HALEY ALDRICH

www.haleyaldrich.com

REPORT ON

HEGLAR KRONQUIST LANDFILL
CLEANUP SITE ID #1135
FACILITY SITE ID #645
ANNUAL COMPLIANCE MONITORING – APRIL 2023
MEAD, WASHINGTON

by
Haley & Aldrich, Inc.
Spokane, Washington

for
Washington State Department of Ecology
Spokane, Washington

File No. 0202596-001
July 2023

HALEY & ALDRICH, INC.
505 W. Riverside Avenue
Suite 205
Spokane, WA 99201
509.960.7447

7 July 2023
File No. 0202596-001

Washington State Department of Ecology
4601 North Monroe
Spokane, Washington 99205

Attention: Justin Rice

Subject: Heglar Kronquist Landfill
Cleanup Site ID #1135
Facility Site ID #645
Annual Compliance Monitoring – April 2023
Mead, Washington

Dear Justin Rice:

This letter report summarizes the results of the April 2023 annual compliance monitoring event performed at the Heglar Kronquist Landfill (Site) near Mead, Washington. The Site location is shown on "Vicinity Map", Figure 1. The purpose of the monitoring event is to evaluate the effectiveness of the Final Cleanup Action Plan (FCAP; Washington State Department of Ecology [Ecology], 2012) implemented at the Site in 2014. This work is being completed for Kaiser Aluminum Investments Company (formally known as DCO Management, LLC [DCO]) as a subsidiary of Kaiser Aluminum Corporation (Kaiser), pursuant to the Final Consent Decree between DCO and Ecology, dated 6 June 2013 (State of Washington, 2013).

Background

The Site is located in a rural area near Mead, Washington, approximately 10 miles northeast of downtown Spokane, Washington (see Figure 1). Geologically, the Site is located above landslide deposits consisting of sediments and basalt rubble (Exponent, 2011). Groundwater flow beneath the Site generally is complex due to the characteristics of the landslide deposits and appears to have preferential components that flow north-northwest, west, and south (Exponent, 2011). Several groundwater springs present near the Site also are indicative of preferential groundwater flow paths through the landslide deposits.

The Site originally was developed as a county gravel pit between 1963 and 1969. Between 1969 and 1974, Kaiser transported black dross (a byproduct of aluminum processing) from the Kaiser Aluminum Trentwood Works in Spokane Valley, Washington, to the Site for disposal in the former gravel pit. Disposal activities ceased in 1974, when elevated levels of chloride and sodium (byproducts of black dross) were detected in one shallow water supply well and a spring downgradient of the Site. Various Site assessments were conducted after disposal activities ceased; findings of those assessments indicated that groundwater and surface water were impacted by contaminants leaching from the landfill.

Kaiser purchased the property in 1984, and the landfill was capped to reduce the potential for black dross constituents to leach into groundwater. The 1984 capping activities included installing a clay layer, vegetated topsoil layer, 17 ammonia gas vents, drainage ditches, and fencing to restrict Site access. However, the 1984 cap did not adequately isolate and contain the landfilled black dross because low rainfall amounts in the region desiccated the clay layer, which subsequently resulted in infiltration of precipitation/snow melt and migration of dross constituents into groundwater. Additionally, no drainage layer was installed above the clay layer to direct surface water around/off the cap and surface water runoff from the hillside east of the landfill flowed onto/through the cap, further diminishing cap performance.

In 2014, Hart Crowser, Inc. (now Haley & Aldrich, Inc. [Haley & Aldrich]) implemented the construction portion of the FCAP to enhance the existing cap. Hart Crowser constructed a multi-layered cap over the landfill and repaired damage to the existing passive gas venting system. Construction activities are described in detail in our "Cleanup Action Construction Completion Report", dated 4 August 2015 (Hart Crowser, 2015). Following construction activities, Hart Crowser began compliance monitoring to assess the effectiveness of the cap at reducing infiltration of surface water and subsequent leaching of chloride, nitrates, and sodium into groundwater as required by the FCAP. Hart Crowser initiated compliance monitoring activities during October 2015 in accordance with our Ecology-approved "Final Sampling and Analysis Plan and Quality Assurance Project Plan" (Hart Crowser, 2013). Compliance monitoring activities include:

- inspecting the condition of Site features (security controls, cap, passive gas venting system, and monitoring wells);
- measuring depth to groundwater;
- sampling groundwater;
- sampling surface water (when flowing); and
- analyzing collected samples for chlorides and nitrates (contaminants of concern [COC]).

Compliance monitoring activities initially were conducted on a quarterly basis were later reduced to semiannual events. Currently, compliance monitoring is conducted annually in the spring when regional groundwater elevations typically are at seasonal highs.*

* See list of References at the end of this letter.

Compliance Monitoring Field Activities

Haley & Aldrich inspected security controls, conditions of the cap, passive gas venting system, monitoring wells, and conducted groundwater and surface water sampling on 26 April 2023.

Haley & Aldrich measured depth to groundwater in monitoring wells (MW)-1 through MW-5, and MW-7; groundwater samples also were collected from these wells using low-flow/low-stress techniques. In addition, Haley & Aldrich collected surface water (SW) samples from two springs south of the Site (SW-1 and SW-3), and the ephemeral stream west of the Site (SW-5). Monitoring well and surface water sample locations are shown on "Groundwater Elevations and Inferred Flow Directions, April 2023", Figure 2. Field activities were conducted in general accordance with the "Sampling and Analysis Plan and Quality Assurance Project Plan", dated 12 August 2013 (Hart Crowser, 2013); with one exception: surface water location SW-2 is no longer sampled because it is adjacent to SW-3, and monitoring data was similar for both locations making this location redundant. A summary of monitoring activities and findings from the event are presented below.

CONDITION OF SITE FEATURES

Conditions of the monitoring wells and the landfill cap and surface features are discussed below.

Security Controls

Haley & Aldrich inspected the perimeter fence, gates, and locks. Security control features appeared intact and posted signage was still present and visible along the perimeter fence.

Condition of the Cap

During our site visit, Haley & Aldrich observed the small animal burrow at the eastern end of the landfill that we initially observed in October 2018. The animal burrow appears to have increased in size since the previous monitoring event, indicating the burrow is active. The burrow depth did not appear to impact the protective cap during the April 2023 compliance monitoring event. Kaiser has contracted a pest and rodent control company to assess animal activity at and immediately around the area of the cap, and to implement protective measures, if necessary.

Condition of the Passive Gas Venting System

Haley & Aldrich inspected the overall integrity of the passive gas venting system stacks. The stacks appeared upright, in good condition, with the top screens intact, and appeared to be operating as designed.

Monitoring Wells

Haley & Aldrich inspected the overall integrity and security of monitoring well features including monuments, surface seals, and protective bollards and rails. Monitoring well features appeared to be in good condition and do not require maintenance or repairs at this time.

GROUNDWATER ELEVATIONS

Haley & Aldrich measured depths to groundwater in MW-1 through MW-5, and MW-7. Depth to groundwater measurements were referenced to the top of well casing (TOC) in each well, which in turn, are referenced to the North American Vertical Datum of 1988 (NAVD 88). During the event, depth to groundwater ranged between 34.63 and 65.94 feet below TOC in MW-5 and MW-2, respectively. This range in measurements generally correlates with seasonal variations in groundwater elevations observed during previous monitoring events. Depth to groundwater measurements are summarized in "Groundwater Elevations and Field Parameters", Table 1.

Haley & Aldrich calculated groundwater elevations by subtracting the depth to water in each well from the corresponding TOC elevation. Calculated groundwater elevations ranged between 2,120.44 and 2,194.14 feet (NAVD 88) in MW-2 and MW-4, respectively. Groundwater elevations calculated for each monitoring well are summarized in Table 1 and are shown on Figure 2.

Groundwater elevations indicate that the direction of groundwater flow, downgradient of the landfill, is west to southwest. However, historical monitoring data (from the Remedial Investigation [RI]) suggests that there might be components of groundwater that flow from the landfill to the north and south. The variable flow patterns inferred by the elevational and chemical data are likely correlated to the complex geology/hydrogeology beneath the Site and linked to preferential pathways through the landslide block in which the landfill is situated. Inferred groundwater flow directions are shown on Figure 2.

GROUNDWATER SAMPLING

Haley & Aldrich purged and sampled MW-1 through MW-5, and MW-7, using a submersible pump, dedicated sample tubing, and low-flow/low-stress sampling techniques. The monitoring wells were sampled when water quality parameters had stabilized. Haley & Aldrich measured temperature, pH, specific conductivity, dissolved oxygen (DO), oxidation reduction potential (ORP), and turbidity (water quality parameters) during the purging process and collected groundwater samples when measured values fluctuated less than +/- 10 percent between readings 1 minute apart. Water quality measurements recorded at stabilization are summarized in Table 1.

Haley & Aldrich collected groundwater samples by pumping the samples directly into containers provided by the laboratory and then placed the samples in a cooler with ice. Samples were kept in this cooler until delivery to the laboratory for chemical analyses under chain-of-custody.

SURFACE WATER SAMPLING

Surface water sample locations SW-1, SW-3, and SW-5 were running freely during the sampling event; therefore, no purging or pumping was required to collect samples. Haley & Aldrich measured and recorded water quality parameters from each surface water sampling location prior to collecting samples; water quality measurements are summarized in Table 1. Haley & Aldrich collected surface water samples by placing a laboratory-supplied sample container directly into the flow of each source and then placed the samples in a cooler with ice until delivery to the laboratory for chemical analyses under chain-of-custody.

Chemical Analytical Results

Haley & Aldrich submitted groundwater and surface water samples to Eurofins Environment Testing Northwest, LLC (Eurofins) in Spokane Valley, Washington, for chemical analyses. Groundwater and surface water analytical results are summarized in "Groundwater Chemical Analytical Results", Table 2, and "Surface Water Chemical Analytical Results", Table 3. The analytical results also are shown in "Contaminant Concentrations, April 2023", Figure 3, and the laboratory report is included with our data quality review in "Quality Assurance Review and Analytical Laboratory Report", Appendix A.

Haley & Aldrich compared analytical results to the cleanup standards for chloride and nitrates established in the FCAP, which are as follows:

- 250 milligrams per liter (mg/L) chloride based on the federal and state drinking water secondary maximum contaminant level (MCL); and
- 14 mg/L nitrate based on background concentrations in nearby wells.

Chloride and nitrate cleanup levels in surface water are based on standards to protect human health based on an assumed drinking water beneficial use; Ecology has not established cleanup levels for ecological receptors.

GROUNDWATER ANALYTICAL RESULTS

Eurofins analyzed groundwater samples collected from MW-1 through MW-5, and MW-7 for the following COCs using the methods indicated:

- chloride (U.S. Environmental Protection Agency [EPA] Method 300.0);
- nitrate/nitrite as nitrogen (EPA Method 353.2);
- dissolved sodium (EPA Method 6010D); and
- total dissolved solids (TDS) (Standard Method [SM] 2540C).

Chloride was detected in each of the monitoring wells sampled during the April 2023 sampling event. Chloride detections ranged between 19 mg/L in MW 5, and 540 mg/L in MW 3; chloride concentrations only exceeded the cleanup standard in MW-3 (see Table 2). However, the detected chloride

concentration in MW-3 was lower compared to the elevated concentrations detected during the April 2021 and April 2022 sampling events. Chloride concentrations over time for each monitoring well are shown in “Groundwater Chloride Concentrations Versus Time", Figure 4.

Nitrate/nitrite was detected in each of the monitoring wells sampled during the April 2023 sampling event. Nitrate/nitrite detections ranged between 1.8 mg/L in MW-7, and 5.4 mg/L in MW-4. Nitrate/nitrite concentrations did not exceed the cleanup standard in any of the monitoring wells. Nitrate/nitrite concentrations decreased in each monitoring well compared to concentrations detected during the April 2022 sampling event. Nitrate/nitrite concentrations for each monitoring well are shown on “Groundwater Nitrate/Nitrite Concentrations Versus Time”, Figure 5.

Concentration trend plots for chloride and nitrate/nitrite for MW-1 through MW-5, and MW-7, are shown on Figures 4 and 5, respectively. Figures 4 and 5 also show the groundwater elevation trend plots for MW-3, which is considered to be representative of seasonal groundwater elevation fluctuations for the Site. Plotted groundwater elevations indicate that seasonal groundwater elevations measured during fall and spring events have been declining since April 2018.

Dissolved sodium and TDS also were analyzed and compared against previous sampling results, but are not used to determine compliance with cleanup standards. Dissolved sodium and TDS were detected above the method reporting limits in the six monitoring wells. Analytical results indicate that concentrations are similar to results collected during previous spring sampling events (see Table 2).

SURFACE WATER ANALYTICAL RESULTS

Eurofins analyzed surface water samples collected from SW-1, SW-3, and SW-5 for the same COCs and used the same methods described above. However, surface water samples were not field filtered and were analyzed for total sodium (EPA Method 6010C) instead of dissolved sodium.

Chloride was detected in SW-1, SW-3, and SW-5 at concentrations of 23, 240, and 230 mg/L, respectively. Analytical results indicate that none of the three surface water samples exceeded the 250 mg/L cleanup standard, in contrast to the April 2022 monitoring event where samples from SW-3 and SW-5 exceeded the cleanup standard. Chloride concentrations detected in SW-1, SW-3, and SW-5 were similar to concentrations observed during previous monitoring events. Chloride concentrations decreased by approximately 17 percent in SW-3, and approximately 18 percent in SW-5 compared to the April 2022 spring monitoring event.

Nitrate/nitrite was detected in SW-1, SW-3, and SW-5 at concentrations lower than the 2022 spring sampling event, with concentrations of 2.0, 2.9, and 0.3 mg/L, respectively. Nitrate/nitrite concentrations remained under the cleanup standard of 14 mg/L in SW-1 and SW-5. Concentrations in SW-3 decreased to below the cleanup level after exceeding it in the April 2022 monitoring event.

Concentration trend plots for chloride and nitrate/nitrite in surface water locations SW-1, SW-3, and SW-5 are shown on “Surface Water Chloride Concentrations Versus Time” and “Surface Water Nitrate/Nitrite Concentrations Versus Time”, Figures 6 and 7, respectively. Figures 6 and 7 also show the groundwater elevation trend plot for monitoring well MW-3.

Dissolved sodium and TDS were detected above method reporting limits in each of the three surface water sample locations (see Table 3). Analytical results indicate that concentrations in each of the surface water samples are similar to those observed during the previous spring sampling event, with the exception of SW-1, where the TDS concentration fell from 460 mg/L to 280 mg/L, a decrease of 39 percent.

Findings

Groundwater elevations indicate that the direction of groundwater flow, downgradient of the landfill, is west to southwest. However, chloride concentrations in MW-1 and in surface water at SW-3 (see Figure 3) indicate that there might be components of groundwater that flow from the landfill to the north and south. The variable flow patterns inferred by the elevational and chemical data likely are correlated to the complex geology/hydrogeology beneath the Site, and linked to preferential pathways through the landslide block in which the landfill is situated.

Chemical analytical data indicates the sample collected from MW-3 was the only sample that exceeded the chloride cleanup standard of 250 mg/L. Chloride concentrations generally decreased between the reconstruction of the cap in 2014 and October 2018, then increased between the October 2018 event and the April 2022 event, then decreased again between April 2022 and 2023. When compared to recorded groundwater elevations at MW-3, it does not appear that recent changes in chloride concentrations is caused by changes in groundwater elevation (see Figure 4). Chloride concentrations appear to decrease to concentrations observed since reconstruction of the cap in 2014.

Chemical analytical data also indicates that chloride concentrations in SW-1 continue to meet cleanup standards; chloride concentrations in samples from this location have been below cleanup standards since January 2016 and likely represent background conditions. Chloride concentrations had increased in SW-3 and SW-5 between the October 2020 and April 2022 monitoring events, and were greater than cleanup standards during the April 2022 monitoring event (see Figure 6), but decreased to below the cleanup standards during the April 2023 monitoring event. Chloride concentration in surface water appears to decrease to concentrations observed since reconstruction of the cap in 2014.

