HALEY ALDRICH

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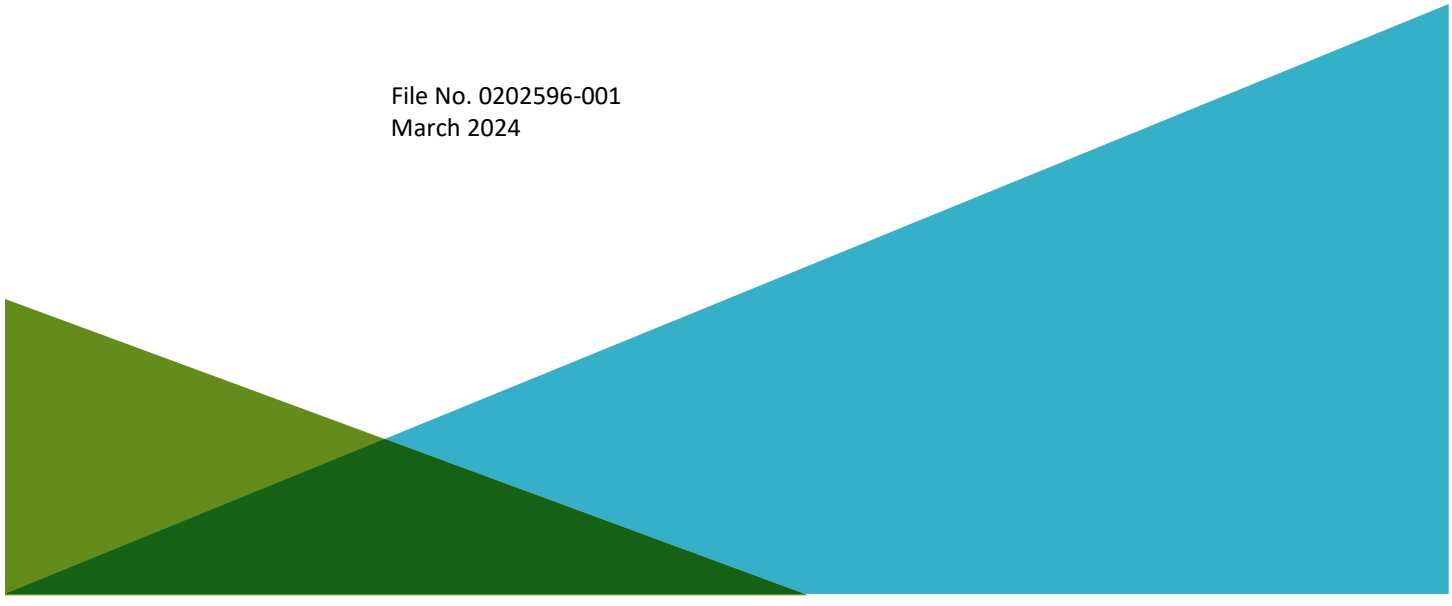
REPORT ON

HEGLAR KRONQUIST LANDFILL
CLEANUP SITE ID #1135
FACILITY SITE ID #645
ANNUAL COMPLIANCE MONITORING – JANUARY 2024
MEAD, WASHINGTON

by
Haley & Aldrich, Inc.
Spokane, Washington

for
Washington State Department of Ecology
Spokane, Washington

File No. 0202596-001
March 2024



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21 March 2024
File No. 0202596-001

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

Attention: Kailey Schrum
Toxics Cleanup Program- Site Manager
Washington State Department of Ecology, Eastern Regional Office

Subject: Heglar Kronquist Landfill
Cleanup Site ID #1135
Facility Site ID #645
Annual Compliance Monitoring - January 2024
Mead, Washington

Dear Kailey Schrum:

This letter report summarizes the results of the January 2024 annual compliance monitoring event conducted at the Heglar Kronquist Landfill (Site) near Mead, Washington. The Site location is shown on Figure 1, Vicinity Map. 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 (Figure 1). According to the Washington State Geologic Information Portal (Department of Natural Resources, 2023), the Site is located above the Tertiary volcanic rocks (Columbia River Basalt Group) and the Quaternary mass-wasting deposits (mass-wasting deposits) that consist of landslide deposits and colluvium.

