/L	H

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

MW-35A-0922

22I0483-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 09/28/2022 16:40

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 18:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0483-02 B 01

Preparation Batch: BKJ0086 — Sample Size: 25 mL

Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	5	0.505	1.00	24.4	ug/L	D
Lead	7439-92-1	5	0.257	0.500	0.995	ug/L	D
Vanadium	7440-62-2	1	0.0556	0.200	0.528	ug/L	

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

MW-35A-0922

22I0483-02 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/28/2022 16:40

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/07/2022 18:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22I0483-02 B 01

Preparation Batch: BKJ0086 — Sample Size: 25 mL

Prepared: 10/05/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	0.187	1.00	5.77	ug/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

MW-35A-0922

22I0483-02 (Water)

Metals and Metallic Compounds

Method: EPA 6010D — Sampled: 09/28/2022 16:40

Instrument: ICP2 Analyst: SKD — Analyzed: 10/12/2022 19:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWC EPA 3010A — Extract ID: 22I0483-02 B 02

Preparation Batch: BKJ0158 — Sample Size: 25 mL

Prepared: 10/07/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Potassium	7440-09-7	5	0.534	2.50	1040	mg/L	D

Analytical Resources, LLC
Analytical Chemists and Consultants

Analytical Report

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

MW-35A-0922

22I0483-02 (Water)

Wet Chemistry

Method: SM 2540 C-97 — Sampled: 09/28/2022 16:40

Instrument: BAL2 Analyst: DAG — Analyzed: 10/10/2022 15:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 22I0483-02

Preparation Batch: BKJ0231 — Sample Size: 20 mL

Prepared: 10/10/2022 — Final Volume: 200 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dissolved Solids		1	50	50	2700	mg/L	H

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0086 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0086-BLK1)					Prepared: 05-Oct-2022 Analyzed: 05-Oct-2022 22:07							
Antimony	121	ND	0.101	0.200	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Blank (BKJ0086-BLK2)					Prepared: 05-Oct-2022 Analyzed: 06-Oct-2022 17:04							
Vanadium	51a	ND	0.0556	0.200	ug/L							U
LCS (BKJ0086-BS1)					Prepared: 05-Oct-2022 Analyzed: 05-Oct-2022 22:12							
Antimony	121	23.5	0.101	0.200	ug/L	25.0		94.1	80-120			
Lead	208	24.1	0.0513	0.100	ug/L	25.0		96.2	80-120			
Arsenic	75a	24.1	0.0373	0.200	ug/L	25.0		96.2	80-120			
LCS (BKJ0086-BS2)					Prepared: 05-Oct-2022 Analyzed: 06-Oct-2022 17:09							
Vanadium	51a	23.2	0.0556	0.200	ug/L	25.0		93.0	80-120			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKJ0158 - EPA 6010D

Instrument: ICP2 Analyst: SKD

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0158-BLK1)				Prepared: 07-Oct-2022 Analyzed: 12-Oct-2022 15:16							
Potassium	0.129	0.107	0.500	mg/L							J
LCS (BKJ0158-BS1)				Prepared: 07-Oct-2022 Analyzed: 12-Oct-2022 15:19							
Potassium	10.5	0.107	0.500	mg/L	10.0		105	80-120			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Analysis by: Analytical Resources, LLC

Wet Chemistry - Quality Control

Batch BKJ0231 - SM 2540 C-97

Instrument: BAL2 Analyst: DAG

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKJ0231-BLK1)				Prepared: 10-Oct-2022 Analyzed: 10-Oct-2022 15:16							
Dissolved Solids	ND	5	5	mg/L							U
LCS (BKJ0231-BS1)				Prepared: 10-Oct-2022 Analyzed: 10-Oct-2022 15:16							
Dissolved Solids	470	10	10	mg/L	500		94.0	90-110			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	08-Nov-2022 15:18

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51b	NELAP,DoD-ELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
EPA 6010D in Water	
Potassium	WADOE,NELAP,DoD-ELAP
SM 2540 C-97 in Water	
Dissolved Solids	DoD-ELAP,WADOE,WA-DW,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023

Golder Associates	Project:	Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number:	Ravensdale	**Reported:**
Redmond WA, 98052-3333	Project Manager:	Gary Zimmerman	08-Nov-2022 15:18

Notes and Definitions

D	The reported value is from a dilution
H	Hold time violation - Hold time was exceeded.
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.

Analytical Resources, LLC
Analytical Chemists and Consultants

20 November 2022

Gary Zimmerman
Golder Associates
18300 NE Union Hill Road Suite 200
Redmond, WA 98052-3333

RE: Ravensdale (Gl1520304.003)

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)	Associated SDG ID(s)
22J0454	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.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 22J0454	Turn-around Requested: STANDARD
ARI Client Company: GOLDER	Phone:
Client Contact: GARY ZIMMERMAN	
Client Project Name: RAVENSDALE	
Client Project #: GLI520304.003	Samplers:

Page: 1 of 1	
Date:	Ice Present?
No. of Coolers:	Cooler Temps:

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

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Total Metals (As, Pb, Sb, V)	Analysis Requested: Dissolved Metals (As, Pb, Sb, V)	Notes/Comments
TANK - INFLUENT	10/26/22	1630	W	2	X	X	ANALYZE IN ACCORDANCE W/ ~~ACCORDANCE~~ SOP MSA BETWEEN GOLDER AND ARI.
TANK - EFFLUENT	10/26/22	1640	W	2	X	X	DISSOLVED METALS UNFILTERED AND UN PRESERVED
AS - EFFLUENT	10/26/22	1722	W	2	X	X	↓

Comments/Special Instructions: PLEASE FILTER AND PRESERVE DISSOLVED METALS.	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: SEAN JOHNSON	Printed Name:	Printed Name:	Printed Name:
	Company: GOLDER	Company: ARI LLC	Company:	Company:
	Date & Time: 10/27/22 8:30	Date & Time: 10/27/22 8:31	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, not withstanding 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.