Chemical analytical data indicate that nitrate/nitrite concentrations in each monitoring well decreased compared to the previous spring monitoring event (see Figure 7). None of the groundwater samples submitted for analysis contained nitrate/nitrite concentrations above cleanup standards and are likely indicative of background concentrations.

Chemical analytical data indicates that nitrate/nitrite concentrations also decreased in SW-1, SW-3, and SW-5. Each surface water sample contained concentrations less than the cleanup standard. None of the surface water samples submitted for analysis contained nitrate/nitrite concentrations above cleanup standards and are likely indicative of background concentrations.

Sincerely yours,
HALEY & ALDRICH, INC.

Keylin Huddleston, L.G.
Assistant Project Manager

Dustin Wasley, P.E.
Principal Engineer

Attachments:

References

Table 1 - Groundwater Elevations and Field Parameters
Table 2 - Groundwater Chemical Analytical Results
Table 3 - Surface Water Chemical Analytical Results

Figure 1 - Vicinity Map
Figure 2 - Groundwater Elevations and Inferred Flow Directions, April 2023
Figure 3 - Contaminant Concentrations, April 2023
Figure 4 - Groundwater Chloride Concentrations Versus Time
Figure 5 - Groundwater Nitrate/Nitrite Concentrations Versus Time
Figure 6 - Surface Water Chloride Concentrations Versus Time
Figure 7 - Surface Water Nitrate/Nitrite Concentrations Versus Time

Appendix A - Quality Assurance Review and Analytical Laboratory Report

\\haleyaldrich.com\share\sea_projects\Notebooks\0202596-001_HK Compliance Monitoring\Deliverables\Reports\April 2023 Compliance Monitoring Report\Final\2023_0707_HAI_ComplianceReport_April2023_F.docx

References

1. Exponent, 2011. Final Remedial Investigation Report, Heglar Kronquist Landfill, Mead, Washington. September 9, 2011.

2. Hart Crowser, 2013. Final Sampling and Analysis Plan and Quality Assurance Project Plan, Heglar Kronquist Site, Mead, Washington. August 12, 2013.

3. Hart Crowser, 2015. Cleanup Action Construction Completion Report, Heglar Kronquist Landfill, Mead, Washington. August 4, 2015.

4. State of Washington, Spokane County Superior Court, 2013. Consent Decree No. 13202067-4. June 6, 2013.

5. Washington State Department of Ecology, 2012. Final Cleanup Action Plan, Heglar Kronquist Site, CSID 1135, FSID 645. October 2012.

TABLES

TABLE 1
GROUNDWATER ELEVATIONS AND FIELD PARAMETERS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Sample Location	Date of Measurement	Top of Casing Elevation in feet (NAVD88)	Depth to Water in feet btoc	Groundwater & Surface Water Elevation in feet above msl	Temperature [°C]	pH	Conductivity [µS/cm]	ORP [mV]	Turbidity [NTU]	DO [mg/L]
Monitoring Wells										
MW-1	30-Sep-10	*2,183.49*	--	--	--	--	*847*	--	--	--
	24-Jan-11	--	*58.76*	*2,124.73*	--	--	--	--	*5.17*	--
	25-Apr-11	--	*54.80*	*2,128.69*	*10.74*	*6.93*	*2,010*	--	*5.09*	--
	28-Oct-15	--	60.96	2,122.53	12.13	6.97	570	187	342	8.71
	26-Jan-16	--	60.35	2,123.14	8.76	6.99	565	113	35.0	8.76
	22-Apr-16	--	58.04	2,125.45	11.56	7.05	428	103	60.1	9.00
	26-Jul-16	--	58.40	2,125.09	11.72	7.42	616	47	1.40	8.98
	21-Oct-16	--	59.70	2,123.79	11.52	7.88	1,197	96	34.6	8.89
	24-Jan-17	--	59.38	2,124.11	10.57	6.94	567	257	3.70	8.59
	24-Apr-17	--	44.86	2,138.63	12.52	6.86	2,397	151	2.20	9.24
	20-Jul-17	--	47.05	2,136.44	13.14	6.58	1,965	243	3.40	9.05
	10-Jan-18	--	52.80	2,130.69	10.20	6.94	837	224	0.94	9.36
	19-Apr-18	--	46.42	2,137.07	12.33	6.95	1,024	175	23.1	9.09
	12-Oct-18	--	52.84	2,130.65	11.70	7.14	864	218	0.72	8.79
	12-Apr-19	--	53.69	2,129.80	11.19	7.06	802	85	0.00	8.40
	23-Oct-19	--	56.51	2,126.98	11.42	6.84	780	216	3.37	8.79
	4-May-20	--	56.42	2,127.07	11.30	6.85	1,120	205	0.83	8.78
	15-Oct-20	--	57.35	2,126.14	11.26	6.93	801	164	0.00	9.28
	21-Apr-21	--	57.65	2,125.84	12.60	7.15	654	88	1.09	8.73
	21-Apr-22	--	59.27	2,124.22	10.80	6.91	561	79	2.51	8.90
	26-Apr-23	--	59.56	2,123.93	11.9	7.06	777	135	3.38	8.73
MW-2	30-Sep-10	*2,186.19*	--	--	--	--	*1,129*	--	--	--
	24-Jan-11	--	*65.80*	*2,120.39*	*7.60*	*7.03*	*590*	--	*41.6*	--
	25-Apr-11	--	*61.52*	*2,124.67*	*10.59*	*7.15*	*906*	--	*3.45*	--
	28-Oct-15	--	67.04	2,119.15	11.08	7.07	749	197	24.7	8.25
	26-Jan-16	--	67.27	2,118.92	10.94	7.07	675	104	0.100	7.42
	22-Apr-16	--	64.52	2,121.67	11.15	7.27	1,649	125	20.1	8.44
	26-Jul-16	--	64.86	2,121.33	12.03	7.40	666	40	12.3	7.81
	24-Oct-16	--	66.21	2,119.98	11.39	7.23	714	117	1.60	8.22
	24-Jan-17	--	65.95	2,120.24	10.61	7.11	1,131	178	7.00	8.11
	24-Apr-17	--	56.46	2,129.73	11.89	7.01	1,536	151	62.2	8.58
	20-Jul-17	--	57.99	2,128.20	12.20	6.63	2,209	142	7.40	8.33
	10-Jan-18	--	60.52	2,125.67	--	--	--	--	--	--
	19-Apr-18	2186.38	56.50	2,129.88	12.07	7.04	1,012	178	38.4	8.95
	12-Oct-18	--	60.43	2,125.95	11.97	7.10	1,092	197	629	8.39
	12-Apr-19	--	60.89	2,125.49	11.45	7.12	885	78	6.31	8.33
	23-Oct-19	--	62.64	2,123.74	10.88	7.15	990	212	2.65	8.33
	4-May-20	--	62.60	2,123.78	11.09	6.97	1,190	110	1.66	8.71
	15-Oct-20	--	63.55	2,122.83	10.89	7.00	953	155	0	8.81
	21-Apr-21	--	63.83	2,122.55	10.80	7.13	684	76	1.98	7.53
	21-Apr-22	--	65.57	2,120.81	10.70	6.96	634	161	3.67	8.11
	26-Apr-23	--	65.94	2,120.44	11.1	7.12	884	135	2.26	7.95
MW-3	1-Oct-10	*2,176.18*	--	--	--	--	*2,965*	--	--	--
	25-Jan-11	--	*55.21*	*2,120.97*	--	--	--	--	*4.30*	--
	26-Apr-11	--	*51.03*	*2,125.15*	*10.25*	*7.78*	*2,787*	--	*4.81*	--
	28-Oct-15	--	56.69	2,119.49	11.47	6.91	2,067	187	33.5	7.62
	26-Jan-16	--	56.84	2,119.34	10.98	6.62	2,051	132	12.6	7.54
	22-Apr-16	--	54.07	2,122.11	11.88	7.11	5,492	135	18.4	8.18
	26-Jul-16	--	54.35	2,121.83	11.66	6.93	2,030	54	10.3	7.83
	21-Oct-16	--	55.77	2,120.41	12.04	8.27	2,660	91	41.3	7.73
	24-Jan-17	--	55.54	2,120.64	10.74	6.74	1,963	199	7.20	7.67
	24-Apr-17	--	45.01	2,131.17	11.94	6.75	3,321	159	6.00	9.33
	20-Jul-17	--	46.49	2,129.69	12.98	6.67	3,305	254	7.80	7.77
	10-Jan-18	--	49.70	2,126.48	10.45	6.87	2,325	230	17.9	8.26
	19-Apr-18	--	45.19	2,130.99	11.93	6.60	2,305	210	12.2	7.99
	12-Oct-18	--	49.55	2,126.63	11.70	6.86	2,113	222	15.0	7.54
	12-Apr-19	--	50.14	2,126.04	11.28	6.66	2,103	117	3.50	7.48
	23-Oct-19	--	52.05	2,124.13	11.55	6.91	2,140	211	185	7.57
	4-May-20	--	52.03	2,124.15	11.35	6.80	2,650	250	3.50	7.80
	15-Oct-20	--	52.98	2,123.20	11.43	6.75	2,129	173	0.00	7.96
	21-Apr-21	--	53.29	2,122.89	11.40	7.14	1,612	93	2.32	7.79
	21-Apr-22	--	55.08	2,121.10	11.00	6.67	1,617	195	2.21	7.97
	26-Apr-23	--	55.45	2,120.73	12.3	6.84	2,162	146	6.80	7.77
MW-4	30-Sep-10	*2,247.25*	--	--	--	--	*1,411*	--	--	--
	24-Jan-11	--	*51.98*	*2,195.27*	--	--	--	--	*13.3*	--
	26-Apr-11	--	*51.13*	*2,196.12*	*10.48*	*7.33*	*3,914*	--	*2.74*	--
	28-Oct-15	--	53.90	2,193.35	11.45	6.92	830	167	3.20	0.13
	26-Jan-16	--	52.56	2,194.69	11.14	6.81	810	122	13.4	0.06
	22-Apr-16	--	52.39	2,194.86	11.47	6.85	1,491	145	15.4	0.25
	26-Jul-16	--	52.60	2,194.65	11.73	7.06	1,172	45	5.10	0.02
	21-Oct-16	--	52.99	2,194.26	11.30	7.52	1,514	96	5.40	0.11

Please see notes on the last page.

TABLE 1
GROUNDWATER ELEVATIONS AND FIELD PARAMETERS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Sample Location	Date of Measurement	Top of Casing Elevation in feet (NAVD88)	Depth to Water in feet btoc	Groundwater & Surface Water Elevation in feet above msl	Temperature [°C]	pH	Conductivity [µS/cm]	ORP [mV]	Turbidity [NTU]	DO [mg/L]
Monitoring Wells (Continued)										
MW-4 Continued	24-Jan-17	*2,247.25*	52.58	2,194.67	10.80	6.83	1,128	203	7.50	0.13
	24-Apr-17	--	47.99	2,199.26	11.83	6.72	1,759	153	14.7	0.66
	20-Jul-17	--	50.00	2,197.25	12.25	6.73	2,248	182	2.70	0.64
	10-Jan-18	--	50.59	2,196.66	10.55	6.90	991	220	1.40	0.59
	19-Apr-18	--	48.62	2,198.63	10.11	6.94	763	248	8.70	9.47
	12-Oct-18	--	51.48	2,195.77	11.45	6.83	940	215	8.70	0.29
	12-Apr-19	--	51.17	2,196.08	11.53	6.91	809	67	0.00	0.20
	23-Oct-19	--	52.39	2,194.86	11.16	6.84	820	230	11.2	0.50
	4-May-20	--	52.14	2,195.11	11.30	6.64	1,000	210.7	0.26	0.10
	15-Oct-20	--	52.54	2,194.71	11.17	6.83	810	169.1	0.00	0.15
	21-Apr-21	--	52.41	2,194.84	13.50	6.95	623	60.1	5.68	8.32
	21-Apr-22	--	53.54	2,193.71	11.00	6.61	558	185.3	7.27	0.63
	26-Apr-23	--	53.11	2,194.14	11.2	6.86	783	145.1	2.40	0.00
MW-5	29-Sep-10	*2,228.26*	--	--	--	--	*778*	--	--	--
	23-Jan-11	--	*33.96*	*2,194.30*	*8.50*	*7.40*	*694*	--	*3.07*	--
	25-Apr-11	--	*33.58*	*2,194.68*	*9.86*	*6.99*	*780*	--	*3.67*	--
	28-Oct-15	--	35.36	2,192.90	10.35	7.31	569	176	65.3	9.07
	26-Jan-16	--	34.27	2,193.99	9.96	7.20	538	133	5.30	9.11
	22-Apr-16	--	34.17	2,194.09	10.45	7.21	1,216	163	8.20	9.60
	26-Jul-16	--	34.40	2,193.86	11.01	7.21	533	69	6.70	9.02
	21-Oct-16	--	34.66	2,193.60	10.52	10.69	559	75	7.20	9.04
	24-Jan-17	--	34.35	2,193.91	9.98	7.21	1,016	147	11.4	8.90
	24-Apr-17	--	32.69	2,195.57	10.13	7.09	1,449	230	4.10	10.2
	10-Jan-18	--	33.40	2,194.86	9.34	7.34	860	231	3.60	9.66
	19-Apr-18	--	32.73	2,195.53	10.11	6.94	763	248	8.70	9.47
	12-Oct-18	--	33.86	2,194.40	9.95	7.17	848	236	13.6	8.80
	12-Apr-19	--	33.57	2,194.69	10.12	7.26	750	149	0.00	9.10
	23-Oct-19	--	34.19	2,194.07	9.91	7.31	800	227	1.59	9.01
	4-May-20	--	34.06	2,194.20	10.08	7.04	950	237	2.28	9.41
	15-Oct-20	--	34.28	2,193.98	9.91	7.12	766	193	0.00	9.58
	21-Apr-21	--	34.19	2,194.07	9.90	6.83	541	91	4.29	8.30
	21-Apr-22	--	34.98	2,193.28	9.40	7.14	520	161	5.70	9.46
	26-Apr-23	--	34.63	2,193.63	10.1	7.17	775	160	3.05	9.31
MW-6	26-Jan-16	--	--	--	--	--	--	--	--	--
	22-Apr-16	--	--	--	--	--	--	--	--	--
MW-7	26-Jul-16	2166.67*	44.99	2,121.68	10.60	7.20	420	54	22.00	9.97
	21-Oct-16	--	46.38	2,120.29	10.46	10.46	427	72	15.80	9.50
	24-Jan-17	--	46.13	2,120.54	9.75	7.00	402	150	25.00	8.79
	24-Apr-17	--	36.01	2,130.66	9.21	7.08	1,335	177	4.80	9.16
	10-Jan-18	--	40.55	2,126.12	9.56	7.14	696	228	3.80	8.52
	19-Apr-18	--	38.18	2,128.49	8.76	7.10	609	211	0.47	8.60
	12-Oct-18	--	40.45	2,126.22	9.58	7.05	726	226	16.50	7.71
	12-Apr-19	--	40.88	2,125.79	10.11	7.09	634	99	8.35	8.09
	23-Oct-19	--	42.64	2,124.03	9.71	7.11	670	221	12.34	8.05
	4-May-20	--	42.60	2,124.07	9.94	6.81	780	173	2.01	8.73
	15-Oct-20	--	43.59	2,123.08	9.76	6.41	641	179	0.00	8.46
	21-Apr-21	--	43.88	2,122.79	11.60	7.21	468	80	6.82	7.95
	21-Apr-22	--	45.65	2,121.02	9.60	6.85	452	180	5.94	8.44
	26-Apr-23	--	46.02	2,120.65	9.7	6.99	668	153	5.27	8.18
Surface Springs										
SW-1	14-May-10	--	--	2149.69	--	--	*694*	--	--	--
	28-Oct-15	--	--		9.73	7.11	1,194	183	10.4	8.51
	26-Jan-16	--	--		8.46	7.35	444	94	0.00	7.87
	22-Apr-16	--	--		11.12	7.56	2,023	128	1.10	7.89
	26-Jul-16	--	--		14.29	7.30	479	38	0.00	7.06
	21-Oct-16	--	--		10.21	9.80	472	140	0.80	8.73
	24-Jan-17	--	--		7.21	7.68	394	207	0.00	11.77
	24-Apr-17	--	--		9.24	7.24	1,370	171	0.90	9.03
	10-Jan-18	--	--		7.87	7.32	713	241	0.80	10.35
	19-Apr-18	--	--		9.44	7.09	615	220	0.64	8.64
	12-Oct-18	--	--		9.57	6.99	694	249	10.5	8.74
	12-Apr-19	--	--		9.54	7.23	595	93	3.38	8.34
	23-Oct-19	--	--		8.77	7.19	650	230	0.00	9.11
	4-May-20	--	--		11.95	7.77	690	233	0.01	8.81
	15-Oct-20	--	--		8.32	7.18	635	176	0.00	10.14
	21-Apr-21	--	--		6.90	7.29	420	80	0.00	7.92
	21-Apr-22	--	--		7.60	7.12	422	195	0.00	11.07
	26-Apr-23	--	--		8.7	7.29	671	123	0.46	9.67
SW-3	14-May-10	--	--	2,116.48	--	--	*1,577*	--	--	--
	28-Oct-15	--	--		9.68	7.14	1,207	182	0.90	8.49
	26-Jan-16	--	--		9.14	6.85	1,275	116	0.00	7.96
	22-Apr-16	--	--		12.62	7.45	4,119	135	41.3	8.08
	26-Jul-16	--	--		9.73	7.69	1,219	36	7.40	7.75
	21-Oct-16	--	--		9.77	7.36	880	122	0.00	8.63

Please see notes on the last page.