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. Based on these findings, Kaiser purchased the property in 1984 and capped the landfill 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 (GVs), drainage ditches, and fencing to restrict Site access; the 1984 capping activities are further detailed in the 2023 Assessment Report (Haley & Aldrich, 2023). However, the 1984 clay cap desiccated due to lack of precipitation, which allowed infiltration of stormwater through the landfilled materials and migration of dross constituents into groundwater. Subsequently, in 2009, Ecology and Kaiser entered into Agreed Order (AO) No. 6557 to address the groundwater contamination at the Site. The AO required Kaiser to complete a Remedial Investigation (RI) to determine the extent of the contamination and a Feasibility Study (FS) to evaluate cleanup actions under Washington Administrative Code 173-340.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

In 2010, Kaiser contracted Exponent, Inc. (Exponent) to complete the RI at the Site in two phases to meet requirements outlined in the AO. The first phase was completed to understand the Site hydrogeology and the interaction of shallow groundwater and surface water; the second phase was completed for additional subsurface investigations to assess potential impacts to groundwater from the landfill (Exponent, 2011).

Based on the results of the RI, nitrate concentrations exceeded a primary health-based standard, sodium concentrations exceeded the United States Environmental Protection Agency's (EPA's) recommended upper limit advisory of 60 milligrams per liter (mg/L) for sodium sensitive individuals, and chloride concentrations, specific conductance, and total dissolved solids (TDS) exceeded secondary standards in groundwater and surface water for drinking water aesthetics (Exponent, 2011). The RI also concluded that a portion of nitrates found in groundwater were associated with dross impacts, but natural levels of nitrates and off-site sources of nitrates (agriculture activities) could also impact concentrations found in groundwater and surface water systems in the area.

After completing the RI, Exponent completed the FS in 2012 to evaluate remedial alternatives for the Site. The FS recommended enhancing the existing cap and improving Site institutional and engineering controls (Exponent, 2012). Following the completion and approval of the RI/FS, Ecology released the FCAP with the proposed cleanup approach for the Site, and in 2013 Ecology and Kaiser entered Consent Decree No. 13202067-4 (Consent Decree) to implement the FCAP.

FINAL CLEANUP ACTION PLAN

In 2014, Kaiser and Hart Crowser, Inc. (Hart Crowser; now Haley & Aldrich) conducted a geotechnical investigation to confirm existing cap conditions, decommissioned two monitoring wells within the cap footprint, repaired damage to the existing passive gas venting system, and designed and conducted the cap enhancements; construction activities are described in detail in the "Cleanup Action Construction Completion Report" (Hart Crowser, 2015).

After completion of the cap enhancements, Kaiser and Hart Crowser developed and implemented a Compliance Monitoring Plan (CMP; Hart Crowser, 2013a) and an Institutional Control Plan (ICP; Hart Crowser, 2013b) in accordance with Section 8.1 of the FCAP (Ecology, 2012). Kaiser and Hart Crowser initiated the compliance monitoring activities during October 2015 in accordance with the Ecology-approved "Final Sampling and Analysis Plan and Quality Assurance Project Plan" (Hart Crowser, 2013c).

COMPLIANCE MONITORING

Kaiser and Hart Crowser began implementing the CMP to monitor the effectiveness of the cap at reducing infiltration of surface water and improving groundwater quality as required by the FCAP. Compliance monitoring includes:

- Inspecting the condition of Site features including the cap, perimeter drainage swales, gas vents (GV-1 through GV-17), signage, and perimeter fencing.
- Conducting groundwater elevation monitoring and sampling groundwater from six monitoring wells (MW-1 through MW-6/7; Figure 2, Site Plan).
- Sampling surface water from up to four surface water sample locations (SW-1 through SW-3 and SW-5).
- Collecting in-situ water quality parameters (temperature, pH, conductivity, oxidative reduction potential [ORP], turbidity, and dissolved oxygen [DO]) for groundwater and surface water (Table 1, Groundwater and Surface Water Elevations and Field Parameters).
- Submitting water samples to a Washington-accredited chemical analytical laboratory for contaminants of concern (COC) analyses (chloride, nitrate plus nitrite as nitrogen [nitrate/nitrite], total and dissolved sodium, and TDS) in groundwater and surface water (Table 2, Groundwater Chemical Analytical Results, and Table 3, Surface Water Chemical Analytical Results, respectively).
- Summarizing the findings from each event in a compliance monitoring report.