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Tank-Influent	22J0454-01	Water	26-Oct-2022 16:30	27-Oct-2022 08:31
Tank-Influent	22J0454-02	Water	26-Oct-2022 16:30	27-Oct-2022 08:31
Tank-Effluent	22J0454-03	Water	26-Oct-2022 16:40	27-Oct-2022 08:31
Tank-Effluent	22J0454-04	Water	26-Oct-2022 16:30	27-Oct-2022 08:31
As-Effluent	22J0454-05	Water	26-Oct-2022 17:22	27-Oct-2022 08:31
As-Effluent	22J0454-06	Water	26-Oct-2022 17:22	27-Oct-2022 08:31

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Work Order Case Narrative

Total and Dissolved Metals - EPA Method 200.8

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

Initial and continuing calibrations were within method requirements.

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

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

WORK ORDER

22J0454

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

Client: Golder Associates | Project Manager: Kelly Bottem

Project: Ravensdale | Project Number: GI1520304.003

Preservation Confirmation

Container ID	Container Type	pH	
22J0454-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
22J0454-02 A	HDPE NM, 1000 mL	>2	Fail
22J0454-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
22J0454-04 A	HDPE NM, 1000 mL	>2	Fail
22J0454-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
22J0454-06 A	HDPE NM, 1000 mL	>2	fail

PIB
Preservation Confirmed By

10/26/22
Date

Reviewed By

Date

Analytical Resources, LLC
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Cooper

COC No(s): _____ NA

Assigned ARI Job No: 22J0454

Project Name: Ravensdale

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

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) (recommended 2.0-6.0 °C for chemistry)

Time 8:31 -2.1

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90258117

Cooler Accepted by: Jason Swim Date: 10/27/22 Time: 8:31

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		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: PJB Date: 10/27/22 Time: 9:17 Labels checked by: AP

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

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

Additional Notes, Discrepancies, & Resolutions:

By: Date:

WORK ORDER

22J0454

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

Client: Golder Associates | Project Manager: Kelly Bottem

Project: Ravensdale | Project Number: GI1520304.003

Preservation Confirmation

Container ID	Container Type	pH		
22J0454-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass	
22J0454-02 A	HDPE NM, 1000 mL	>2	Fail	(1)
22J0454-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass	
22J0454-04 A	HDPE NM, 1000 mL	>2	Fail	(1)
22J0454-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass	
22J0454-06 A	HDPE NM, 1000 mL	>2	Fail	(1)

PIB
Preservation Confirmed By

10/26/22
Date

(1) Filtered at 0.45µM and preserved to pH<2 with 0.75mL conc HNO_3 (LL7993)
AP 10/28/22

Reviewed By

Date

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Influent

22J0454-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/26/2022 16:30

Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/16/2022 00:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-01 A 01

Preparation Batch: BKK0325 — Sample Size: 25 mL

Prepared: 11/10/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	36.1	ug/L	D
Lead	7439-92-1	10	0.513	1.00	85.6	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	10.0	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Influent

22J0454-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/26/2022 16:30
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/16/2022 00:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-01 A 01
Preparation Batch: BKK0325 — Sample Size: 25 mL
Prepared: 11/10/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	62.3	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Influent

22J0454-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/26/2022 16:30
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/08/2022 00:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-02 A 03
Preparation Batch: BKK0105 — Sample Size: 25 mL — Filtration Batch: BKJ0794
Prepared: 11/03/2022 — Final Volume: 25 mL — Filtration Date: 10/28/2022 12:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	20	2.02	4.00	33.5	ug/L	D
Lead, Dissolved	7439-92-1	20	1.36	2.00	57.3	ug/L	D
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	8.06	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Influent

22J0454-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/26/2022 16:30
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/08/2022 00:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-02 A 03
Preparation Batch: BKK0105 — Sample Size: 25 mL — Filtration Batch: BKJ0794
Prepared: 11/03/2022 — Final Volume: 25 mL — Filtration Date: 10/28/2022 12:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	20	0.440	4.00	52.9	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Effluent

22J0454-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/26/2022 16:40
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/16/2022 00:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-03 A 01
Preparation Batch: BKK0325 — Sample Size: 25 mL
Prepared: 11/10/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	33.5	ug/L	D
Lead	7439-92-1	10	0.513	1.00	38.1	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	4.25	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Effluent

22J0454-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/26/2022 16:40
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/16/2022 00:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-03 A 01
Preparation Batch: BKK0325 — Sample Size: 25 mL
Prepared: 11/10/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	15.4	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Effluent

22J0454-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/26/2022 16:30
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/08/2022 00:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-04 A 03
Preparation Batch: BKK0105 — Sample Size: 25 mL — Filtration Batch: BKJ0794
Prepared: 11/03/2022 — Final Volume: 25 mL — Filtration Date: 10/28/2022 12:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	20	2.02	4.00	30.0	ug/L	D
Lead, Dissolved	7439-92-1	20	1.36	2.00	23.1	ug/L	D
Vanadium, Dissolved	7440-62-2	1	0.0556	0.200	2.57	ug/L	

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Tank-Effluent

22J0454-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/26/2022 16:30
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/08/2022 00:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-04 A 03
Preparation Batch: BKK0105 — Sample Size: 25 mL — Filtration Batch: BKJ0794
Prepared: 11/03/2022 — Final Volume: 25 mL — Filtration Date: 10/28/2022 12:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	20	0.440	4.00	13.5	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

As-Effluent

22J0454-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 — Sampled: 10/26/2022 17:22
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/16/2022 00:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-05 A 01
Preparation Batch: BKK0325 — Sample Size: 25 mL
Prepared: 11/10/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	10	1.01	2.00	30.6	ug/L	D
Lead	7439-92-1	10	0.513	1.00	50.5	ug/L	D
Vanadium	7440-62-2	10	0.556	2.00	5.05	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

As-Effluent

22J0454-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 10/26/2022 17:22
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/16/2022 00:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-05 A 01
Preparation Batch: BKK0325 — Sample Size: 25 mL
Prepared: 11/10/2022 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	0.373	2.00	20.8	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