TABLE 1
GROUNDWATER ELEVATIONS AND FIELD PARAMETERS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Sample Location	Date of Measurement	Top of Casing Elevation in feet (NAVD88)	Depth to Water in feet btoc	Groundwater & Surface Water Elevation in feet above msl	Temperature [°C]	pH	Conductivity [µS/cm]	ORP [mV]	Turbidity [NTU]	DO [mg/L]
Surface Springs (Continued)										
SW-3 Continued	24-Jan-17	--	--	2,116.48	9.22	7.39	1,452	271	0.00	11.06
	24-Apr-17	--	--		10.39	7.22	2,179	169	1.20	8.51
	10-Jan-18	--	--		9.80	7.10	1,407	232	0.70	8.04
	19-Apr-18	--	--		10.99	6.73	1,225	231	13.9	7.53
	12-Oct-18	--	--		11.20	7.04	1,317	233	31.0	7.11
	12-Apr-19	--	--		11.14	7.10	1,071	94	0.00	7.63
	23-Oct-19	--	--		9.56	7.11	1,200	201	0.00	8.49
	4-May-20	--	--		10.23	7.21	1,380	205	0.00	8.79
	15-Oct-20	--	--		9.64	7.06	1,173	176	0.00	8.89
	21-Apr-21	--	--		9.70	7.42	839	83	4.02	6.63
	21-Apr-22	--	--		9.60	7.05	889	190	204.62	9.18
	26-Apr-23	--	--		9.70	7.23	493	134	16.44	9.03
SW-5	14-May-10	--	--	2,058.38	--	--	*1,403*	--	--	--
	28-Oct-15	--	--		--	--	--	--	--	--
	26-Jan-16	--	--		--	--	--	--	--	--
	22-Apr-16	--	--		--	--	--	--	--	--
	26-Jul-16	--	--		--	--	--	--	--	--
	21-Oct-16	--	--		--	--	--	--	--	--
	24-Jan-17	--	--		1.68	7.56	1,214	323	33.0	9.90
	24-Apr-17	--	--		16.30	7.76	1,424	172	4.30	8.90
	10-Jan-18	--	--		3.60	7.82	1,163	240	4.80	10.49
	19-Apr-18	--	--		19.74	8.14	876	160	26.4	8.45
	12-Oct-18	--	--		11.70	7.76	823	242	63.0	8.23
	12-Apr-19	--	--		11.78	7.87	1,021	74	9.61	7.97
	23-Oct-19	--	--		8.51	7.86	1,140	188	0.00	9.45
	4-May-20	--	--		13.93	7.79	1,530	208	4.55	8.68
	15-Oct-20	--	--		7.89	7.64	1,061	143	0.00	10.08
	21-Apr-21	--	--		15.50	7.48	954	63	5.20	11.47
	21-Apr-22	--	--		7.30	7.55	823	193	109.40	192.80
	26-Apr-23	--	--		14.80	7.91	611	142	31.24	9.76

Notes:

Top of casing elevation measured from the top of inner PVC casing (Survey completed in 2010 by Exponent).
Italicized parameters are from Exponent's Final Remedial Investigation Report (September 9, 2011) and Final Feasibility Study (May 4, 2012), prior to implementation of the Final Cleanup Action Plan.
** = Casing elevation determined by measuring the difference in casing elevations between MW-6 and MW-7 during installation of MW-7 on June 16, 2016.*
-- = Not applicable for surface water locations/water quality parameters not measured during sampling event.

NAVD88 = North American Vertical Datum of 1988.
btoc = below top of casing.
msl = mean sea level.
°C = degrees Celsius.
µ S/cm = microsiemens per centimeter.
ORP = oxidation-reduction potential.
mV = millivolts.
NTU = nephelometric turbidity units.
DO = dissolved oxygen.
mg/L = milligrams per liter.

TABLE 2
GROUNDWATER CHEMICAL ANALYTICAL RESULTS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Sample Location	Date	Chloride	Dissolved Sodium	Nitrate/ Nitrite as Nitrogen*		Total Dissolved Solids	
Monitoring Wells		Concentrations in mg/L					
MW-1	*30-Sep-10*	***77.2***	***84.2***	***17.70***		***489***	
	24-Jan-11	***70.7***	***85.5***	***17.90***		***532***	
	25-Apr-11	***425***	***166***	***31.50***		***1,190***	
	28-Oct-15	**44.1**	**83.9**	**14.70**		**507**	
	26-Jan-16	**52.6**	**84.6**	**17.00**		**487**	
	22-Apr-16	**77.1**	**93.1**	**19.20**		**529**	
	26-Jul-16	**85.6**	**90.2**	**21.30**	**J**	**650**	**J**
	21-Oct-16	**74.6**	**81.0**	**21.80**		**596**	
	24-Jan-17	**81.2**	**91.3**	**20.10**		**576**	
	24-Apr-17	**316**	**185**	**44.90**		**1,140**	
	20-Jul-17	**118**	**123**	**33.10**		**726**	
	10-Jan-18	**50.6**	**88.9**	**23.90**		**600**	
	19-Apr-18	**86.9**	**106**	**31.60**		**637**	
	12-Oct-18	**34.8**	**81.6**	**22.10**		**491**	
	12-Apr-19	**42.9**	**84.6**	**24.70**		**504**	
	23-Oct-19	**35.3**	**75.3**	**19.60**		**484**	
	4-May-20	**77.0**	**82.5**	**23.50**		**585**	
	15-Oct-20	**50.6**	**72.3**	**23.90**		**539**	
	21-Apr-21	**75.0**	**75.0**	**1.40**		**410**	
	21-Apr-22	**59**	**63**	**22**		**50**	
	26-Apr-23	**52**	**67**	**4.4**		**490**	
MW-2	*30-Sep-10*	***155***	***29.0***	***8.97***		***657***	
	24-Jan-11	***55.6***	***24.3***	***9.36***		***457***	
	25-Apr-11	***83.5***	***28.3***	***8.13***		***552***	
	28-Oct-15	**99.5**	**25.6**	**10.4**		**640**	
	26-Jan-16	**85.0**	**26.0**	**9.12**		**549**	
	22-Apr-16	**57.9**	**29.1**	**7.81**		**499**	
	26-Jul-16	**82.7**	**25.5**	**10.1**	**J**	**737**	**J**
	24-Oct-16	**89.9**	**24.0**	**13.00**		**592**	
	24-Jan-17	**91.1**	**23.8**	**11.90**		**600**	
	24-Apr-17	**48.8**	**27.9**	**8.65**		**494**	
	20-Jul-17	**94.2**	**30.2**	**8.50**		**585**	
	10-Jan-18	**--**	**--**	**--**		**--**	
	19-Apr-18	**93.5**	**30.5**	**13.20**		**600**	
	12-Oct-18	**85.5**	**31.0**	**15.90**		**631**	
	12-Apr-19	**80.5**	**32.4**	**14.50**		**589**	
	23-Oct-19	**67.0**	**37.9**	**15.40**		**630**	
	4-May-20	**67.9**	**27.4**	**14.60**		**641**	
	15-Oct-20	**65.1**	**26.8**	**16.60**		**617**	
	21-Apr-21	**77.0**	**26.0**	**1.10**		**520**	
	21-Apr-22	**76**	**23**	**14.00**		**560**	
	26-Apr-23	**67**	**27**	**2.0**		**460**	
MW-3	*1-Oct-10*	***788***	***235.0***	***31.40***		***1,980***	
	25-Jan-11	***656***	***258.0***	--		***1,600***	***J***
	26-Apr-11	***741***	***274.0***	***31.10***		***1,710***	
	28-Oct-15	**671**	**299.0**	**23.7**		**1,670**	
	26-Jan-16	**679**	**295.0**	**24.4**		**1,680**	
	22-Apr-16	**607**	**276.0**	**21.5**		**1,530**	
	26-Jul-16	**615**	**266.0**	**22.1**	**J**	**1,700**	**J**
	21-Oct-16	**578**	**272.0**	**24.90**		**1,410**	
	24-Jan-17	**561**	**259.0**	**23.90**		**1,360**	
	24-Apr-17	**678**	**272.0**	**38.80**		**1,590**	
	20-Jul-17	**525**	**231.0**	**37.70**		**1,420**	
	10-Jan-18	**462**	**215.0**	**0.66**		**1,370**	
	19-Apr-18	**493**	**228.0**	**36.20**		**1,320**	
	12-Oct-18	**381**	**196.0**	**30.60**		**1,140**	
	12-Apr-19	**475**	**227.0**	**26.00**		**1,160**	
	23-Oct-19	**444**	**222.0**	**24.40**		**1,210**	
	4-May-20	**480**	**226.0**	**21.70**		**1,310**	
	15-Oct-20	**458**	**215.0**	**23.40**		**1,300**	
	21-Apr-21	**590**	**230.0**	**1.90**		**1,200**	
	21-Apr-22	**710**	**210**	**22**		**1,200**	
	23-Apr-23	**540**	**220**	**3.4**		**1,200**	
MW-4	*30-Sep-10*	***175***	***82.3***	***42.00***		***883***	
	24-Jan-11	***445***	***154***	***53.80***		***1,550***	
	26-Apr-11	***943***	***254***	***76.30***		***2,210***	
	28-Oct-15	**97.2**	**81.4**	**36.3**		**717**	
	26-Jan-16	**97.0**	**76.1**	**35.3**		**679**	
	22-Apr-16	**124**	**85.5**	**43**		**804**	
	26-Jul-16	**121**	**78.4**	**43.9**	**J**	**1,050**	**J**
	21-Oct-16	**90.6**	**68.3**	**46.40**		**754**	
	24-Jan-17	**76.1**	**71.8**	**40.70**		**765**	
	24-Apr-17	**44.7**	**64.7**	**38.90**		**671**	

Please see notes on the last page.

TABLE 2
GROUNDWATER CHEMICAL ANALYTICAL RESULTS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Sample Location	Date	Chloride	Dissolved Sodium	Nitrate/ Nitrite as Nitrogen*	Total Dissolved Solids
Monitoring Wells		Concentrations in mg/L			
MW-4 Continued	20-Jul-17	40.6	60.8	37.50	653
	10-Jan-18	33.5	58.1	35.60	655
	19-Apr-18	32.0	57.2	22.10	529
	12-Oct-18	28.8	59.2	33.70	647
	12-Apr-19	24.1	57.6	36.40	593
	23-Oct-19	19.0	45.8	28.40	615
	4-May-20	21.4	48.7	25.00	558
	15-Oct-20	30.3	49.0	29.80	579
	21-Apr-21	29.0	43.0	5.90	510
	21-Apr-22	26	34	29	510
	23-Apr-23	26	49	5.4	670
MW-4 Field Duplicate	28-Oct-15	94.8	78.8	36.5	709
	26-Jan-16	70.7	74.4	35	697
	22-Apr-16	122	85.9	43.3	824
	26-Jul-16	116	80.8	42.9	1,050
	21-Oct-16	91.0	70.1	46.90	753
	24-Jan-17	74.5	70.2	40.90	709
	24-Apr-17	43.6	67.6	39.10	649
	20-Jul-17	39.9	60.4	36.60	648
	10-Jan-18	34.2	59.0	35.80	656
	19-Apr-18	31.8	57.9	21.30	526
	12-Oct-18	27.9	61.2	32.40	612
	12-Apr-19	24.8	59.8	36.50	592
	23-Oct-19	20.1	45.2	28.70	569
	4-May-20	21.9	48.8	24.90	561
	15-Oct-20	24.5	48.7	30.40	588
	21-Apr-21	23.0	43.0	5.90	490
	21-Apr-22	26	35	29	530
	26-Apr-23	25	47	6.3	500
MW-5	*29-Sep-10*	*19.4*	*32.1*	*14.40*	*496*
	23-Jan-11	*17.9*	*31.8*	*14.20*	*500*
	25-Apr-11	*18.9*	*32.2*	*13.20*	*488*
	28-Oct-15	17.2	37.3	13	504
	26-Jan-16	15.3	33.4	13.4	491
	22-Apr-16	19.1	33.3	12.4	508
	26-Jul-16	20.9	33.3	13.4 J	573 J
	21-Oct-16	18.9	33.2	14.90	503
	24-Jan-17	18.6	33.8	13.70	481
	24-Apr-17	19.9	31.6	11.40	462
	20-Jul-17	19.4	31.4	12.10	481
	10-Jan-18	19.3	31.4	13.20	508
	19-Apr-18	18.7	31.1	12.50	475
	12-Oct-18	18.0	33.0	13.30	472
	12-Apr-19	18.7	34.1	13.30	459
	23-Oct-19	17.6	34.2	13.90	512
	4-May-20	18.5	34.1	12.40	503
	15-Oct-20	17.5	33.1	14.40	528
	21-Apr-21	20.0	32.0	1.70	450
	21-Apr-22	19	31	15	540
	26-Apr-23	19	33	2.6	350
MW-6	*29-Sep-10*	*15.6*	*18.6*	*4.95*	*545*
	23-Jan-11	*19.0*	*23.6*	*7.04*	*425*
	25-Apr-11	*19.3*	*24.2*	*7.65*	*430*
	28-Oct-15	Well damaged, no sample collected.			
	26-Jun-16	Well decommissioned.			
MW-7	26-Jul-16	19.3	25.0	7.01	521
	21-Oct-16	17.6	23.1	7.30	394
	24-Jan-17	19.8	26.0	7.56	397
	24-Apr-17	19.4	24.4	7.06	403
	20-Jul-17	20.7	25.7	7.88	423
	10-Jan-18	20.8	25.0	8.58	429
	19-Apr-18	17.3	24.8	6.19	383
	12-Oct-18	19.5	26.2	8.20	424
	12-Apr-19	19.6	27.5	8.61	408
	23-Oct-19	18.8	26.5	8.42	417
	4-May-20	19.2	26.1	7.91	433
	15-Oct-20	26.2	25.2	9.20	418
	21-Apr-21	23.0	25.0	1.10	490
	21-Apr-22	24	24	10	460
	26-Apr-23	22	28	1.8	360
Federal or State Cleanup Standard		250	--	14.00	--

Please see notes on the last page.

TABLE 2
GROUNDWATER CHEMICAL ANALYTICAL RESULTS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Notes:

Italicized values are from Exponent's Final Remedial Investigation Report (September 9, 2011) and Final Feasibility Study (May 4, 2012), prior to implementation of the Final Cleanup Action Plan.

Bold *denotes a detected concentration.*

Shaded cell denotes an exceedance in the cleanup standard. The exceeded cleanup standard is also shaded.

mg/L = milligrams per liter.