At the end of the five-year monitoring period required by the Consent Decree, Ecology reviewed the compliance monitoring data and concluded that although COC concentrations have declined since installation of the enhanced cap, cleanup standards for chloride and nitrate/nitrite at select locations had not been met and annual monitoring should continue for an additional five years. Ecology requested Kaiser to conduct annual monitoring events during the spring when precipitation and snow melt typically are at seasonal highs.

Furthermore, after reviewing the April 2023 compliance monitoring report, Ecology sent a letter to Kaiser, dated 28 September 2023, expressing concerns over recent elevated concentrations of chloride and nitrate/nitrite in groundwater and surface water (during April 2022) hydraulically downgradient of the Site. Ecology also indicated that "reported trends of chloride and nitrate concentrations are not protective of human health or the environment under Washington State's Model Toxics Control Act (MTCA)". Based on this, Ecology requested Kaiser complete a supplemental site characterization to provide a status update to confirm that the institutional controls (detailed in the ICP) were in place and working properly and to provide a plan and timeline to continue quarterly compliance monitoring

starting in 2024. Subsequently, Kaiser and Haley & Aldrich re-assessed the available data and historical remedial actions and prepared objectives in a 2023 Assessment Plan (Haley & Aldrich, 2023) to help guide the 2024 compliance monitoring events and to support Kaiser's goal of returning to annual compliance monitoring and/or permanent Site closure in 2025.

2023 ASSESSMENT PLAN

The objectives outlined in the Assessment Plan include:

- Reviewing geology, hydrogeology, and analytical data for the Site and updating the conceptual site model (CSM) completed during the RI/FS.
- Reviewing the CMP analytical suite and updating as necessary to achieve the project goal.
- Conducting quarterly compliance monitoring in 2024 to further assess Site conditions post-cap enhancement.
- Assessing groundwater and surface water upgradient and/or cross-gradient of the Site to establish background conditions.
- Collecting additional hydrogeologic data to better understand fluctuations and flow directions of groundwater and update the CSM with additional data, as appropriate.
- Preparing quarterly compliance monitoring reports, submitting reports to Ecology, and uploading analytical data collected to Ecology's Environmental Information Management System (EIM).

Based on data and details outlined in the Assessment Plan, Ecology, Kaiser, and Haley & Aldrich agreed to continue the 2024 compliance monitoring events with the following modifications to the CMP:

- Remove monitoring wells MW-2, MW-5, and MW-7, and seep SW-1 from the future compliance sampling protocol based on historical data and updates to the CSM. These monitoring locations appear to have little, if any, hydraulic connection to the landfill and/or represent groundwater and surface water conditions likely independent of the landfill.
- Collect upgradient and/or cross-gradient groundwater and/or surface water data from the Site to assess potential regional sources of nitrates/nitrites, chlorides, and TDS and/or background water quality data.
- Install pressure transducers in select monitoring wells to better understand groundwater flow direction, seasonal fluctuations, and potential downgradient receptors.
- Collect three GV samples from GV-9, -11, and -12 (shown in Figure 3, Contaminant Concentrations January 2024) to document current ammonia concentrations and compare to historical data.

These modifications to the CMP and the details summarizing the January 2024 compliance monitoring event are provided in the following sections.

January 2024 Compliance Monitoring Field Activities

Haley & Aldrich inspected security controls, conditions of the cap, passive gas venting system, and monitoring wells, and conducted groundwater and surface water sampling on 31 January 2024. We measured the depth to groundwater in monitoring wells MW-1 and MW-3 through MW-6/7, and collected groundwater samples from MW-1, MW-3, and MW-4 using low-flow/low-stress techniques. In addition, we collected surface water (SW) samples from one seep and one stream at the Site (SW-3 and SW-5, respectively). Monitoring well and surface water sample locations are shown on Figure 2. Field activities were conducted in accordance with the "Sampling and Analysis Plan and Quality Assurance Project Plan" (Hart Crowser, 2013c) with the following exceptions:

- 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.
- Sampling locations MW-2, -5, -6/7, and SW-1 are no longer sampled based on Ecology's approval (via electronic mail communication on 9 January 2024) to the modified sampling plan listed in the 2023 Assessment Plan. 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 are 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 similar in size compared to our Site visit with Ecology on 3 November 2023. The burrow depth did not appear to impact the protective cap during the January 2024 compliance monitoring event. Kaiser continues to contract 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 are upright, in good condition, with the top screens intact, and are operating as designed.