As-Effluent

22J0454-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 — Sampled: 10/26/2022 17:22
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 05:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-06 A 03
Preparation Batch: BKK0105 — Sample Size: 25 mL — Filtration Batch: BKJ0794
Prepared: 11/03/2022 — Final Volume: 25 mL — Filtration Date: 10/28/2022 12:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	2	0.202	0.400	28.5	ug/L	D
Lead, Dissolved	7439-92-1	20	1.36	2.00	27.2	ug/L	D
Vanadium, Dissolved	7440-62-2	2	0.111	0.400	3.39	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

As-Effluent

22J0454-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 10/26/2022 17:22
Instrument: ICPMS1 Analyst: MCB — Analyzed: 11/05/2022 05:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M — Extract ID: 22J0454-06 A 03
Preparation Batch: BKK0105 — Sample Size: 25 mL — Filtration Batch: BKJ0794
Prepared: 11/03/2022 — Final Volume: 25 mL — Filtration Date: 10/28/2022 12:17

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	20.0	ug/L	D

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKK0325 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0325-BLK1)					Prepared: 10-Nov-2022 Analyzed: 10-Nov-2022 17:36							
Lead	208	ND	0.0513	0.100	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Blank (BKK0325-BLK2)					Prepared: 10-Nov-2022 Analyzed: 11-Nov-2022 20:39							
Antimony	121	ND	0.101	0.200	ug/L							U
Blank (BKK0325-BLK3)					Prepared: 10-Nov-2022 Analyzed: 15-Nov-2022 17:10							
Vanadium	51a	0.0690	0.0556	0.200	ug/L							J
LCS (BKK0325-BS1)					Prepared: 10-Nov-2022 Analyzed: 10-Nov-2022 17:41							
Lead	208	23.2	0.0513	0.100	ug/L	25.0		92.8	80-120			
Arsenic	75a	25.2	0.0373	0.200	ug/L	25.0		101	80-120			
LCS (BKK0325-BS2)					Prepared: 10-Nov-2022 Analyzed: 11-Nov-2022 20:44							
Antimony	121	25.6	0.101	0.200	ug/L	25.0		103	80-120			
LCS (BKK0325-BS3)					Prepared: 10-Nov-2022 Analyzed: 15-Nov-2022 17:16							
Vanadium	51a	24.6	0.0556	0.200	ug/L	25.0		98.4	80-120			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKK0105 - EPA 200.8

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0105-BLK1)					Prepared: 03-Nov-2022 Analyzed: 04-Nov-2022 16:47							
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Vanadium, Dissolved	51a	ND	0.0556	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
LCS (BKK0105-BS1)					Prepared: 03-Nov-2022 Analyzed: 04-Nov-2022 16:52							
Antimony, Dissolved	121	24.2	0.101	0.200	ug/L	25.0		96.8	80-120			
Lead, Dissolved	208	26.7	0.0513	0.100	ug/L	25.0		107	80-120			
Vanadium, Dissolved	51a	24.0	0.0556	0.200	ug/L	25.0		96.2	80-120			
Arsenic, Dissolved	75a	24.5	0.0373	0.200	ug/L	25.0		98.1	80-120			

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 in Water	
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	NELAP,DoD-ELAP,WADOE
Vanadium-51b	NELAP,DoD-ELAP,WADOE
Lead-208	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-121	NELAP,WADOE,WA-DW,DoD-ELAP
Antimony-123	NELAP,WADOE,WA-DW,DoD-ELAP
Vanadium-51a	DoD-ELAP,NELAP,WADOE
Vanadium-51b	DoD-ELAP,NELAP,WADOE
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023

Golder Associates	Project: Ravensdale	
18300 NE Union Hill Road Suite 200	Project Number: Gl1520304.003	**Reported:**
Redmond WA, 98052-3333	Project Manager: Gary Zimmerman	20-Nov-2022 10:57

Notes and Definitions

D	The reported value is from a dilution
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 Infiltration Ponds / MW-35A - 0922

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, Grab

Date September 28, 2022 **Time** 16:40

Media Surface Water **Station** Infiltration Ponds / MW-35A

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description clear, no odor

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

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

SAMPLE INTEGRITY DATA SHEET

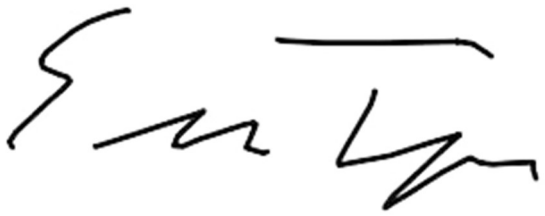
Well ID Infiltration Ponds / MW-35A
Date 09/28/2022
Time Begin Purge 16:40
Time Collect Sample 16:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	16:40	8.75	3,251	16.2	7.06	-49.1	3.18

Comments:

Flow Rate: _____ mL/min

Sample taken from the NE end of the infiltration pond.



Sampler _____

Date September 28, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Interceptor Trench - 0922

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 September 23, 2022 **Time** 14:46

Media Surface Water **Station** Interceptor Trench

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description Parameter check - no sample taken

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID Interceptor Trench
Date 09/23/2022
Time Begin Purge _____
Time Collect Sample 14:46

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	14:46	7.54	400.8	15.8	8.14	119.3	4.77

Comments:

Flow Rate: 400 mL/min

Sampler

_____

_____ **Date** September 23, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-2LDA - 0922

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 September 23, 2022 **Time** 14:38

Media Groundwater **Station** MWB-2LDA

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 37.27 ft BTOC (September 23, 2022 2:12 PM); Well total depth at 125' BGS

Screen Interval: 110'- 125' BGS

Pump Intake: ~ 120' BGS

Sample Description Parameters only - no sample collected

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

Aliquot Amount	Analysis	Container	Preservation
-1000 mL			

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-2LDA
Date 09/23/2022
Time Begin Purge 14:13
Time Collect Sample 14:38

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
35.15	14:20	8.03	245.9	12.5	9.85	102.5	1.11
35.09	14:25	7.57	245.5	12.5	5.7	4.6	0.72
35.02	14:30	7.51	244.8	12.4	4.39	-15.2	0.44
35.7	14:35	7.48	244	12.2	3.88	-17.9	0.61
35.64	14:38	7.47	243.1	12.1	3.88	-17.8	0.54