-- = not analyzed for or not available.

J = estimated value.

** = results beginning October 2015 are nitrate and nitrite as nitrogen.*

Chloride cleanup level based on federal and state drinking water secondary maximum contaminant level based on taste and odor concerns.

Nitrite cleanup level based on background concentrations in groundwater.

EPA's recommended range for sodium for most individuals is 30,000 to 60,000 micrograms per liter (µg/L) based on aesthetic effects (taste). The EPA recommended level for sodium-sensitive consumers is 20,000 µg/L (see WAC 246-290-310(3)(a)). The upper limit of EPA's recommended range for most individuals of 60,000 µg/L is used for comparison.

TABLE 3
SURFACE WATER CHEMICAL ANALYTICAL RESULTS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Sample Location	Date	Chloride	Total Sodium	Nitrate/ Nitrite as Nitrogen*		Total Dissolved Solids	
Surface Spring		Concentrations in mg/L					
SW-2	*14-May-10*	***21.7***	***27.5***	***9.9***	***J***	***408***	
SW-1	28-Oct-15	*SW-2 dry during sampling event. Relocate sample location to SW-1.*					
	26-Jan-16	**20.7**	**25.5**	**9.0**		**419**	
	22-Apr-16	**20.0**	**26.4**	**8.4**		**431**	
	26-Jul-16	**21.6**	**25.7**	**8.3**	**J**	**576**	**J**
	21-Oct-16	**20.6**	**27.0**	**10.0**		**443**	
	24-Jan-17	**21.7**	**27.0**	**9.5**		**422**	
	24-Apr-17	**20.0**	**27.6**	**8.1**		**413**	
	20-Jul-17	**20.9**	**25.4**	**7.1**		**410**	
	10-Jan-18	**21.1**	**25.1**	**8.4**		**428**	
	19-Apr-18	**17.6**	**24.6**	**7.69**		**387**	
	12-Oct-18	**19.0**	**25.7**	**7.58**		**407**	
	12-Apr-19	**19.9**	**27.1**	**9.02**		**401**	
	23-Oct-19	**19.2**	**26.6**	**9.04**		**422**	
	4-May-20	**20.5**	**26.5**	**8.68**		**415**	
	15-Oct-20	**20.0**	**25.9**	**9.9**		**420**	
	21-Apr-21	**24.0**	**25.0**	**1.3**		**380**	
	21-Apr-22	**24**	**23**	**11**		**460**	
	26-Apr-23	**23**	**24**	**2.0**		**280**	
SW-3	*14-May-10*	***301***	***111.0***	***18.0***	***J***	***821***	
	28-Oct-15	**272**	**130.0**	**15.3**		**932**	
	26-Jan-16	**269**	**116.0**	**15.7**		**925**	
	22-Apr-16	**256**	**118.0**	**14.4**		**860**	
	26-Jul-16	**251**	**112.0**	**15.0**	**J**	**1,110**	**J**
	21-Oct-16	**259**	**115.0**	**16.7**		**848**	
	24-Jan-17	**258**	**120.0**	**15.3**		**825**	
	24-Apr-17	**261**	**119.0**	**16.6**		**878**	
	20-Jul-17	**283**	**126.0**	**20.1**		**907**	
	10-Jan-18	**200**	**103.0**	**17.8**		**842**	
	19-Apr-18	**182**	**98.2**	**16.5**		**698**	
	12-Oct-18	**181**	**103.0**	**16.6**		**728**	
	12-Apr-19	**168**	**97.1**	**16.5**		**701**	
	23-Oct-19	**146**	**91.2**	**14.5**		**700**	
	4-May-20	**157**	**89.1**	**13.1**		**681**	
	15-Oct-20	**158**	**90.4**	**15.5**		**702**	
	21-Apr-21	**190**	**95.0**	**2.4**		**650**	
	21-Apr-22	**290**	**88**	**17**		**670**	
	26-Apr-23	**240**	**100**	**2.9**		**600**	
SW-3 Field Duplicate	28-Oct-15	**265**	**121.0**	**15.1**		**887**	
	26-Jan-16	**273**	**116.0**	**15.7**		**912**	
	22-Apr-16	**247**	**115.0**	**14.4**		**881**	
	26-Jul-16	**250**	**111.0**	**15.0**	**J**	**1,090**	**J**
	21-Oct-16	**250**	**117.0**	**16.6**		**862**	
	24-Jan-17	**253**	**119.0**	**15.3**		**826**	
	24-Apr-17	**251**	**119.0**	**16.6**		**869**	
	20-Jul-17	**283**	**124.0**	**19.7**		**926**	
	10-Jan-18	**194**	**102.0**	**17.8**		**854**	
	19-Apr-18	**183**	**94.7**	**15.6**		**744**	
	12-Oct-18	**187**	**96.4**	**13.5**		**748**	
	12-Apr-19	**168**	**96.5**	**16.4**		**694**	
	23-Oct-19	**90**	**89.6**	**14.8**		**711**	
	4-May-20	**153**	**87.9**	**13.3**		**722**	
	15-Oct-20	**163**	**88.7**	**15.4**		**714**	
	21-Apr-21	**200**	**98.0**	**3.0**		**670**	
	21-Apr-22	**250**	**88**	**16**		**660**	
	26-Apr-23	**220**	**94**	**2.6**		**880**	
SW-5	*14-May-10*	***252***	***96.1***	***14.8***		***739***	
	28-Oct-15	Spring Dry During Sampling Event					
	26-Jan-16						
	22-Apr-16						
	26-Jul-16						
	21-Oct-16						
	24-Jan-17	**228**	**106.0**	**1.1**		**752**	
	24-Apr-17	**121**	**67.3**	**7.5**		**563**	
	20-Jul-17	**191**	**96.6**	**3.7**		**746**	
	10-Jan-18	**145**	**77.6**	**8.2**		**694**	
	19-Apr-18	**93.6**	**63.3**	**5.89**		**501**	
	12-Oct-18	**167**	**82.9**	**5.38**		**696**	
	12-Apr-19	**136**	**80.5**	**7.08**		**568**	
	23-Oct-19	**141**	**85.0**	**3.78**		**684**	

Please see notes on the last page.

TABLE 3
SURFACE WATER CHEMICAL ANALYTICAL RESULTS
HEGLAR KRONQUIST LANDFILL COMPLIANCE MONITORING
0202596-001
MEAD, WASHINGTON

Sample Location	Date	Chloride	Total Sodium	Nitrate/ Nitrite as Nitrogen*	Total Dissolved Solids
Surface Spring		Concentrations in mg/L			
SW-5 Continued	4-May-20	**149**	**82.6**	**1.79**	**661**
	15-Oct-20	**142**	**80.4**	**6.6**	**676**
	21-Apr-21	**200**	**88.0**	**0.2**	**640**
	21-Apr-22	**280**	**87**	**3.2**	**680**
	26-Apr-23	**230**	**92**	**0.3**	**700**
Federal or State Cleanup Standard		250	--	14	--

Notes:

Italicized values are from Exponent's Final Remedial Investigation Report (September 9, 2011) and Final Feasibility Study (May 4, 2012), prior to implementation of the Final Cleanup Action Plan.

Bold *denotes a detected concentration.*

Shaded cell denotes an exceedance in the cleanup standard. The exceeded cleanup standard is also shaded.

-- = not analyzed for or not available.

mg/L = milligrams per liter.

J = estimated value.

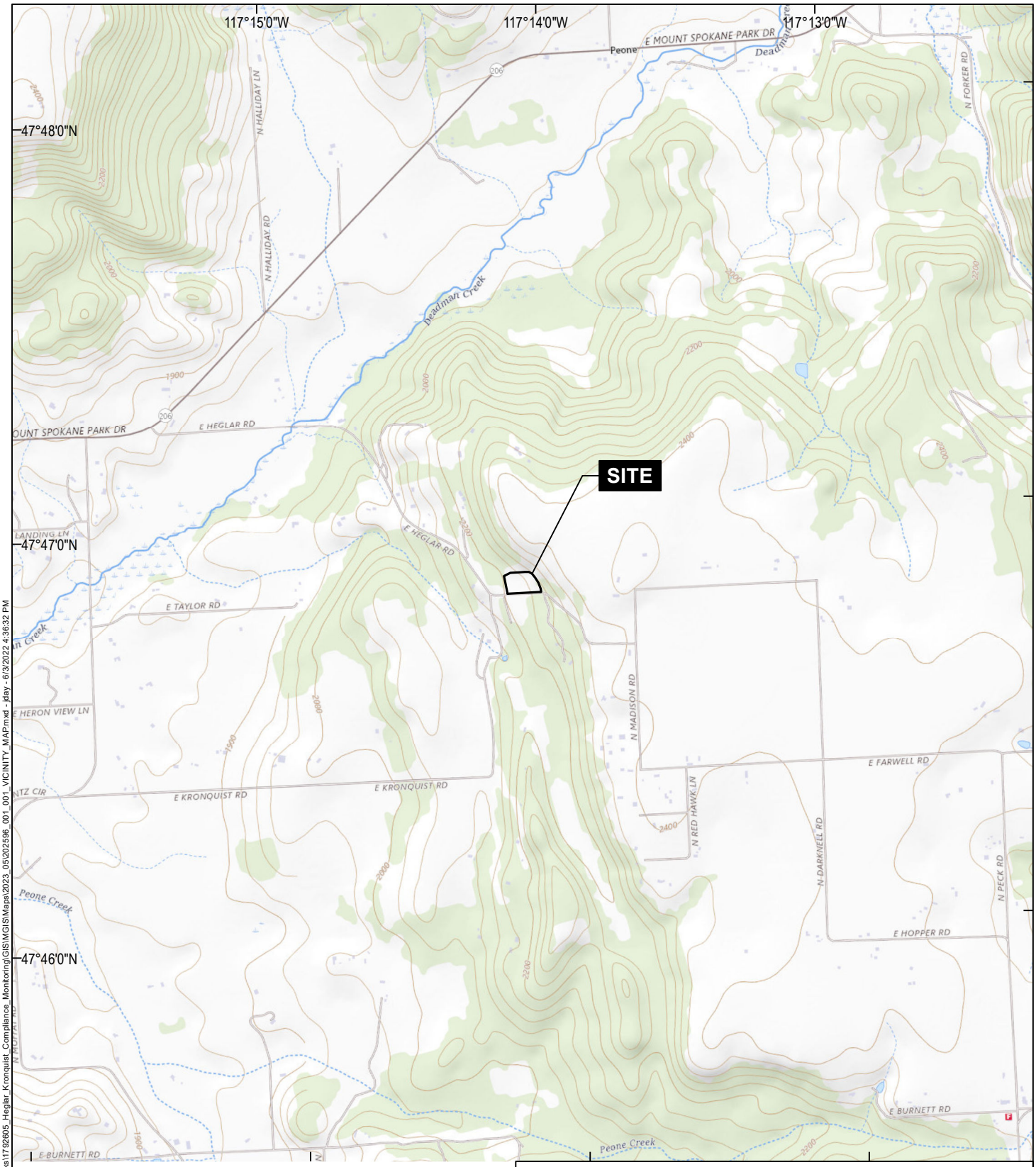
** = results beginning October 2015 are Nitrate + Nitrite as Nitrogen.*

Chloride cleanup level based on federal and state drinking water secondary maximum contaminant level based on taste and odor concerns.

Nitrite cleanup level based on background concentrations in groundwater.

EPA's recommended range for sodium for most individuals is 30,000 to 60,000 micrograms per liter (µg/L) based on aesthetic effects (taste). The EPA recommended level for sodium-sensitive consumers is 20,000 µg/L (see WAC 246-290-310(3)(a)). The upper limit of EPA's commended range for most individuals of 60,000 µg/L is used for comparison.

FIGURES



GIS: \\haleyaldrich.com\share\sea_projects\Notebooks\172605_Heglar_Kronquist_Compliance_Monitoring\GIS\MGIS\Maps\2023_0512022596_001_001_VICINITY_MAP.mxd - jday - 6/3/2022 4:36:32 PM

HALEY ALDRICH

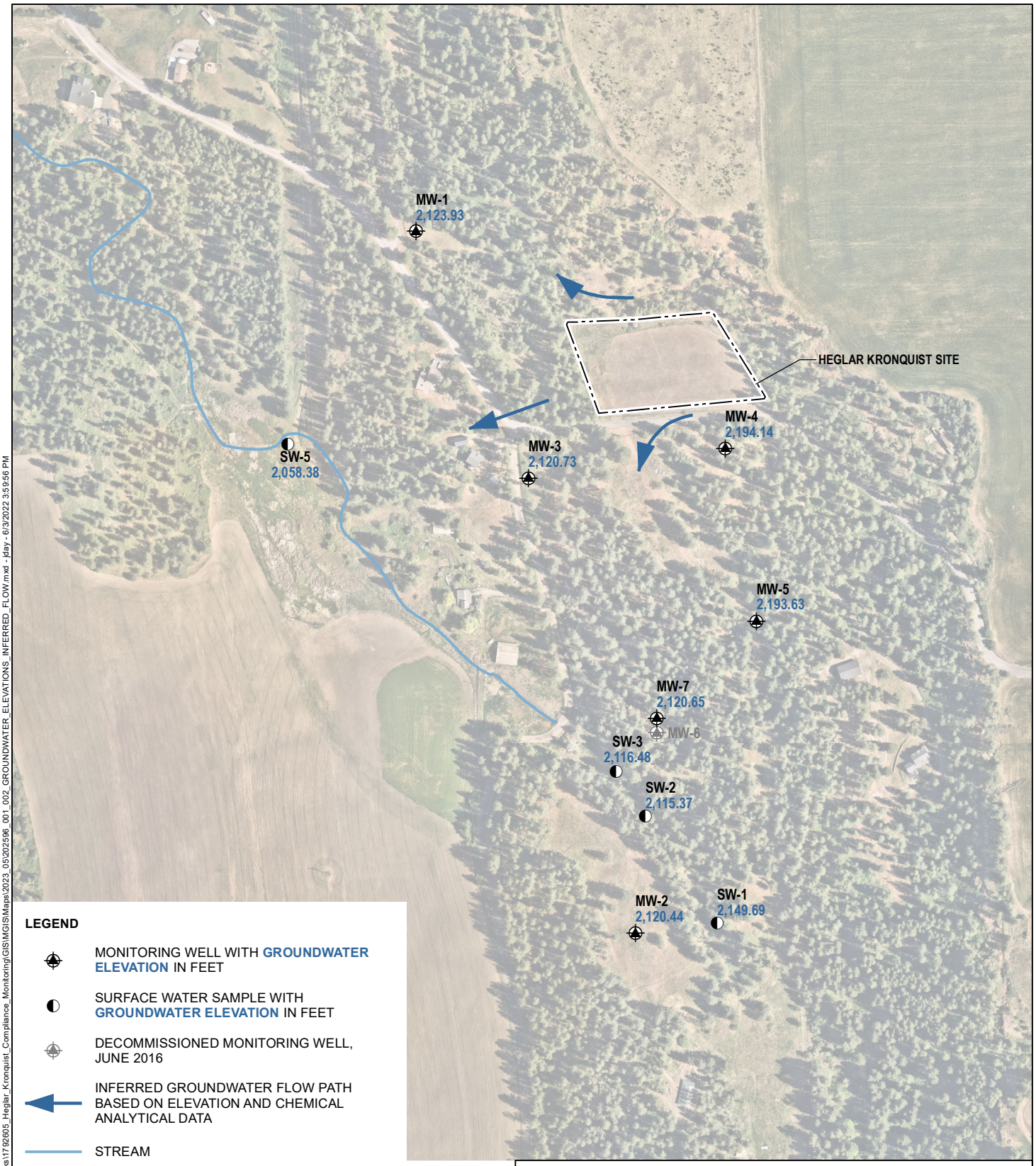
HEGLAR KRONQUIST SITE
MEAD, WASHINGTON

VICINITY MAP

MAP SOURCE: USGS
SITE COORDINATES: 47°46'51"N, 117°14'09"W

APPROXIMATE SCALE: 1 IN = 2000 FT
MAY 2023

FIGURE 1



LEGEND

- MONITORING WELL WITH **GROUNDWATER ELEVATION** IN FEET
- SURFACE WATER SAMPLE WITH **GROUNDWATER ELEVATION** IN FEET
- DECOMMISSIONED MONITORING WELL, JUNE 2016
- INFERRED GROUNDWATER FLOW PATH BASED ON ELEVATION AND CHEMICAL ANALYTICAL DATA
- STREAM