Monitoring Wells

Haley & Aldrich inspected the overall integrity and security of the monitoring well features including monuments, surface seals, and protective bollards and rails. Monitoring well features are in good condition and do not require maintenance or repairs at this time, excluding MW-2.

During the January 2024 compliance monitoring event, Haley & Aldrich observed a blockage within the well casing of MW-2 while attempting to collect a depth to water measurement. The blockage was observed at approximately 65.5 feet below top of casing (TOC) (elevation 2,120.88) approximately 9.5 feet from the bottom of the well. Haley & Aldrich then assessed the blockage further by lowering a submersible camera down the well casing. Based on this investigation, it appears that the blockage is caused by coarse sandy material within the well screen. We were not able to accurately measure depth to groundwater in MW-2 and therefore, not able to deploy groundwater monitoring equipment. MW-2 is currently unusable for groundwater monitoring activities. Haley & Aldrich are discussing potential mitigation activities with Kaiser to address blockage or remove the MW-2 location from the groundwater monitoring network.

GROUNDWATER ELEVATIONS

Haley & Aldrich measured depths to groundwater in wells MW-1 and MW-3 through MW-6/7. Depth to groundwater measurements were referenced to the 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 34.69 and 60.83 feet below TOC in MW-5 and MW-1, 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 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 2,119.19 and 2,194.17 feet (NAVD 88) in MW-7 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 as shown in Figure 4, Cross Section A-A. Based on the 2023 Assessment Report, historical literature (e.g., RI/FS) suggests that there may be components of groundwater flow from the landfill to the north and south. However, after re-assessing the CSM, historical groundwater elevation data, and data collected from the January 2024 compliance monitoring event, groundwater elevation data indicates groundwater generally flows from the east (upgradient of the landfill) to the west (downgradient of the landfill) as shown on Figure 4 and Figure 5, Cross Section B-B'. Based on Figure 5, groundwater appears to have a minimal vertical gradient between monitoring well MW-3, seeps SW-2 and SW-3, and likely monitoring well MW-2.

Pressure Transducer Deployment

After completing groundwater sampling at each well location, Haley & Aldrich deployed one In-Situ Rugged Troll 100 pressure transducer at each well location (excluding MW-2) to continuously monitor groundwater elevations. We also installed one In-Situ BaroTROLL logger (BaroTROLL) to monitor barometric pressures within the top of the well monument at MW-1; this instrument will be used to correct water level data collected from the pressure transducers for barometric pressure changes. Each pressure transducer was deployed near the bottom of each monitoring well and programmed to collect data every six hours. Haley & Aldrich will retrieve and download data from each monitoring well during the next compliance monitoring event tentatively scheduled for April 2024.

GROUNDWATER SAMPLING

Haley & Aldrich purged and sampled MW-1, MW-3, and MW-4 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, DO, ORP, and turbidity (water quality parameters) during the purging process and collected groundwater samples when measured values fluctuated less than +/- 10 percent between readings one 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-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.

UPGRADIENT WATER SAMPLING

Haley & Aldrich is currently working on securing access agreements for three additional sample locations (two domestic wells and one surface stream) upgradient of the Site. Since the access agreements were not completed prior to the January 2024 monitoring event, upgradient samples were not collected. We are tentatively scheduled to collect water samples from the upgradient sample locations during the April 2024 compliance monitoring event.

GAS VENT MONITORING

In accordance with the 2023 Assessment Plan, Kaiser and Haley & Aldrich assessed ammonia concentrations from GV-9, -11, and -12 during the January 2024 compliance monitoring event. However, due to the limited quantity of Washington State accredited labs certified for analyzing ammonia samples (in accordance with the CMP), Haley & Aldrich monitored ammonia concentrations from the gas vents using a MultiRAE Series PGM 6228 programmed to measure ammonia concentrations between 0 and 99 parts per million (ppm). This approach was discussed with Ecology via electronic mail on 25 January 2024.

Haley & Aldrich measured ammonia concentrations at GV-9, -11, and -12 by placing the MultiRAE intake near the opening of each vent. We recorded measurements every six seconds for one minute (10 readings total). Measurements indicated ammonia concentrations ranged between 0 and 1 ppm at GV-11 and GV-12, and greater than 99 ppm at GV-9. Based on the range of the MultiRAE (0 to 99 ppm), ammonia concentrations at GV-9 may have been greater than 99 ppm.