Comments:

Flow Rate: 300 mL/min

Sampler

Date September 23, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-1A - 0922

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 September 23, 2022 **Time** 13:23

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 37.42 ft BTOC (September 23, 2022 12:30 PM); Well total depth at 44' BGS

Screen Interval: 28' - 43' BGS

Pump Intake: ~ 39' BGS

Sample Description Clear, no odor

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID MW-1A
Date 09/23/2022
Time Begin Purge 12:34
Time Collect Sample 13:23

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
37.47	12:40	7.48	518	11.3	6.5	42.5	2.42
37.45	12:44	7.06	551	11.4	4.48	19.8	3.76
37.43	12:47	6.97	549	11.4	3.9	23	4.94
37.43	12:50	6.91	544	11.5	3.52	28.7	5.77
37.43	12:53	6.86	528	11.4	3.57	50.6	7.54
37.42	12:56	6.82	467.3	11.6	4.21	74.4	7.00
37.42	12:59	6.73	428	12.1	4.86	85	6.62
37.42	13:02	6.77	408.8	11.9	5.26	92.5	6.1
37.42	13:05	6.77	382.2	11.8	5.79	102.7	5.45
37.43	13:08	6.71	355.5	11.8	6.13	112.3	4.78
37.41	13:11	6.7	341.8	12	6.37	117.9	3.73
37.41	13:14	6.72	325.5	12.3	6.59	122	3.23
37.41	13:17	6.76	317.4	12.9	6.69	123.4	3.61
37.41	13:20	6.86	314.8	13.2	6.85	125.4	2.62
37.41	13:23	6.91	312.5	13.2	6.93	128.4	2.84

SAMPLE INTEGRITY DATA SHEET

Comments:

Flow Rate: 100 mL/min

Sampler

Date September 23, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-2A / MW-45A - 0922

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 September 23, 2022 **Time** 11:56

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 31.21 ft BTOC (September 23, 2022 11:31 AM); Well total depth at 40' BGS

Screen Interval: 24'- 40' BGS

Pump Intake: ~ 30' BGS

Sample Description Clear, no odor

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

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

SAMPLE INTEGRITY DATA SHEET

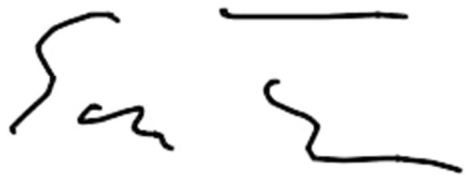
Well ID MW-2A / MW-45A
Date 09/23/2022
Time Begin Purge 11:33
Time Collect Sample 11:56

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
31.24	10:40	7.26	480.1	11.6	8.53	176.1	3.72
31.22	11:45	7	476.6	11.5	8.49	182.3	3.70
31.23	11:50	6.9	474.6	11.3	8.5	185.3	3.23
31.23	11:53	6.86	472.5	11.2	8.49	187.8	3.28
31.25	11:56	6.82	471.5	11.2	8.5	190.3	2.04

Comments:

Flow Rate: 100 mL/min

Sampler



Date September 23, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-6A - 0922

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 September 23, 2022 **Time** 10:33

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 33.28 ft BTOC (September 23, 2022 9:40 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 09/23/2022
Time Begin Purge 10:00
Time Collect Sample 10:33

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	10:10	7.86	2,107	14.4	44.3	201.5	1.13
	10:15	7.96	2,214	14.6	4.22	201.7	2.08
	10:20	8.04	2,261	14.7	4	200.8	1.61
	10:25	8.05	2,272	14.7	3.87	200.2	1.41
	10:30	8.05	2,281	14.8	3.73	199.3	2.05

Comments:

Flow Rate: 100 mL/min

Sampler

Date September 23, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-5A - 0922

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 September 23, 2022 **Time** 09:01

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 35.38 ft BTOC (September 23, 2022 8:17 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

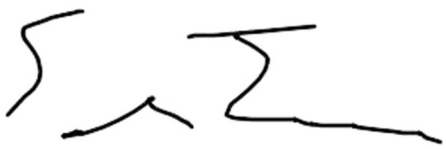
Well ID MW-5A
Date 09/23/2022
Time Begin Purge 08:33
Time Collect Sample 09:01

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
35.85	08:40	7.5	1,514	11.6	5.59	259.5	0.89
36.01	08:45	7.46	1,555	11.6	4.66	253.3	2.34
36.31	08:50	7.43	1,567	11.5	4.23	244.9	1.73
36.65	08:54	7.42	1,602	11.5	3.78	234.8	1.66
36.74	08:58	7.41	1,618	11.5	3.62	228.0	1.14
36.9	09:01	7.42	1,640	11.5	3.45	223.6	1.35

Comments:

Flow Rate: 100 mL/min

Sampler



Date September 23, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-99-1 - 0922

Sampling Location QA/QC Blank

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

Type of Sampler Grab

Date September 14, 2022 **Time** 16:50

Media Other **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 ft BTOC (September 14, 2022 4:57 PM); Well total depth at

Screen Interval:

Pump Intake:

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

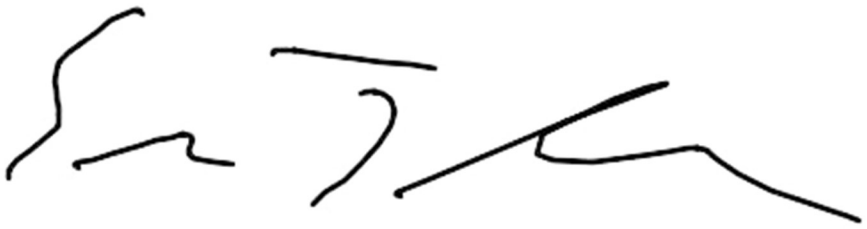
Well ID MW-99-1
Date 09/14/2022
Time Begin Purge _____
Time Collect Sample 16:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)

Comments:

Flow Rate: _____ mL/min

Sampler



_____ **Date** September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-7A - 0922

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date September 14, 2022 **Time** 16:41