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. MONITORING WELL AND SURFACE WATER SAMPLING LOCATIONS SURVEYED BY ADAMS AND CLARK, INC. 2011; REFERENCED TO NAD 83 WASHINGTON STATE PLANE NORTH (US FEET) AND NAVD 88.
3. AERIAL IMAGERY SOURCE: NEARMAP, 13 MAY 2021

N

0 200 400
SCALE IN FEET

HALEY ALDRICH

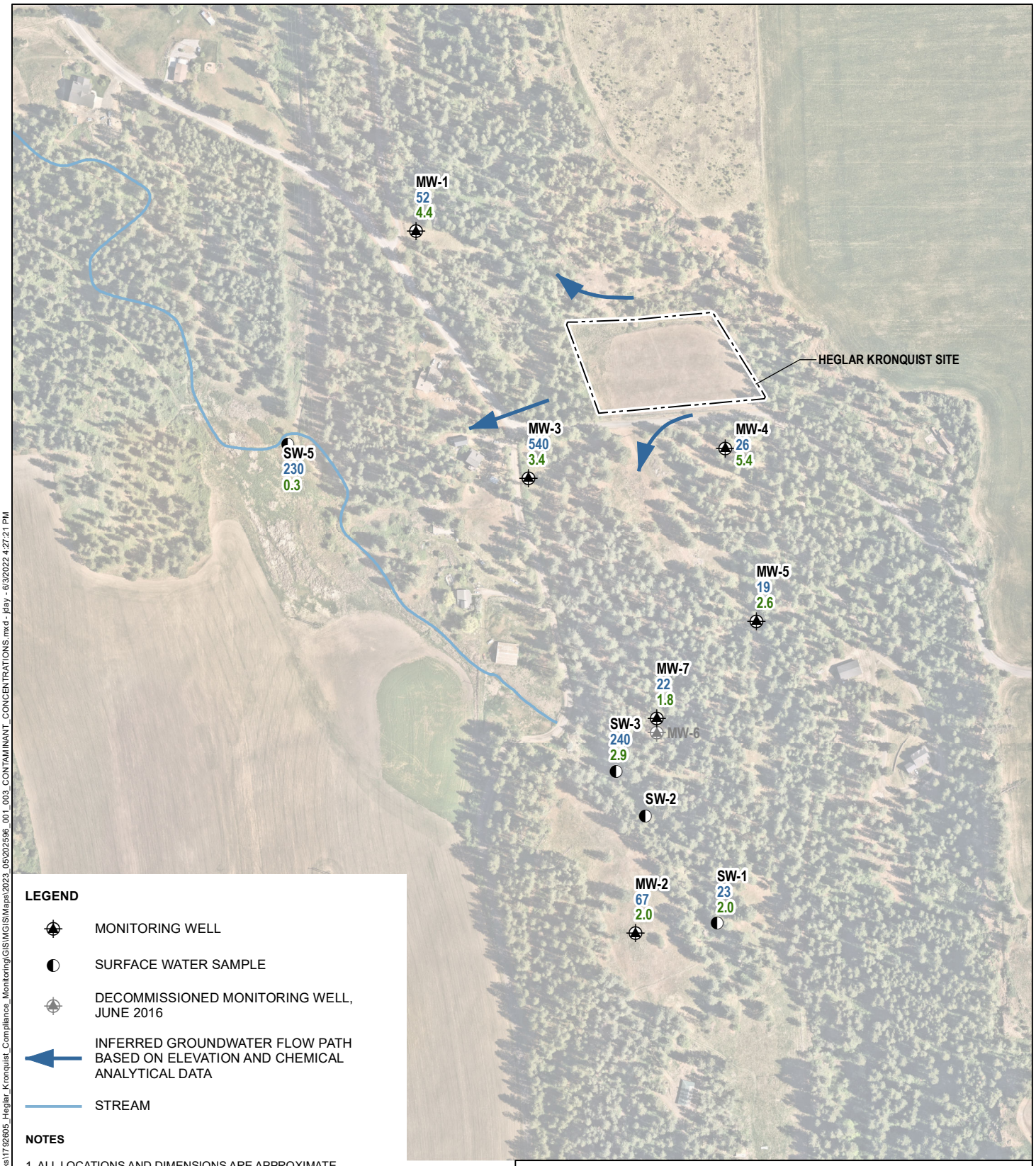
HEGLAR KRONQUIST SITE
MEAD, WASHINGTON

GROUNDWATER ELEVATIONS AND INFERRED FLOW DIRECTIONS APRIL 2023

MAY 2023

FIGURE 2

GIS: \\haleyaldrich.com\share\sea_projects\Notebooks\172605_Heglar_Kronquist_Compliance_Monitoring\GIS\MGISMaps\2023_0512022596_001_002_GROUNDWATER_ELEVATIONS_INFERRED_FLOW.mxd - jday - 6/3/2022 3:59:56 PM



LEGEND

- MONITORING WELL
- SURFACE WATER SAMPLE
- DECOMMISSIONED MONITORING WELL, JUNE 2016
- INFERRED GROUNDWATER FLOW PATH BASED ON ELEVATION AND CHEMICAL ANALYTICAL DATA
- STREAM

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. MG/L = MILLIGRAMS PER LITER
3. **CHLORIDE CONCENTRATION (MG/L)**
4. **NITRATE/NITRITE CONCENTRATION (MG/L)**
5. MONITORING WELL AND SURFACE WATER SAMPLING LOCATIONS SURVEYED BY ADAMS AND CLARK, INC. 2011; REFERENCED TO NAD 83 WASHINGTON STATE PLANE NORTH (US FEET) AND NAVD 88.
6. AERIAL IMAGERY SOURCE: NEARMAP, 13 MAY 2021

N

0 200 400

SCALE IN FEET

HALEY ALDRICH

HEGLAR KRONQUIST SITE
MEAD, WASHINGTON

CONTAMINANT CONCENTRATIONS APRIL 2023

MAY 2023

FIGURE 3

GIS: \\haleyaldrich.com\share\sea_projects\Notebooks\172605_Heglar_Kronquist_Compliance_Monitoring\GIS\MGISMaps\2023_05\202596_001_003_CONTAMINANT_CONCENTRATIONS.mxd - jday - 6/3/2022 4:27:21 PM