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 Tables 2 and 3, respectively. The analytical results are also shown in Figure 3, and the laboratory report is included with our data quality review in Appendix A, Quality Assurance Review and Analytical Laboratory Report.

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

- 250 mg/L for chloride based on the federal and state drinking water secondary maximum contaminant level; and
- 14 mg/L for 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 these constituents for ecological receptors.

GROUNDWATER ANALYTICAL RESULTS

Eurofins analyzed groundwater samples collected from MW-1, MW-3, and MW-4 for the following COCs using the methods indicated:

- chloride (EPA Method 300.0);
- nitrate/nitrite as nitrogen (EPA Method 353.2);
- dissolved sodium (EPA Method 6010D); and
- TDS (Standard Method [SM] 2540C).

Chloride was detected in each of the monitoring wells sampled during the January 2024 sampling event. Chloride detections ranged between 28 mg/L in MW 4, and 620 mg/L in MW 3; chloride concentrations only exceeded the cleanup standard in MW-3 and have increased since the April 2023 monitoring event (Table 2). Chloride concentrations over time for each monitoring well are shown in Figure 6, Groundwater Chloride Concentrations Versus Time.

Nitrate/nitrite was detected in each of the monitoring wells sampled during the January 2024 sampling event. Nitrate/nitrite detections ranged between 1.3 mg/L in MW-1 and MW-3, and 1.5 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 2023 sampling event. Nitrate/nitrite concentrations for each monitoring well are shown on Figure 7, Groundwater Nitrate/Nitrite Concentrations Versus Time.

Concentration trend plots for chloride and nitrate/nitrite for MW-1, MW-3, and MW-4 are shown on Figures 6 and 7, respectively. Figures 6 and 7 also show the groundwater elevation trend plots for MW-3, which represent seasonal groundwater elevation fluctuations for the Site. Plotted groundwater elevations indicate that seasonal groundwater elevations measured during monitoring events have been declining since April 2018.

Dissolved sodium and TDS were also analyzed and compared against previous sampling results but are not used to determine compliance with cleanup standards. Haley & Aldrich field filtered groundwater samples for dissolved sodium using a 0.45-micron in-line filter. 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 (Table 2).

SURFACE WATER ANALYTICAL RESULTS

Eurofins analyzed surface water samples collected from 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-3 and SW-5 at concentrations of 250 and 260 mg/L, respectively. Analytical results indicate that both surface water samples were equal to or exceeded the 250 mg/L cleanup standard and have increased since the April 2023 monitoring event by approximately eight percent in SW-3.

Nitrate/nitrite was detected in SW-3 and SW-5 at concentrations similar to or lower than the April 2023 sampling event, with concentrations of 0.94 and 0.25 mg/L, respectively. Nitrate/nitrite concentrations remained under the cleanup standard of 14 mg/L in SW-3 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 are shown on Figures 7 and 9, Surface Water Chloride Concentrations Versus Time and Surface Water Nitrate/Nitrite

Concentrations Versus Time, respectively. Figures 7 and 9 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 (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.

Findings

Groundwater elevations indicate that the direction of groundwater flow downgradient of the landfill is generally west to southwest as described in the 2023 Assessment Plan. Haley & Aldrich installed pressure transducers at each monitoring well (excluding MW-2) to further assess groundwater flow direction, seasonal fluctuations, and potential downgradient receptors; data from these instruments will be downloaded and analyzed during the next compliance monitoring event.

Chemical analytical data indicates the sample collected from MW-3 was the only groundwater 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 are caused by changes in groundwater elevation (Figure 6). Chloride concentrations have increased in SW-3 and SW-5 between the April 2023 and the current January 2024 monitoring events and were greater than cleanup standards during the January 2024 monitoring event (Figure 8)

Chemical analytical data indicate that nitrate/nitrite concentrations in MW-1, MW-3, and MW-4 decreased compared to the previous spring monitoring event (Figure 7). None of the groundwater samples contained nitrate/nitrite concentrations above cleanup standards. 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.

Haley & Aldrich observed damage to the monument lid and a blockage within the well casing of MW-2. Based on this, MW-2 is currently unusable for groundwater monitoring activities and requires well rehabilitation, repair, or replacement. We will discuss with Kaiser mitigation activities to address blockage found in MW-2 or removing MW-2 from the monitoring network.

Sincerely yours,
HALEY & ALDRICH, INC.