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 16.91 ft BTOC (September 14, 2022 4:15 PM); Well total depth at 20' BGS

Screen Interval: 10' - 20' BGS

Pump Intake: ~ 17' 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

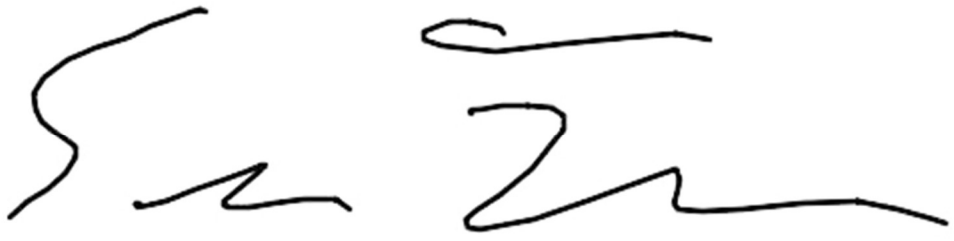
Well ID MW-7A
Date 09/14/2022
Time Begin Purge 16:16
Time Collect Sample 16:41

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
16.92	16:20	6.16	558	14.1	6.54	120.7	1.69
16.91	16:25	6.35	553	13.8	5.62	128.2	0.45
16.91	16:30	6.34	551	13.7	5.04	133.7	0.95
16.91	16:35	6.32	549	13.6	4.68	138.1	0.37
16.91	16:40	6.31	548	13.6	4.46	141	0.5

Comments:

Flow Rate: 200 mL/min

Sampler



Date September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Portal - 0922

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 September 14, 2022 **Time** 15:55

Media Surface Water **Station** Portal

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description Parameters only - no sample collected

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

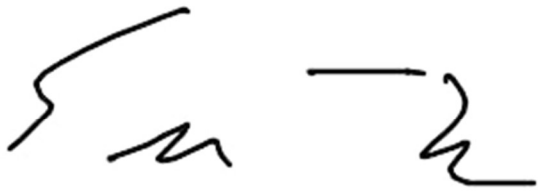
Well ID Portal
Date 09/14/2022
Time Begin Purge _____
Time Collect Sample 15:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	15:55	6.7	521	12	7.29	39.1	93.8

Comments:

Flow Rate: _____ mL/min

Sampler



_____ **Date** September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-8A - 0922

Sampling Location Monitoring Well

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

Type of Sampler

Date September 12, 2022 **Time** 11:16

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 ft BTOC (September 14, 2022 3:32 PM); Well total depth at 26' BGS

Screen Interval: 16' - 26' BGS

Pump Intake: ~ 22' BGS

Sample Description Dry - no sample

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

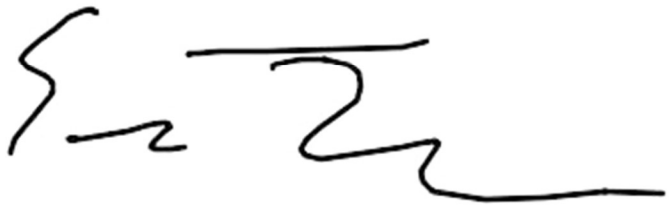
Well ID MW-8A
Date 09/12/2022
Time Begin Purge _____
Time Collect Sample 11:16

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)

Comments:

Flow Rate: _____ mL/min

Sampler



_____ **Date** September 12, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-9A - 0922

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date September 14, 2022 **Time** 15:25

Media Groundwater **Station** MW-9A

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 8.82 ft BTOC (September 14, 2022 3:03 PM); Well total depth at 13' BGS

Screen Interval: 8' - 13' BGS

Pump Intake: ~ 10' BGS

Sample Description Clear, no odor

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID MW-9A
Date 09/14/2022
Time Begin Purge 15:04
Time Collect Sample 15:25

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
9.63	15:10	6.73	528	13.3	5.61	129.9	0.56
10.23	15:15	6.46	524	13.3	4.35	134.1	0.79
10.6	15:20	6.44	512	13.4	3.96	131.4	1.58
11.01	15:25	6.44	509	13.5	3.84	130.2	1.09

Comments:

Flow Rate: 100 mL/min

Sampler

Date September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-4A - 0922

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date September 14, 2022 **Time** 14:35

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 8.92 ft BTOC (September 14, 2022 2:08 PM); Well total depth at 20' BGS

Screen Interval: 5' - 20' BGS

Pump Intake: ~ 12' BGS

Sample Description MS\MSD collected

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 09/14/2022
Time Begin Purge 14:10
Time Collect Sample 14:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
9.1	14:15	6.62	422.9	13.2	4.4	77.3	2.11
9.31	14:20	6.22	394.1	13.3	3.47	83.1	1.12
9.45	14:25	6.08	388.4	13.4	2.97	84.4	2.84
9.57	14:30	6.03	392.4	13.4	2.66	85.2	3.33
9.69	14:35	6.02	389.4	13.4	2.46	87.6	2.53

Comments:

Flow Rate: 250 mL/min

Sampler

Date September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID P-17 - 0922

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date September 14, 2022 **Time** 13:45

Media Groundwater **Station** P-17

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 13.34 ft BTOC (September 14, 2022 1:05 PM); Well total depth at 13' BGS

Screen Interval: 8'- 13' BGS

Pump Intake: ~ 10' BGS

Sample Description Clear, no odor

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID P-17
Date 09/14/2022
Time Begin Purge 13:15
Time Collect Sample 13:45

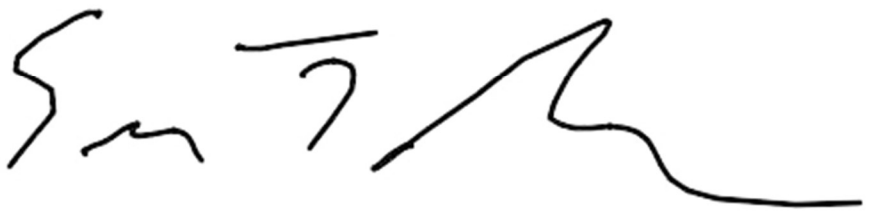
Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
13.61	13:25	6.74	753	14.2	3.25	-72.8	18.6
13.96	13:30	6.42	728	14.2	2.59	-69.6	8.48
13.92	13:35	6.28	730	14.5	2.28	-67.7	7.97
13.93	13:40	6.18	715	14.3	2.05	-6.18	6.93
13.97	13:45	6.1	706	14.3	1.91	-63.2	2.12

Comments:

Flow Rate: 100 mL/min

Water level was very close to bottom of well, purged at low flow (100 mL/min) and lowered pump intake to 1 ft above the bottom of the well (14ft btoc).