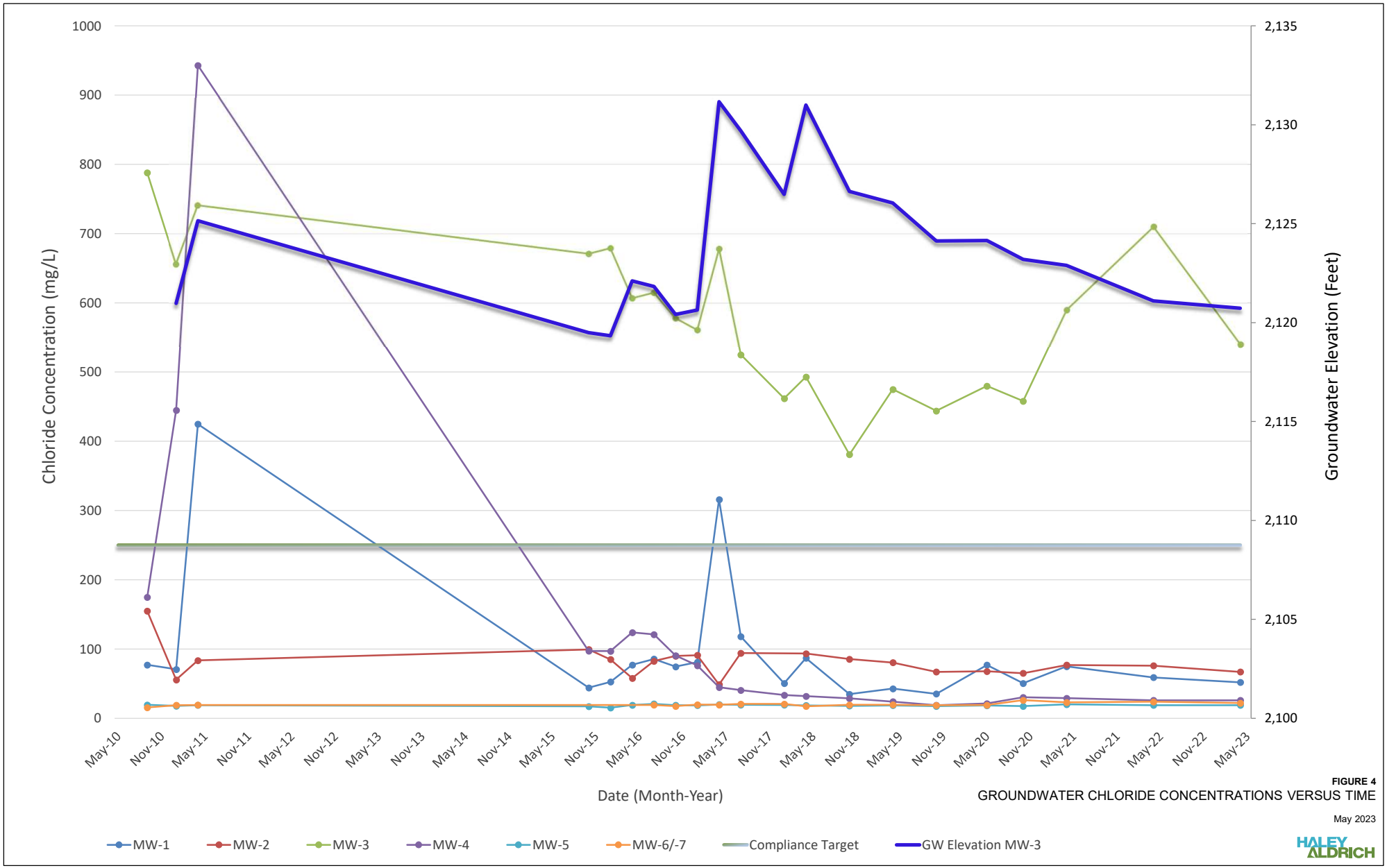


FIGURE 4

GROUNDWATER CHLORIDE CONCENTRATIONS VERSUS TIME

May 2023

HALEY ALDRICH

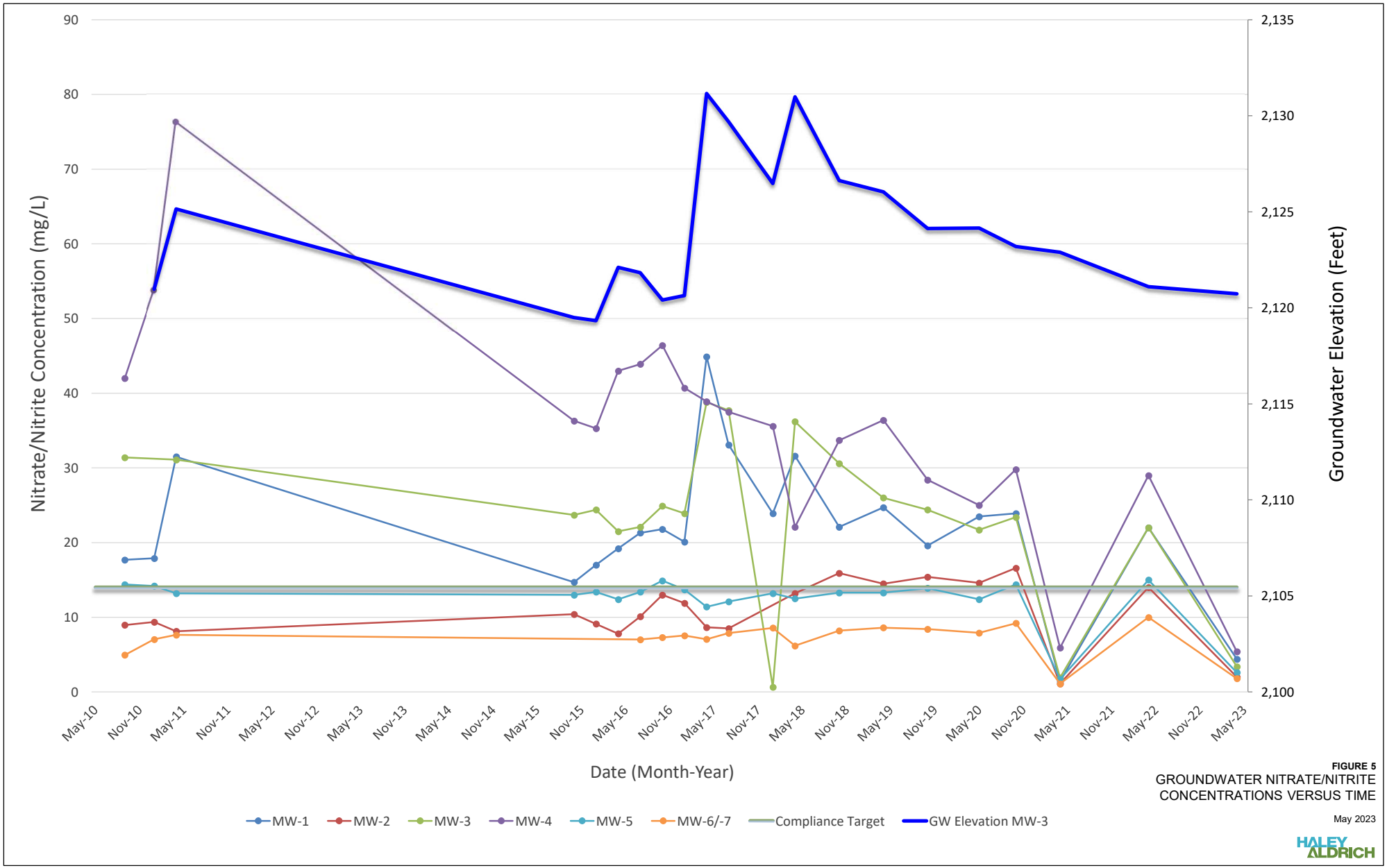


FIGURE 5
GROUNDWATER NITRATE/NITRITE CONCENTRATIONS VERSUS TIME

May 2023

HALEY ALDRICH

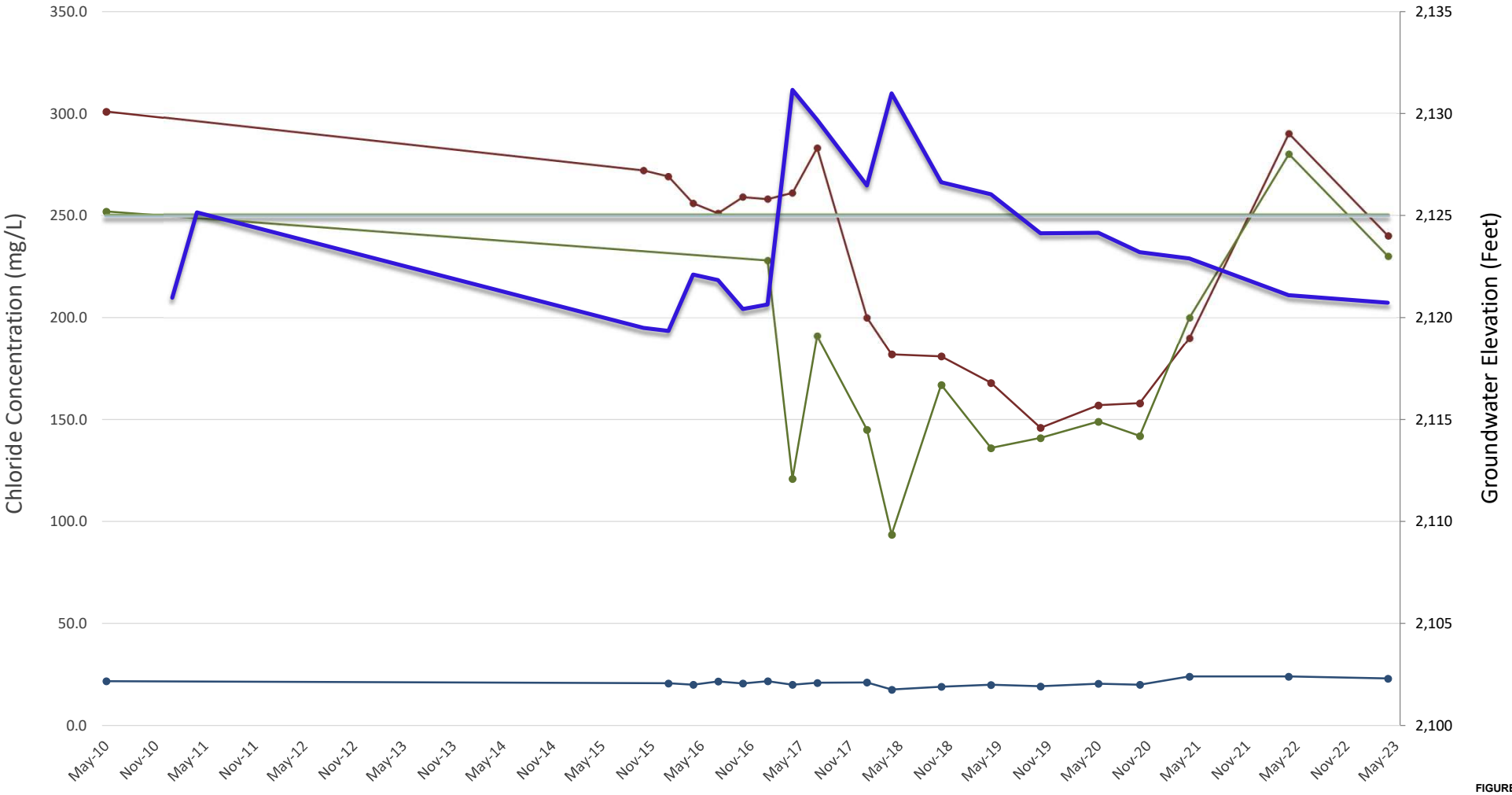


FIGURE 6
SURFACE WATER CHLORIDE CONCENTRATIONS VERSUS TIME

May 2023

HALEY ALDRICH

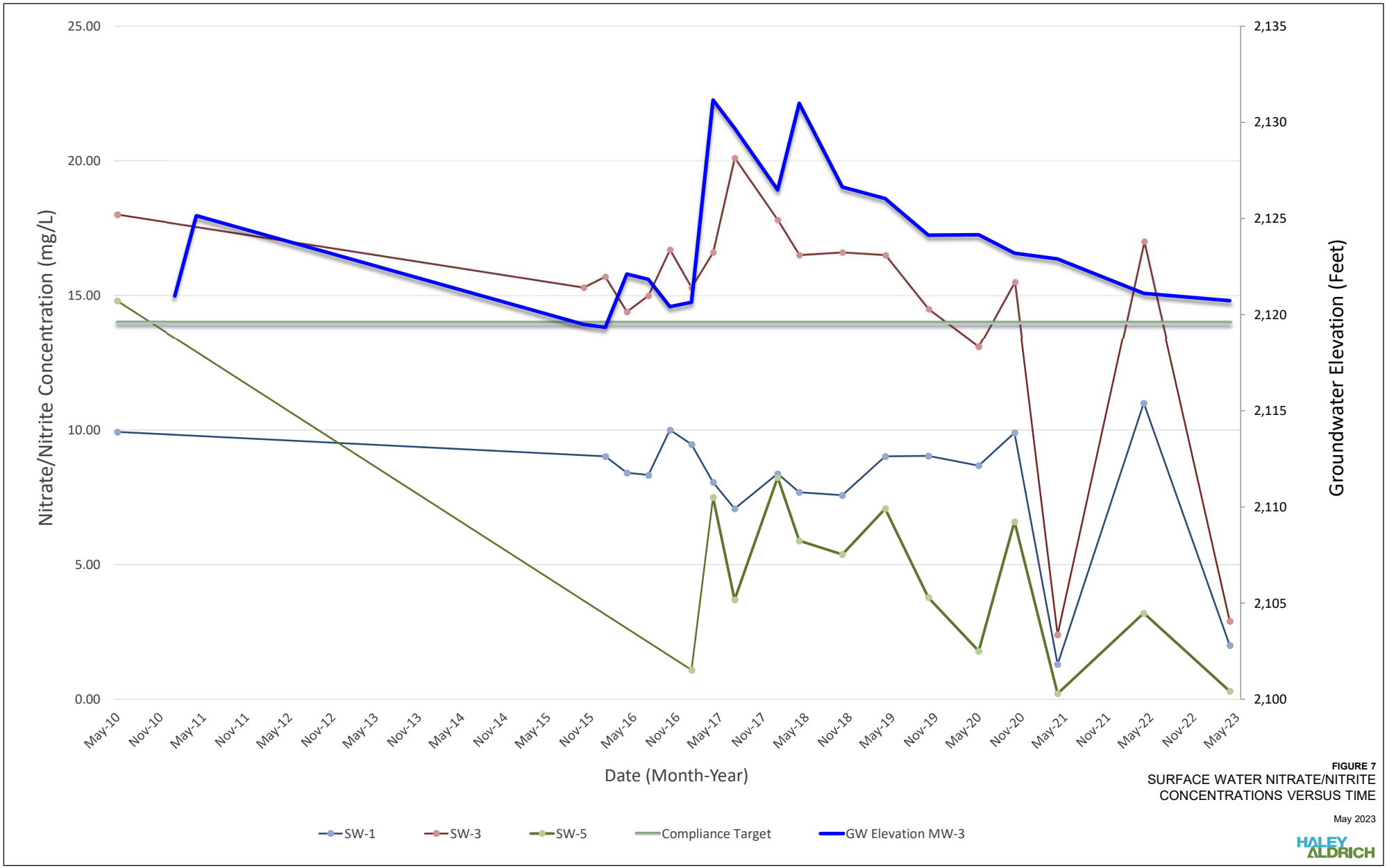


FIGURE 7
SURFACE WATER NITRATE/NITRITE CONCENTRATIONS VERSUS TIME

May 2023

HALEY ALDRICH

APPENDIX A
Quality Assurance Review and Analytical Laboratory Report

Appendix A

Quality Assurance Review and Analytical Laboratory Report

This appendix documents the results of a quality assurance/quality control (QA/QC) review of the analytical data for samples collected during April 2023. Eurofins TestAmerica (Eurofins) in Spokane, Washington, performed groundwater and surface water analyses. The analytical laboratory report is included in this appendix.

The QA review included examination and validation of the laboratory's summary reports, including:

- analytical methods;
- reporting limits;
- sample holding times;
- custody records;
- surrogates, spikes, and blanks;
- calibration criteria; and
- duplicates.

The QA review did not include a review of raw data.

Analytical Methods and Reporting Limits

This section describes the analytical methods and detection/reporting limits for the chemical analyses. Three discrepancies between the Sampling and Analysis Plan (SAP)/Quality Assurance Project Plan (QAPP; Hart Crowser, 2013) and the laboratory results were noted.

According to the SAP/QAPP, both groundwater and surface water samples were to be analyzed for nitrate as nitrogen by U.S. Environmental Protection Agency (EPA) Method 300.0 or EPA Method 353.2. The samples were analyzed for nitrate and nitrite as nitrogen by EPA Method 353.2. The sample results shown in Table 2 were subsequently flagged to indicate the variance.

Per the SAP/QAPP, total dissolved solids (TDS) were to be analyzed by EPA Method 160.1. The samples were analyzed by Standard Method (SM) 2540C, which is a comparable method.

According to the SAP, both groundwater and surface water samples were to be analyzed for total sodium. Historical compliance monitoring for the site included groundwater samples analyzed for dissolved sodium and surface water samples analyzed for total sodium. The April 2023 sampling event followed the historical compliance monitoring.

ANALYTICAL METHODS

Groundwater Analyses. Chemical analyses of groundwater samples consisted of the following:

- chloride by EPA Method 300.0;
- nitrate and nitrite as nitrogen by EPA Method 353.2;
- dissolved sodium by EPA Method 6010C; and
- TDS by SM 2540C.

Surface Water Analyses. Chemical analyses of surface water samples consisted of the following:

- chloride by EPA Method 300.0;
- nitrate and nitrite as nitrogen by EPA Method 353.2;
- total sodium by EPA Method 6010C; and
- TDS by SM 2540C.

METHOD REPORTING AND DETECTION LIMITS

Reporting limits are set by the laboratory and are based on instrumentation abilities, sample matrix, and suggested reporting limits by the EPA or the Washington State Department of Ecology. In some cases, the reporting limit is raised because of high analyte concentrations in the samples or matrix interferences. Reporting limits are generally consistent with industry standards and below promulgated standards (if not raised as discussed above). Reporting limits were reviewed and are generally acceptable for this project.

SAMPLE RECEIVING DISCREPANCIES

There were no sample receiving discrepancies during the April 2023 sampling event.

Data Quality Assurance

Data quality is indicated by assessing data precision, accuracy, and completeness. An evaluation of the data follows.

PRECISION

Precision is the degree of reproducibility or agreement between independent or repeated measurements. Analytical variability is expressed as the relative percent difference (RPD) between field or laboratory replicates and between the primary and duplicate matrix spike (MS) and laboratory control sample (LCS) analyses.

Matrix Spike Duplicates. A second MS sample (matrix spike duplicate [MSD]) is prepared and analyzed. This is compared with the initial MS to assess the precision of the analytical method by calculating the RPD. The MSD RPDs were within the acceptability criteria.

Laboratory Duplicates. A duplicate is a second laboratory sample collected from a submitted sample and prepared along with the original. It is analyzed and compared with the first to assess the precision of the analytical method and the potential variability of the sample matrix. This comparison is reported as the RPD. The laboratory duplicate RPDs were within the acceptability criteria or not applicable when the sample and duplicate were non-detect.

Field Duplicates. Field duplicate control samples assess whether collection techniques result in reproducible analytical results. Two field duplicate samples were collected for analyses out of a total of nine samples. An RPD of 50 percent or less between the sample and duplicate constitutes acceptable precision. Duplicates had RPDs within acceptable ranges.

ACCURACY

Accuracy or bias measures the closeness of the measured value to the true value. Accuracy is the agreement between a measured value and its true or accepted value. While it is not possible to determine absolute accuracy for environmental samples, analyzing standards and spiked samples assesses accuracy indirectly.

Matrix Spike Samples analyses are performed on samples submitted to the laboratory that are of the same matrix as the actual sample. The sample is spiked with known levels of the constituents of interest. These analyses are used to assess the potential for matrix interference with recovery, detection of the constituents of interest, and the accuracy of the determination. The spiked sample results are compared with the expected result (i.e., sample concentration plus spike amount) and are reported as percent recovery. Each MS samples were within control limit.

Laboratory Control Sample is also analyzed by the laboratory to assess the accuracy of the analytical equipment. The sample is prepared by spiking the analyte-free matrix with known levels of the constituents of interest (i.e., a standard). The concentrations are measured, and the results are compared with the known spiked levels. This comparison is expressed as percent recovery. Each LCS recoveries for the target analytes were within control limits.

COMPLETENESS

Completeness is defined as the percentage of measurements made that are judged to be valid. The completeness goal is essentially that a sufficient amount of valid data is generated to meet the objectives of the project (i.e., assess groundwater conditions). One laboratory report was received and is included in this appendix. No sample results were rejected and the data completeness for the samples is 100 percent for each requested analysis.

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

Data Usability Summary Report

Project Name: Heglar Kronquist

Project Description: Groundwater Samples

Sample Date(s): 4 April 2023

Analytical Laboratory: Eurofins Test America Laboratories, Inc. – Spokane, WA

Validation Performed by: Katherine Miller

Validation Reviewed by: Kathryn Lindenschmidt

Validation Date: 26 May 2023

Haley & Aldrich, Inc. prepared this Data Usability Summary Report (DUSR) to summarize the review and validation of the analytical results for Sample Delivery Group (SDG) listed. This DUSR is organized into the following sections:

1. **Sample Delivery Group Number 590-20358-1**
2. **Explanations**
3. **Glossary**
4. **Abbreviations**
5. **Qualifiers**

References

This data validation and usability assessment was performed per the guidance and requirements established by the United States Environmental Protection Agency (USEPA) using the following reference materials:

- National Functional Guidelines (NFG) for Inorganic Data Review.
- The project-specific Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section).

Data reported in this sampling event were reported to the laboratory method detection limit (MDL). Results found between the MDL and reporting limit (RL) are flagged J as estimated.

Sample data were qualified in accordance with the laboratory's standard operating procedures (SOP). The results presented in each laboratory report were found to be compliant with the data quality objectives (DQO) for the project and therefore usable; any exceptions are noted in the following pages.

1. Sample Delivery Group Number 590-20358-1

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number 590-20358-1, dated 11 May 2023. Samples were collected, preserved, and shipped following standard chain of custody (COC) protocol.

Samples were also received appropriately, identified correctly, and analyzed according to the COC.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Date	Matrix	Methods
MW-1	N	590-20358-1	04/26/2023	WG	A, B, C, D
MW-2	N	590-20358-2	04/26/2023	WG	A, B, C, D
MW-3	N	590-20358-3	04/26/2023	WG	A, B, C, D
MW-4	N	590-20358-4	04/26/2023	WG	A, B, C, D
MW-5	N	590-20358-5	04/26/2023	WG	A, B, C, D
MW-7	N	590-20358-6	04/26/2023	WG	A, B, C, D
MW-400	FD	590-20358-7	04/26/2023	WG	A, B, C, D
SW-2	N	590-20358-8	04/26/2023	WS	A, B, C, E
SW-3	N	590-20358-9	04/26/2023	WS	A, B, C, E
SW-5	N	590-20358-10	04/26/2023	WS	A, B, C, E
SW-300	FD	590-20358-11	04/26/2023	WS	A, B, C, E

Method Holding Times			
A.	E300	Chloride	28 days for liquid unpreserved
B.	E353.2	Nitrogen, Nitrate-Nitrite	28 days for liquid, preserved
C.	SM2540C	Total Dissolved Solids (TDS)	7 days
D.	SW6010D	Dissolved Sodium	180 days for liquid, preserved
E.	SW6010D	Total Sodium	180 days for liquid, preserved

1.2 HOLDING TIMES/PRESERVATION

The samples arrived at the laboratory at the proper temperature and were prepared and analyzed within the holding time and preservation criteria specified per method protocol with the following exceptions:

Method	Matrix	Holding Time	Preservation	Sample ID, Violation, Qualification
ALL	Water	Various	Cool to ≤ 6 °C	The samples were received warm at 17.5 degrees Celsius (°C). However, the cooler was delivered same day as sample collection and there is evidence chilling had begun. No qualification necessary.

1.3 REPORTING LIMITS AND SAMPLE DILUTIONS

The RLs for the samples within this SDG were not below the minimum RL requirements specified by the project specific QAPP. However, all samples had detections.

1.4 LABORATORY CONTROL SAMPLES

Refer to section E 1.3. Compounds associated with the laboratory control samples/laboratory control sample duplicates (LCS/LCSD) analyses associated with client samples exhibited recoveries and relative percent differences (RPDs) within the specified limits.

1.5 MATRIX SPIKE SAMPLES

Refer to section E 1.4. The sample(s) below were used for matrix spike/matrix spike duplicate (MS/MSD):

Lab Sample Number	Matrix Spike/Matrix Spike Duplicate Sample Client ID	Method(s)
590-20358-1	MW-1	SW6010D, E353.2

The MS/MSD recoveries and the relative percent difference (RPD) between the MS and MSD results were within the specified limits with the following exceptions:

Sample Type	Method	Parent Sample	Analyte	%R/RPD	Qualifier	Affected Samples
MS/MSD	E353.2	MW-1	Nitrate-Nitrite	9%/9%	NA	None, dilution >5x

1.6 BLANK SAMPLE ANALYSIS

Refer to section E 1.5. Method blank samples had no detections, indicating that no contamination from laboratory activities occurred.

1.7 DUPLICATE SAMPLE ANALYSIS

Refer to section E 1.6. The following sample(s) were used for laboratory duplicate analysis and the RPDs were all below 20 percent (or the absolute difference rule was satisfied if detects were less than 5 times the RL):

Lab Sample Number	Laboratory Duplicate Sample Client ID	Method(s)
590-20358-1	MW-1	SW6010D

The following sample(s) were used for field duplicate analysis. The RPD comparison for detections in either the parent or duplicate sample(s) is shown below. RPDs were all below 50 percent for water (or the absolute difference rule was satisfied if detects were less than 5 times the RL). Any exceptions are noted below and qualified.

Primary Sample ID	Duplicate Sample ID	Method(s)
MW-4	MW-400	E300, E353.2, SM2540C, SW6010D
SW-3	SW-300	E300, E353.2, SM2540C, SW6010D

1.8 PRECISION AND ACCURACY

Refer to section E 1.7. Where required by the method, some measurement of analytical accuracy and precision was reported for each method with the site samples.

1.9 SYSTEM PERFORMANCE AND OVERALL ASSESSMENT

The results presented in this report were found to comply with the DQOs for the project and the guidelines specified by the analytical method. Based on the review of this report, the data are useable and acceptable as no data was rejected. No qualifiers were applied to any data in this report.

2. Explanations

The following explanations include more detailed information regarding each of the sections in the DUSR above. Not all sections in the Explanations are represented:

- E 1.3 Laboratory Control Samples
  - The laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analyses are used to assess the precision and accuracy of the analytical method independent of matrix interferences.
- E 1.4 Matrix Spike Samples
  - Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effects of the sample matrix on the sample preparation procedures and measurement methodologies.
  - For inorganic methods, when a matrix spike recovery falls outside of the control limits and the sample result is less than four times the spike added, a post digestion spike (PDS) is performed.
- E 1.5 Blank Sample Analysis
  - Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination.
- E 1.6 Laboratory and Field Duplicate Sample Analysis
  - The laboratory duplicate sample analysis is used by the laboratory at the time of the analysis to demonstrate acceptable method precision. The RPD or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
  - The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The relative percent difference (RPD) or absolute difference was evaluated for each duplicate sample pair to monitor the reproducibility of the data.
- E 1.7 Precision and Accuracy
  - Precision measures the reproducibility of repetitive measurements. In a laboratory environment, this will be measured by determining the relative percent difference (RPD) found between a primary and a duplicate sample. This can be an LCS/LCSD pair, a MS/MSD pair, a laboratory duplicate performed on a site sample, or a field duplicate collected and analyzed concurrently with a site sample.
  - Accuracy is a statistical measurement of the correctness of a measured value and includes components of random error (variability caused by imprecision) and systematic error. In a laboratory environment, this will be measured by determining the percent recovery (%R) of certain spiked compounds. This can be assessed using LCS, blank spike (BS), MS, and/or surrogate recoveries.

3. Glossary

Not all of the following symbols, acronyms, or qualifiers occur in this document.

- Sample Types:
  - EB Equipment Blank Sample
  - FB Field Blank Sample
  - FD Field Duplicate Sample
  - N Primary Sample
  - TB Trip Blank Sample
- Units:
  - µg/kg microgram per kilogram
  - µg/L microgram per liter
  - µg/m^3 microgram per cubic meter
  - mg/kg milligram per kilogram
  - mg/L milligram per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
- Matrices:
  - AA Ambient Air
  - GS Soil Gas
  - GW/WG Groundwater
  - QW Water Quality
  - IA Indoor Air
  - SE Sediment
  - SO Soil
  - SSV Sub-slab Vapor
  - WQ Water Quality control matrix
  - WS Surface Water
- Table Footnotes:
  - NA Not applicable
  - ND Non-detect
  - NR Not reported
- Common Symbols:
  - % percent
  - < less than
  - ≤ less than or equal to
  - > greater than
  - ≥ greater than or equal to
  - = equal
  - °C degrees Celsius
  - ± plus or minus
  - ~ approximately
  - x times (multiplier)

4. Abbreviations

%D	Percent Difference
%R	Percent Recovery
%RSD	Percent Relative Standard Deviation
%v/v	Percent volume by volume
2s	2 sigma
4,4-DDT	4 4-dichlorodiphenyltrichloroethane
Abs Diff	Absolute Difference
amu	atomic mass unit
BPJ	Best Professional Judgement
BS	Blank Spike
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CCVL	Continuing Calibration Verification Low
COC	Chain of Custody
COM	Combined Isotope Calculation
Cr (VI)	Hexavalent Chromium
CRI	Collision Reaction Interface
DoD	Department of Defense
DQO	data quality objective
DUSR	Data Usability Summary Report
EMPC	Estimated Maximum Possible Concentration
FBK	Field Blank Contamination
FDP	Field Duplicate
GC	Gas Chromatograph
GC/MS	Gas Chromatography/Mass Spectrometry
GPC	Gel Permeation Chromatography
H_2	Hydrogen gas
HCl	Hydrochloric Acid
ICAL	Initial Calibration
ICB	Initial Calibration Blank
ICP/MS	Inductively Coupled Plasma/ Mass Spectrometry
ICV	Initial Calibration Verification
ICVL	Initial Calibration Verification Low
IPA	Isopropyl Alcohol
LC	Laboratory Control
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
MBK	Method Blank Contamination
MDC	Minimum Detectable Concentration
MDL	Laboratory Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NA	not applicable
ND	Non-Detect
NFG	National Functional Guidelines
NH_3	Ammonia
NYSDEC	New York State Department of Environmental Conservation
PAH	polycyclic aromatic hydrocarbon
PCB	Polychlorinated Biphenyl
PDS	Post Digestion Spike
PEM	Performance Evaluation Mixture
PFAS	Per- and Polyfluoroalkyl Substances
PFBA	Perfluorbutanoic Acid
PFD	Perfluorodecalin
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane sulfonate
PFPeA	Perfluoropentanoic Acid
QAPP	Quality Assurance Project Plan
QC	Quality Control
QSM	Quality Systems Manual
R^2	R-squared value
Ra-226	Radium-226
Ra-228	Radium-228
RESC	Resolution Check Measure
RL	Laboratory Reporting Limit
RPD	Relative Percent Difference
RRF	Relative Response Factors
RT	Retention Time
SAP	sampling analysis plan
SDG	Sample Delivery Group
SIM	Selected ion monitoring
SOP	Laboratory Standard Operating Procedures
SPE	Solid Phase Extraction
SVOC	Semi-Volatile Organic Compounds
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TKN	Total Kjeldahl Nitrogen
TPH	Total Petroleum Hydrocarbon
TPU	Total Propagated Uncertainty
amu	atomic mass unit
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compounds
WP	Work Plan

5. Qualifiers

The qualifiers below are from the USEPA National Functional Guidelines and the data in the DUSR may contain these qualifiers:

- Concentration (C) Qualifiers:

  U — The compound was analyzed for but not detected. The associated value is either the compound quantitation limit if not detected by the analytical instrument or could be the reported or blank concentration if qualified by blank contamination. This can also be displayed as less than the associated compound quantitation limit (<RL or <MDL), or "ND".

  B — The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers:

  E — The compound was quantitated above the calibration range.

  D — The concentration is based on a diluted sample analysis.

- Validation Qualifiers:

  J — The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  J+ — The result is an estimated quantity, but the result may be biased high.

  J- — The result is an estimated quantity, but the result may be biased low.

  J/UJ — as listed in exception tables J applies to detected data and UJ applies to non-detected data as reported by the laboratory.

  UJ — The compound was not detected above the reported sample quantitation limit; however, the reported limit is estimated and may or may not represent the actual limit of quantitation.

  NJ — The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is an estimated concentration only.

  R — The sample results were rejected as unusable; the compound may or may not be present in the sample.

  S — Result is suspect. See DUSR for details.

References

1. Hart Crowser, 2013. Sampling and Analysis Plan and Quality Assurance Project Plan. Heglar Kronquist Site. Mead Washington. August.
2. United States Environmental Protection Agency, 2020. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-542-R-20-006. November 2020.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: John Haney
Haley & Aldrich, Inc.
505 W Riverside Ave
Suite 205
Spokane, Washington 99201

Generated 5/11/2023 11:51:05 AM

JOB DESCRIPTION

Heglar Kronquist/0202596-002

JOB NUMBER

590-20358-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

See page two for job notes and contact information.

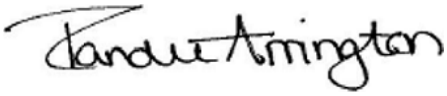
my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

Authorization



Generated
5/11/2023 11:51:05 AM

Authorized for release by
Randee Arrington, Business Unit Manager
Randee.Arrington@et.eurofinsus.com
(509)924-9200

Table of Contents

Case Narrative

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Job ID: 590-20358-1

Laboratory: Eurofins Spokane

Narrative

Receipt
The samples were received on 4/26/2023 4:23 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 17.5º C.

Receipt Exceptions
The following samples were received at the laboratory outside the required temperature criteria: MW-1 (590-20358-1), MW-2 (590-20358-2), MW-3 (590-20358-3), MW-4 (590-20358-4), MW-5 (590-20358-5), MW-7 (590-20358-6), MW-400 (590-20358-7), SW-2 (590-20358-8), SW-3 (590-20358-9), SW-5 (590-20358-10) and SW-300 (590-20358-11). The samples are considered acceptable since they were collected and submitted to the laboratory on the same day and there is evidence that the chilling process has begun.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
Method 353.2: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 580-424918 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-20358-1	MW-1	Water	04/26/23 13:22	04/26/23 16:23
590-20358-2	MW-2	Water	04/26/23 11:55	04/26/23 16:23
590-20358-3	MW-3	Water	04/26/23 12:50	04/26/23 16:23
590-20358-4	MW-4	Water	04/26/23 11:18	04/26/23 16:23
590-20358-5	MW-5	Water	04/26/23 09:43	04/26/23 16:23
590-20358-6	MW-7	Water	04/26/23 10:25	04/26/23 16:23
590-20358-7	MW-400	Water	04/26/23 11:48	04/26/23 16:23
590-20358-8	SW-2	Water	04/26/23 10:45	04/26/23 16:23
590-20358-9	SW-3	Water	04/26/23 12:20	04/26/23 16:23
590-20358-10	SW-5	Water	04/26/23 13:40	04/26/23 16:23
590-20358-11	SW-300	Water	04/26/23 12:50	04/26/23 16:23

Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample ID: MW-1

Lab Sample ID: 590-20358-1
Date Collected: 04/26/23 13:22
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	52		0.80		mg/L			04/27/23 16:08	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	67		0.50		mg/L		05/09/23 16:04	05/10/23 13:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	4.4	F1	1.5		mg/L			05/09/23 16:40	10
Total Dissolved Solids (SM 2540C)	490		25		mg/L			05/03/23 09:11	1

Client Sample ID: MW-2

Lab Sample ID: 590-20358-2
Date Collected: 04/26/23 11:55
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	67		0.80		mg/L			04/27/23 16:21	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	27		0.50		mg/L		05/09/23 16:04	05/10/23 13:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	2.0		0.30		mg/L			05/09/23 16:40	2
Total Dissolved Solids (SM 2540C)	460		25		mg/L			05/03/23 09:11	1

Client Sample ID: MW-3

Lab Sample ID: 590-20358-3
Date Collected: 04/26/23 12:50
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	540		8.0		mg/L			04/28/23 15:03	10

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	220		0.50		mg/L		05/09/23 16:04	05/10/23 13:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	3.4		1.5		mg/L			05/09/23 16:40	10
Total Dissolved Solids (SM 2540C)	1200		25		mg/L			05/03/23 09:11	1

Client Sample ID: MW-4

Lab Sample ID: 590-20358-4
Date Collected: 04/26/23 11:18
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	26		0.80		mg/L			04/27/23 16:48	1

Client Sample ID: MW-4
Lab Sample ID: 590-20358-4
Date Collected: 04/26/23 11:18
Matrix: Water
Date Received: 04/26/23 16:23

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	49		0.50		mg/L		05/09/23 16:04	05/10/23 14:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	5.4		1.5		mg/L			05/09/23 16:40	10
Total Dissolved Solids (SM 2540C)	670		25		mg/L			05/03/23 09:11	1

Client Sample ID: MW-5
Lab Sample ID: 590-20358-5
Date Collected: 04/26/23 09:43
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	19		0.80		mg/L			04/27/23 17:01	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	33		0.50		mg/L		05/09/23 16:04	05/10/23 14:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	2.6		1.5		mg/L			05/09/23 16:40	10
Total Dissolved Solids (SM 2540C)	350		25		mg/L			05/03/23 09:11	1

Client Sample ID: MW-7
Lab Sample ID: 590-20358-6
Date Collected: 04/26/23 10:25
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	22		0.80		mg/L			04/27/23 17:14	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	28		0.50		mg/L		05/09/23 16:04	05/10/23 14:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	1.8		0.30		mg/L			05/09/23 16:40	2
Total Dissolved Solids (SM 2540C)	360		25		mg/L			05/03/23 09:11	1

Client Sample ID: MW-400
Lab Sample ID: 590-20358-7
Date Collected: 04/26/23 11:48
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	25		0.80		mg/L			04/27/23 17:27	1

Method: SW846 6010D - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	47		0.50		mg/L		05/09/23 16:04	05/10/23 14:17	1

Client Sample ID: MW-400
Lab Sample ID: 590-20358-7
Date Collected: 04/26/23 11:48
Matrix: Water
Date Received: 04/26/23 16:23

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	6.3		1.5		mg/L			05/09/23 16:40	10
Total Dissolved Solids (SM 2540C)	500		25		mg/L			05/03/23 09:11	1

Client Sample ID: SW-2
Lab Sample ID: 590-20358-8
Date Collected: 04/26/23 10:45
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23		0.80		mg/L			04/27/23 17:40	1

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	24		0.50		mg/L		05/01/23 10:09	05/02/23 18:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	2.0		0.30		mg/L			05/09/23 16:40	2
Total Dissolved Solids (SM 2540C)	280		25		mg/L			05/03/23 09:11	1

Client Sample ID: SW-3
Lab Sample ID: 590-20358-9
Date Collected: 04/26/23 12:20
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	240		8.0		mg/L			04/28/23 15:44	10

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	100		0.50		mg/L		05/01/23 10:09	05/02/23 18:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	2.9		0.30		mg/L			05/09/23 16:40	2
Total Dissolved Solids (SM 2540C)	600		25		mg/L			05/03/23 09:11	1

Client Sample ID: SW-5
Lab Sample ID: 590-20358-10
Date Collected: 04/26/23 13:40
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	230		8.0		mg/L			04/28/23 15:57	10

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	92		0.50		mg/L		05/01/23 10:09	05/02/23 18:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	0.30		0.15		mg/L			05/10/23 13:36	1

Client Sample ID: SW-5
Lab Sample ID: 590-20358-10
Date Collected: 04/26/23 13:40
Matrix: Water
Date Received: 04/26/23 16:23

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids (SM 2540C)	700		25		mg/L			05/03/23 09:11	1

Client Sample ID: SW-300
Lab Sample ID: 590-20358-11
Date Collected: 04/26/23 12:50
Matrix: Water
Date Received: 04/26/23 16:23

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	220		8.0		mg/L			04/28/23 16:11	10

Method: SW846 6010D - Metals (ICP) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	94		0.50		mg/L		05/01/23 10:09	05/02/23 18:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	2.6		0.30		mg/L			05/09/23 16:40	2
Total Dissolved Solids (SM 2540C)	880		25		mg/L			05/03/23 09:11	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-41247/1003
Matrix: Water
Analysis Batch: 41247

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.80		mg/L			04/26/23 12:57	1

Lab Sample ID: LCS 590-41247/1004
Matrix: Water
Analysis Batch: 41247

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	12.5	11.7		mg/L		93	90 - 110