Sampler



Date September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Interceptor Trench - 0922

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 September 14, 2022 **Time** 12:50

Media Surface Water **Station** Interceptor Trench

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (September 14, 2022 12:45 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

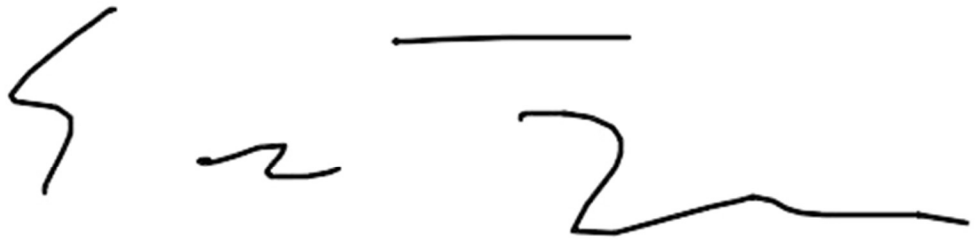
Well ID Interceptor Trench
Date 09/14/2022
Time Begin Purge
Time Collect Sample 12:50

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	12:50	9.17	428	15	8.37	13.9	3.23

Comments:

Flow Rate: 500 mL/min

Sampler



Date September 14, 2022

Supervisor **Date**

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID P-14 - 0922

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 September 14, 2022 **Time** 12:15

Media Groundwater **Station** P-14

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 34.26 ft BTOC (September 14, 2022 11:47 AM); Well total depth at 50' BGS

Screen Interval: 40'- 50' BGS

Pump Intake: ~ 45' BGS

Sample Description Clear, no odor

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID P-14
Date 09/14/2022
Time Begin Purge 11:51
Time Collect Sample 12:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
34.41	11:55	13.35	17,012	13.3	3.8	-55.9	16.8
34.51	00:00	13.25	16,824	13.3	2.91	-84.9	2.45
34.47	12:05	13.23	17,084	13.2	2.4	-99.9	2.04
34.46	12:10	13.22	17,264	13.2	2.04	-112.5	0.17
34.45	12:15	13.21	17,395	13.2	1.72	-127.9	1.70

Comments:

Flow Rate: 250 mL/min

Sampler

Date September 14, 2022

Supervisor **Date**

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID P-15 - 0922

Sampling Location Monitoring Well

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

Type of Sampler Bladder Pump (non-dedicated)

Date September 14, 2022 **Time** 10:40

Media Groundwater **Station** P-15

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 28.8 ft BTOC (September 14, 2022 10:06 AM); Well total depth at 34' BGS

Screen Interval: 24'- 34' 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 P-15
Date 09/14/2022
Time Begin Purge 10:01
Time Collect Sample 10:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
29.68	10:10	12.44	13,930	13.3	8.19	3.3	0.42
30.11	10:15	12.96	14,250	13.1	7.7	-6.0	0.02
30.61	10:20	12.96	14,353	13.6	6.57	-13.2	1.49
30.64	10:25	12.94	14,345	13.9	6.58	-13.6	7
30.79	10:30	12.96	14,195	13.9	6.69	-14.8	12.9
31.25	10:35	12.99	14,240	13.8	6.64	-17.2	10.8
31.25	10:40	12.99	14,297	13.8	6.41	-17.7	4.71

Comments:

Flow Rate: 200 mL/min

Initial pump parameters:
Throttle=40 psi
Cpm=2
ID=50

Sampler _____ **Date** September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Still Well - 0922

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 September 14, 2022 **Time** 08:35

Media Surface Water **Station** Still Well

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 0.6 ft BTOC (September 14, 2022 8:32 AM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description Brownish clear

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 09/14/2022
Time Begin Purge 08:33
Time Collect Sample 08:35

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	08:35	12.33	6,728	16.6	6	68.0	44.5

Comments:

Flow Rate: _____ mL/min

Sampler

Date September 14, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID P-16 - 0922

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date September 13, 2022 **Time** 16:30

Media Groundwater **Station** P-16

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 4.23 ft BTOC (September 13, 2022 3:36 PM); Well total depth at 10' BGS

Screen Interval: 5'- 10' BGS

Pump Intake: ~ 8' BGS

Sample Description Dark reddish brown

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

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

SAMPLE INTEGRITY DATA SHEET

Well ID P-16
Date 09/13/2022
Time Begin Purge 15:37
Time Collect Sample 16:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
5.47	15:45	9.41	2,552	14.4	3.53	-263.7	0.13
5.9	15:50	9.47	2,560	14.6	2.78	-280.7	1.23
5.91	15:55	9.53	2,569	14.9	2.38	-289.8	2.07
6.03	16:00	9.78	2,567	14.9	1.93	-313.7	10.5
6.17	16:05	9.95	2,551	14.8	1.81	-330.3	20.5
6.4	16:10	10.74	2,402	14.8	1.52	-385.5	32.1
6.55	16:15	11.05	2,392	14.8	1.43	-399.3	32.7
6.7	16:20	11.45	2,437	14.8	1.33	-416.5	31.5
6.8	16:25	11.57	2,545	14.9	1.28	-423.4	35.4
6.85	16:30	11.63	2,609	14.9	1.26	-427.3	31.8

Comments:

Flow Rate: 200 mL/min

Sampler _____

Date September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-10A - 0922

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date September 13, 2022 **Time** 15:15

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 14.35 ft BTOC (September 13, 2022 2:47 PM); Well total depth at 29' BGS

Screen Interval: 9' - 29' BGS

Pump Intake: ~ 25' 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-10A
Date 09/13/2022
Time Begin Purge 14:48
Time Collect Sample 15:15

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
14.97	14:55	7.11	199.1	11.6	6.6	154.9	3.37
15.31	15:00	7.04	198.7	11.7	6.14	164.9	4.23
17.74	15:05	6.92	196.2	11.7	5.94	175.2	4.30
16.02	15:10	6.83	195.9	11.8	6.19	182.7	3.48
16.45	15:15	6.78	221.3	12	6.64	189.1	3.74

Comments:

Flow Rate: 200 mL/min

Sampler

Date September 13, 2022

Supervisor **Date**

Golder Associates Inc.

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MW-3A - 0922

Sampling Location Monitoring Well

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

Type of Sampler Peristaltic Pump

Date September 13, 2022 **Time** 14:20

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 11.31 ft BTOC (September 13, 2022 1:52 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 09/13/2022
Time Begin Purge 13:53
Time Collect Sample 14:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
12.06	14:00	6.74	879	13.3	3.57	84.2	0.29
12.38	14:05	6.65	877	13.3	3.19	77.8	2.36
12.71	14:10	6.57	870	13.2	2.86	72.4	4.23
12.91	14:15	6.45	891	14.4	4.03	93.3	7.23
	14:20	6.49	910	15.3	4.92	85.7	9.15

Comments:

Flow Rate: 250 mL/min

Well drawn down very close to pump intake causing increasing DO and turbidity.

Sampler

Date September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-5DSP - 0922

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 September 13, 2022 **Time** 12:55

Media Groundwater **Station** MWB-5DSP

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 27.26 ft BTOC (September 13, 2022 11:34 AM); Well total depth at 83' BGS

Screen Interval: 73'- 83' BGS

Pump Intake: ~ 80' BGS

Sample Description Parameters only - No sample

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-5DSP
Date 09/13/2022
Time Begin Purge 12:29
Time Collect Sample 12:55

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
29.59	12:35	7.22	638	12.8	4.9	5.2	3.15
30.65	12:40	6.96	618	12.4	4.05	1.7	2.29
31.66	12:45	6.82	611	12.2	3.25	0.7	0.02
32.15	12:50	6.78	609	12.3	2.83	-1.2	0.02
33.33	12:55	6.74	606	12.3	2.54	-3.7	1.49

Comments:

Flow Rate: 375 mL/min

Sampler

Date September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-4DSP - 0922

Sampling Location Monitoring Well

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

Type of Sampler Grab

Date September 13, 2022 **Time** 11:22

Media Groundwater **Station** MWB-4DSP

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 21.62 ft BTOC (September 13, 2022 11:16 AM); Well total depth at 42.8' BGS

Screen Interval: 25'- 36' BGS

Pump Intake: N/A

Sample Description Parameters only - no sample collected

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

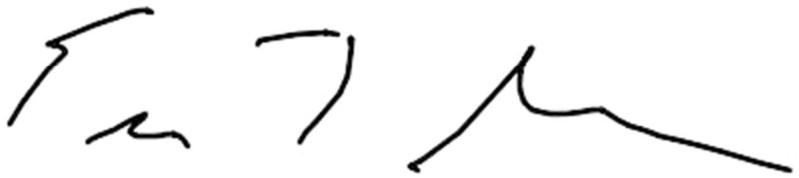
Well ID MWB-4DSP
Date 09/13/2022
Time Begin Purge 11:22
Time Collect Sample 11:22

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
21.62	11:22	7.53	531	15.3	7.87	90.3	1.45

Comments:

Flow Rate: _____ mL/min

Sampler



_____ **Date** September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-1DDSP - 0922

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 September 13, 2022 **Time** 11:05

Media Groundwater **Station** MWB-1DDSP

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 57.57 ft BTOC (September 13, 2022 10:35 AM); Well total depth at 265' BGS

Screen Interval: 255'- 265' BGS

Pump Intake: ~ 260' BGS

Sample Description Clear, strong rotten egg like odor

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-1DDSP
Date 09/13/2022
Time Begin Purge 10:36
Time Collect Sample 11:05

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
60.05	10:40	7.1	784	12	5.55	-61.6	5.49
62.82	10:45	6.95	783	11.8	4.61	-62.8	5.98
66.65	10:50	6.87	781	11.7	3.54	-69.9	6.55
70.3	10:55	6.85	777	11.7	3.03	-76.8	7.48
74.2	11:00	6.83	778	11.8	2.56	-89.3	1.51
75.48	11:05	6.84	778	11.9	2.5	-91.0	0.45

Comments:

Flow Rate: 450 mL/min

Sampler _____ **Date** September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-1SDSP - 0922

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 September 13, 2022 **Time** 10:30

Media Groundwater **Station** MWB-1SDSP

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 44.45 ft BTOC (September 13, 2022 10:01 AM); Well total depth at 160' BGS

Screen Interval: 73'- 83' BGS

Pump Intake: ~ 80' BGS

Sample Description Clear, strong rotten egg like odor

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-1SDSP
Date 09/13/2022
Time Begin Purge 10:02
Time Collect Sample 10:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
46.42	10:05	7.22	1,165	13.2	8.45	73.7	10.9
48.96	10:10	6.65	1,146	12	6.22	15.3	5.75
52.05	10:15	6.46	1,128	11.8	4.34	13.7	4.92
55.5	10:20	6.43	1,123	11.9	3.67	10.1	4.65
57.55	10:25	6.42	1,123	11.9	3.22	7.8	5.13
60.7	10:30	6.42	1,122	11.8	2.97	6.4	4.73

Comments:

Flow Rate: 425 mL/min

Sampler _____ **Date** September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-2DSP - 0922

Sampling Location Monitoring Well

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

Type of Sampler Grab

Date September 13, 2022 **Time** 09:40

Media Groundwater **Station** MWB-2DSP

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 200.06 ft BTOC (September 13, 2022 9:38 AM); Well total depth at 258' BGS