Lab Sample ID: MB 590-41265/1003
Matrix: Water
Analysis Batch: 41265

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.80		mg/L			04/28/23 12:33	1

Lab Sample ID: LCS 590-41265/1004
Matrix: Water
Analysis Batch: 41265

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	12.5	13.3		mg/L		106	90 - 110

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-41278/2-A
Matrix: Water
Analysis Batch: 41303

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 41278

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND		0.50		mg/L		05/01/23 10:09	05/02/23 13:37	1

Lab Sample ID: LCS 590-41278/1-A
Matrix: Water
Analysis Batch: 41303

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 41278

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	50.0	51.0		mg/L		102	80 - 154

Lab Sample ID: MB 590-41442/2-A
Matrix: Water
Analysis Batch: 41464

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 41442

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND		0.50		mg/L		05/09/23 16:04	05/10/23 13:16	1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 590-41442/1-A
Matrix: Water
Analysis Batch: 41464

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 41442

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sodium			50.0	51.4		mg/L		103	80 - 154		

Lab Sample ID: 590-20358-1 MS
Matrix: Water
Analysis Batch: 41464

Client Sample ID: MW-1
Prep Type: Dissolved
Prep Batch: 41442

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Sodium	67		50.0	120		mg/L		107	75 - 125		

Lab Sample ID: 590-20358-1 MSD
Matrix: Water
Analysis Batch: 41464

Client Sample ID: MW-1
Prep Type: Dissolved
Prep Batch: 41442

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sodium	67		50.0	122		mg/L		111	75 - 125	1	20

Lab Sample ID: 590-20358-1 DU
Matrix: Water
Analysis Batch: 41464

Client Sample ID: MW-1
Prep Type: Dissolved
Prep Batch: 41442

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sodium	67		67.9		mg/L		2	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 580-424918/5
Matrix: Water
Analysis Batch: 424918

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	ND		0.15		mg/L			05/09/23 16:38	1

Lab Sample ID: LCS 580-424918/6
Matrix: Water
Analysis Batch: 424918

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Nitrate Nitrite as N			2.50	2.58		mg/L		103	90 - 110		

Lab Sample ID: LCSD 580-424918/7
Matrix: Water
Analysis Batch: 424918

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrate Nitrite as N			2.50	2.39		mg/L		96	90 - 110	8	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite (Continued)

Lab Sample ID: 590-20358-1 MS
Matrix: Water
Analysis Batch: 424918

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Nitrate Nitrite as N	4.4	F1	25.0	6.55	F1	mg/L		9	90 - 110		

Lab Sample ID: 590-20358-1 MSD
Matrix: Water
Analysis Batch: 424918

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrate Nitrite as N	4.4	F1	25.0	6.59	F1	mg/L		9	90 - 110	1	20

Lab Sample ID: 590-20358-1 DU
Matrix: Water
Analysis Batch: 424918

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Nitrate Nitrite as N	4.4	F1		3.97		mg/L				10	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 590-41348/1
Matrix: Water
Analysis Batch: 41348

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		25		mg/L			05/03/23 09:11	1

Lab Sample ID: LCS 590-41348/2
Matrix: Water
Analysis Batch: 41348

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Dissolved Solids			503	480		mg/L		96	80 - 120		

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Client Sample ID: MW-1

Date Collected: 04/26/23 13:22
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	41247	04/27/23 16:08	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	41442	05/09/23 16:04	AMB	EET SPK
Dissolved	Analysis	6010D		1			41464	05/10/23 13:20	AMB	EET SPK
Total/NA	Analysis	353.2		10	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: MW-2

Date Collected: 04/26/23 11:55
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	41247	04/27/23 16:21	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	41442	05/09/23 16:04	AMB	EET SPK
Dissolved	Analysis	6010D		1			41464	05/10/23 13:45	AMB	EET SPK
Total/NA	Analysis	353.2		2	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: MW-3

Date Collected: 04/26/23 12:50
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	5 mL	5 mL	41265	04/28/23 15:03	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	41442	05/09/23 16:04	AMB	EET SPK
Dissolved	Analysis	6010D		1			41464	05/10/23 13:49	AMB	EET SPK
Total/NA	Analysis	353.2		10	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: MW-4

Date Collected: 04/26/23 11:18
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	41247	04/27/23 16:48	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	41442	05/09/23 16:04	AMB	EET SPK
Dissolved	Analysis	6010D		1			41464	05/10/23 14:05	AMB	EET SPK
Total/NA	Analysis	353.2		10	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Client Sample ID: MW-5
Date Collected: 04/26/23 09:43
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	41247	04/27/23 17:01	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	41442	05/09/23 16:04	AMB	EET SPK
Dissolved	Analysis	6010D		1			41464	05/10/23 14:09	AMB	EET SPK
Total/NA	Analysis	353.2		10	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: MW-7
Date Collected: 04/26/23 10:25
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	41247	04/27/23 17:14	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	41442	05/09/23 16:04	AMB	EET SPK
Dissolved	Analysis	6010D		1			41464	05/10/23 14:13	AMB	EET SPK
Total/NA	Analysis	353.2		2	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: MW-400
Date Collected: 04/26/23 11:48
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	41247	04/27/23 17:27	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	41442	05/09/23 16:04	AMB	EET SPK
Dissolved	Analysis	6010D		1			41464	05/10/23 14:17	AMB	EET SPK
Total/NA	Analysis	353.2		10	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: SW-2
Date Collected: 04/26/23 10:45
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-8
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	5 mL	5 mL	41247	04/27/23 17:40	NMI	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	41278	05/01/23 10:09	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			41303	05/02/23 18:24	AMB	EET SPK
Total/NA	Analysis	353.2		2	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Client Sample ID: SW-3

Date Collected: 04/26/23 12:20
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	5 mL	5 mL	41265	04/28/23 15:44	NMI	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	41278	05/01/23 10:09	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			41303	05/02/23 18:28	AMB	EET SPK
Total/NA	Analysis	353.2		2	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: SW-5

Date Collected: 04/26/23 13:40
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	5 mL	5 mL	41265	04/28/23 15:57	NMI	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	41278	05/01/23 10:09	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			41303	05/02/23 18:43	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	424918	05/10/23 13:36	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Client Sample ID: SW-300

Date Collected: 04/26/23 12:50
Date Received: 04/26/23 16:23

Lab Sample ID: 590-20358-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	5 mL	5 mL	41265	04/28/23 16:11	NMI	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	41278	05/01/23 10:09	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			41303	05/02/23 18:47	AMB	EET SPK
Total/NA	Analysis	353.2		2	50 mL	50 mL	424918	05/09/23 16:40	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	41348	05/03/23 09:11	AMB	EET SPK

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310
EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Laboratory: Eurofins Spokane

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C569	01-07-24

Laboratory: Eurofins Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
ANAB	Dept. of Defense ELAP	L2236	01-19-25
ANAB	Dept. of Energy	L2236	01-19-25
ANAB	ISO/IEC 17025	L2236	01-19-25
Arkansas DEQ	State	8801526	05-23-23
California	State	2954	07-07-23
Florida	NELAP	E87575	06-30-23
Louisiana	NELAP	03073	06-30-23
Louisiana (All)	NELAP	03073	06-30-23
Maine	State	WA01273	05-02-24
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-23
New York	NELAP	11662	03-31-24
Oregon	NELAP	4167	07-07-23
US Fish & Wildlife	US Federal Programs	A20571	06-30-23
USDA	US Federal Programs	525-23-4-22573	01-04-26
Washington	State	C788	07-13-23
Wisconsin	State	399133460	08-31-23

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Heglar Kronquist/0202596-002

Job ID: 590-20358-1

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	EPA	EET SPK
6010D	Metals (ICP)	SW846	EET SPK
353.2	Nitrogen, Nitrate-Nitrite	EPA	EET SEA
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET SPK
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET SPK

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

EET SPK = Eurofins Spokane, 11922 East 1st Ave, Spokane, WA 99206, TEL (509)924-9200

HALEY ALDRICH
Haley & Aldrich, Inc.
505 W Riverside,
Suite 205,
Spokane WA, 99212

CHAIN OF CUSTODY RECORD

Phone (617) 886-7400
Fax (617) 886-7600

H&A FILE NO.	0202596-002	LABORATORY	Eurofins	DELIVERY DATE	4/26/23
PROJECT NAME	Heglar Kronquist	ADDRESS		TURNAROUND TIME	Standard
H&A CONTACT	Ward McDonald	CONTACT		PROJECT MANAGER	

Analysis Requested

Sample No.	Date	Time	Depth	Type	Chloride (300.0)	NO_3, NO_2 (353.2)	TDS (160.1)	(T) Sodium (6010C)	(D) Sodium (6010C)	Number of Containers	Comments (special instructions, precautions, additional method numbers, etc.)
MW 1	4/26/23	13:22		H_2O	X	X	X		X	3	Laboratory to use applicable DEP CAM methods, unless otherwise directed.
MW 2		11:55			X	X	X		X	3	Field filtered (MW 1 – MW-400)
MW-3		12:50			X	X	X		X	3	
MW-4		11:18			X	X	X		X	3	
MW-5		9:43			X	X	X		X	3	
MW 7		10:25			X	X	X		X	3	
MW-400		11:48			X	X	X		X	3	
SW-2		10:45			X	X	X	X		3	Not filtered (SW-2 – SW-5)
SW-3		12:20			X	X	X	X		3	
SW-5		13:40			X	X	X	X		3	

Sampled and Relinquished by	Received by
Sign [signature]	Sign [signature] 16.9 17.5 corr'd 1 cooler
Print Chad M	Print EETSRO
Firm HLA	Firm
Date 4/26/23 Time 16:23	Date 4/26/23 Time 1623

Relinquished by	Received by
Sign	Sign
Print	Print
Firm	Firm
Date Time	Date Time

Relinquished by	Received by
Sign	Sign
Print	Print
Firm	Firm
Date Time	Date Time

LIQUID: VOA Vial / Amber Glass / Plastic Bottle / Preservative / Volume

SOLID: VOA Vial / Amber Glass / Clear Glass / Preservative / Volume

Sampling Comments

590-20358 Chain of Custody

Evidence samples were tampered with? YES NO
If YES, please explain in section below.

PRESERVATION KEY

A Sample chilled	C NaOH	E H_2SO_4	G Methanol
B Sample filtered	D HNO_3	F HCL	H Water/NaHSO4 (circle)

Presumptive Certainty Data Package (Laboratory to use applicable DEP CAM methods)

If Presumptive Certainty Data Package is needed, initial all sections:

_______ The required minimum field QC samples, as designated in BWSC CAM-VII have been or will be collected, as appropriate, to meet the requirements of Presumptive Certainty.

_______ Matrix Spike (MS) samples for MCP Metals and/or Cyanide are included and identified herein.

_______ This Chain of Custody Record (specify) _______ includes _______ does not include samples defined as Drinking Water Samples.

_______ If this Chain of Custody Record identifies samples defined as Drinking Water Samples, Trip Blanks and Field Duplicates are included and identified and analysis of TICs are required, as appropriate. Laboratory should (specify if applicable) _______ analyze

Required Reporting Limits and Data Quality Objectives

☐ RC-S1 ☐ S1 ☐ GW1
☐ RC-S2 ☐ S2 ☐ GW2
☐ RC-GW1 ☐ S3 ☐ GW3
☐ RC-GW2

WHITE Laboratory CANARY Project Manager PINK Haley & Aldrich Laboratory

FEBRUARY 2016

Form 3003

HALEY ALDRICH

Haley & Aldrich, Inc.
505 W Riverside,
Suite 205,
Spokane WA, 99212

CHAIN OF CUSTODY RECORD

Phone (617) 886-7400
Fax (617) 886-7600
Page 2 of 2

H&A FILE NO.	0202596-002	LABORATORY	DELIVERY DATE
PROJECT NAME	Heglar Kronquist	ADDRESS	TURNAROUND TIME
H&A CONTACT	Ward McDonald	CONTACT	PROJECT MANAGER

Sample No.	Date	Time	Depth	Type	Analysis Requested: Chloride (300.0)	NO_3, NO_2 (353.2)	TDS (160.1)	6020 Sodium (6020C)	Number of Containers	Comments (special instructions, precautions, additional method numbers, etc.)
~~MW~~ SW-3009	9/26/23	12-50		H_2O	X	X	X	X	3	Laboratory to use applicable DEP CAM methods, unless otherwise directed. Not filtered

Sampled and Relinquished by	Received by
Sign	Sign
Print	Print
Firm	Firm
Date Time	Date Time

Relinquished by	Received by
Sign	Sign
Print	Print
Firm	Firm
Date Time	Date Time

Relinquished by	Received by
Sign	Sign
Print	Print
Firm	Firm
Date Time	Date Time

LIQUID	SOLID
VOA Vial	VOA Vial
Amber Glass	Amber Glass
Plastic Bottle	Clear Glass
Preservative	Preservative
Volume	Volume

PRESERVATION KEY

A Sample chilled	C NaOH	E H_2SO_4	G Methanol
B Sample filtered	D HNO_3	F HCL	H Water/NaHSO4 (circle)

Sampling Comments

Evidence samples were tampered with? YES NO
If YES, please explain in section below

Presumptive Certainty Data Package (Laboratory to use applicable DEP CAM methods)

If Presumptive Certainty Data Package is needed, initial all sections:

_____ The required minimum field QC samples, as designated in BWSC CAM-VII have been or will be collected, as appropriate, to meet the requirements of Presumptive Certainty

_____ Matrix Spike (MS) samples for MCP Metals and/or Cyanide are included and identified herein.

_____ This Chain of Custody Record (specify) _____ includes _____ does not include samples defined as Drinking Water Samples.

_____ If this Chain of Custody Record identifies samples defined as Drinking Water Samples, Trip Blanks and Field Duplicates are included and identified and analysis of TICs are required, as appropriate. Laboratory should (specify if applicable) _____ analyze

Required Reporting Limits and Data Quality Objectives

☐ RC-S1 ☐ S1 ☐ GW1
☐ RC-S2 ☐ S2 ☐ GW2
☐ RC-GW1 ☐ S3 ☐ GW3
☐ RC-GW2

WHITE Laboratory CANARY Project Manager PINK Haley & Aldrich Laboratory

FEBRUARY 2016

Form 3003

5/11/2023

Eurofins Spokane
11922 East 1st Ave
Spokane, WA 99206
Phone: 509-924-9200 Fax: 509-924-9290

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Arrington, Randee E	Carrier Tracking No(s):	COC No: 590-7778.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 2
Company: Eurofins Environment Testing Northwest,		Accreditations Required (See note): State Program - Washington		Job #: 590-20358-1
Address: 5755 8th Street East, ,	Due Date Requested: 5/9/2023			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #:			
Email:	WO #:			
Project Name: Heglar Kronquist/0202596-002	Project #: 59001939			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code:	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	353.2/353.2_Prep Nitrogen, Nitrate-Nitrite	Total Number of containers	Special Instructions/Note:
MW-1 (590-20358-1)	4/26/23	13:22 Pacific		Water				X	1	
MW-2 (590-20358-2)	4/26/23	11:55 Pacific		Water				X	1	
MW-3 (590-20358-3)	4/26/23	12:50 Pacific		Water				X	1	
MW-4 (590-20358-4)	4/26/23	11:18 Pacific		Water				X	1	
MW-5 (590-20358-5)	4/26/23	09:43 Pacific		Water				X	1	
MW-7 (590-20358-6)	4/26/23	10:25 Pacific		Water				X	1	
MW-400 (590-20358-7)	4/26/23	11:48 Pacific		Water				X	1	
SW-2 (590-20358-8)	4/26/23	10:45 Pacific		Water				X	1	
SW-3 (590-20358-9)	4/26/23	12:20 Pacific		Water				X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/29/23 0900	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.2.9 0.3/1.1

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 590-20358-1

Login Number: 20358
List Number: 1
Creator: Fettig, Riley

List Source: Eurofins Spokane

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 590-20358-1

Login Number: 20358
List Number: 2
Creator: Presley, Kim A

List Source: Eurofins Seattle
List Creation: 04/29/23 01:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	IR9=0.8c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	