Screen Interval: 236'- 256' BGS

Pump Intake: N/A

Sample Description Parameters only, no sample taken

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

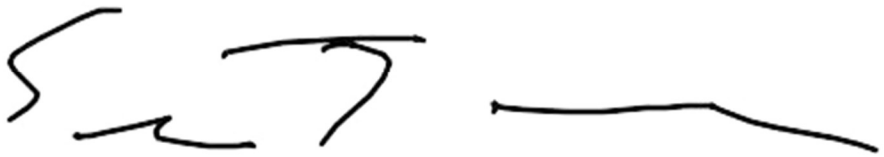
Well ID MWB-2DSP
Date 09/13/2022
Time Begin Purge 09:40
Time Collect Sample 09:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
200.06	09:40	6.91	404.7	12.6	8.66	252.7	10.5

Comments:

Flow Rate: _____ mL/min

Sampler



Date September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-3LDA - 0922

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 September 13, 2022 **Time** 09:25

Media Groundwater **Station** MWB-3LDA

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 4.65 ft BTOC (September 13, 2022 8:56 AM); Well total depth at 145' BGS

Screen Interval: 125'- 145' BGS

Pump Intake: ~ 135' BGS

Sample Description Clear, no odor

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-3LDA
Date 09/13/2022
Time Begin Purge 09:03
Time Collect Sample 09:25

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
6.8	09:05	7.11	180.8	14.4	7.43	168.4	8.58
7.77	09:10	6.85	180.7	13.9	6.81	172.3	6.08
9.99	09:15	6.71	179.9	13.9	6.38	173.6	7.94
12.04	09:20	6.65	179.7	14.1	5.99	172.6	5.18
13.35	09:25	6.63	178.6	13.8	5.66	172	5.55

Comments:

Flow Rate: 375 mL/min

Sampler

Date September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-2LDA - 0922

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 September 13, 2022 **Time** 08:40

Media Groundwater **Station** MWB-2LDA

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 37.01 ft BTOC (September 13, 2022 7:25 AM); Well total depth at 125' BGS

Screen Interval: 110'- 125' BGS

Pump Intake: ~ 120' BGS

Sample Description Clear, no odor

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

Aliquot Amount	Analysis	Container	Preservation

SAMPLE INTEGRITY DATA SHEET

Well ID MWB-2LDA
Date 09/13/2022
Time Begin Purge 08:14
Time Collect Sample 08:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
37.4	08:20	6.87	256.4	12.1	11.45	41.5	4.92
36.45	08:25	6.91	256.5	12.1	11.45	26.2	7.01
36.52	08:30	6.81	255.9	12.1	11.47	33.5	6.05
37.55	08:35	6.83	255.7	12	11.45	30.2	6.66
36.99	08:40	6.84	255.4	12.1	11.44	31	4.40

Comments:

Flow Rate: 275 mL/min

Sampler

Date September 13, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID Weir or Constructed Wetlands - 0922

Sampling Location Surface Water Monitoring Point

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

Type of Sampler

Date September 12, 2022 **Time** 09:30

Media Surface Water **Station** Weir or Constructed Wetlands

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (September 12, 2022 9:30 AM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description Dry - No sample

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

Well ID Weir or Constructed Wetlands
Date 09/12/2022
Time Begin Purge 09:30
Time Collect Sample 09:30

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
	now()						

Comments:

Flow Rate: _____ mL/min

Dry - No sample

Sampler _____

Date September 12, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID South Pond - 0922

Sampling Location Surface Water Monitoring Point

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

Type of Sampler

Date September 12, 2022 **Time** 21:40

Media Surface Water **Station** South Pond

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at ft BTOC (September 12, 2022 9:40 PM); Well total depth at N/A

Screen Interval: N/A

Pump Intake: N/A

Sample Description Dry - No sample

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

SAMPLE INTEGRITY DATA SHEET

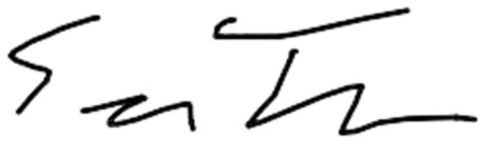
Well ID South Pond
Date 09/12/2022
Time Begin Purge _____
Time Collect Sample 21:40

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)

Comments:

Flow Rate: _____ mL/min

Dry - No sample



Sampler _____

Date September 12, 2022

Supervisor _____ **Date** _____

SAMPLE INTEGRITY DATA SHEET

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

Site Location Ravensdale, WA

Sample ID MWB-1LDA - 0922

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 September 12, 2022 **Time** 13:20

Media Groundwater **Station** MWB-1LDA

Sample Type: **grab** time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

SWL: Depth to water at 23.51 ft BTOC (September 12, 2022 12:54 PM); Well total depth at 135' BGS

Screen Interval: 115'- 135' BGS

Pump Intake: ~ 125' BGS

Sample Description Clear, no odor

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

Aliquot Amount	Analysis	Container	Preservation
-		HDPE	

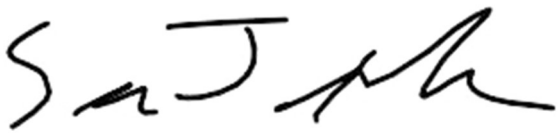
SAMPLE INTEGRITY DATA SHEET

Well ID MWB-1LDA
Date 09/12/2022
Time Begin Purge 12:54
Time Collect Sample 13:20

Water Level (ft bmp)	Time	pH	Cond. (uS/cm)	Temp (°C)	DO (mg/L)	ORP (rel mV)	Turbidity (NTU)
24.55	13:00	7.11	265.7	11.6	5.93	125.5	2.56
25.05	13:05	6.75	264.8	11.4	4.03	27.2	1.47
25.2	13:10	6.73	264.2	11.4	3.57	12.2	0.39
25.61	13:15	6.74	263.6	11.4	3.18	1.3	0.37
26.03	13:20	6.76	263.3	11.3	2.86	-7.4	0.37

Comments:

Flow Rate: 400 mL/min



Sampler _____

Date September 12, 2022

Supervisor _____ **Date** _____

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