Ward McDonald, L.G.
Project Manager, Environmental Geologist

Mark Dagel, L.H.G.
Principal Hydrogeologist

Attachments:

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 – Site Plan
Figure 3 – Contaminant Concentrations, January 2024
Figure 4 – Cross Section A-A'
Figure 5 – Cross Section B-B'
Figure 6 – Groundwater Chloride Concentrations Versus Time
Figure 7 – Groundwater Nitrate/Nitrite Concentrations Versus Time
Figure 8 – Surface Water Chloride Concentrations Versus Time
Figure 9 – Surface Water Nitrate/Nitrite Concentrations Versus Time

Appendix A – Quality Assurance Review and Analytical Laboratory Report

References

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

2. Exponent, 2012. Final Feasibility Study Heglar Kronquist Landfill Mead, Washington. 4 May.

3. Haley & Aldrich, 2023. Heglar Kronquist Landfill Annual Compliance Monitoring Report. 7 July.

4. Haley & Aldrich, 2023. Heglar-Kronquist Landfill Mead Washington Assessment Plan. December.

5. Hart Crowser, 2013a. Final Compliance Monitoring Plan Heglar Kronquist Site. 12 August.

6. Hart Crowser, 2013b. Final Institutional Controls Plan Heglar Kronquist Site. 12 August.

7. Hart Crowser, 2013c. Final Sampling and Analysis Plan and Quality Assurance Project Plan. 12 August

8. Hart Crowser, 2015. Cleanup Action Construction Completion Report Heglar Kronquist Landfill. 4 August.

9. Washington State Department of Ecology (Ecology), 2012. Final Cleanup Action Plan Heglar Kronquist Site. October.

10. Ecology, 2013. Consent Decree No. 13202067-4.

11. Washington State Department of Natural Resource, 2023. Washington Geologic Information Portal. geologyportal.dnr.wa.gov. Accessed 15 December.

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	11.90	7.06	777	135	3.38	8.73
	31-Jan-24	--	60.83	2,122.66	10.90	6.91	778	185	19.98	8.87
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	11.10	7.12	884	135	2.26	7.95
	31 January 2024- curerntly unusable due to vandalism. Discontinued sampling based on 2023 Assessment Report									
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	12.30	6.84	2,162	146	6.80	7.77
	31-Jan-24	--	56.90	2,119.28	10.40	6.65	2,397	182	5.85	7.59
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	11.20	6.86	783	145.1	2.40	0.00
	31-Jan-24	--	53.08	2,194.17	10.30	6.84	780	107.8	14.74	0.70
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
	31-Jan-24	--	34.69	2,193.57	**Discontinued sampling based on 2023 Assessment Report**					
MW-6	26-Jan-16	--	--	--	--	--	--	--	--	--
	22-Apr-16	--	--	--	--	--	--	--	--	--
	Well damaged, decomissioned, and replaced with MW-7.									
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
	31-Jan-24	--	47.48	2,119.19	**Discontinued sampling based on 2023 Assessment Report**					
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
	Discontinued sampling based on 2023 Assessment Report									
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	24-Jan-17	--	--		9.22	7.39	1,452	271	0.00	11.06
Continued	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	--	--	2,116.48	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
	31-Jan-24	--	--		9.60	7.03	711	185	49.09	8.94
SW-5	14-May-10	--	--		--	--	*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	--	--	2,058.38	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
	31-Jan-24	--	--		1.60	7.76	864	119	396.76	12.04

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.
2023 Assessment Report refers to "Heglar-Kronquist Landfill Assessment Report" dated December 2023.

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

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
	31-Jan-24	50	64 ^1-	1.3	500
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
	Discontinued sampling based on 2023 Assessment Report				

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-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**
	31-Jan-24	**620**	**210 ^1-**	**1.3**	**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**
	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**
	31-Jan-24	**28**	**45 ^1-**	**1.5**	**660**

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 Field Duplicate (MW-400)	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
	31-Jan-24	28	45 ^1-	1.2	510
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
	Discontinued sampling based on 2023 Assessment Report				

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-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**
	Discontinued sampling based on 2023 Assessment Report				
Federal or State Cleanup Standard		250	--	14.00	--

Notes:

Bold *denotes a detected concentration.*

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.

Shaded cell denotes concentrations that meet or exceed the cleanup standard. The exceeded cleanup standard is also shaded.

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.

2023 Assessment Report refers to "Heglar-Kronquist Landfill Assessment Report" dated December 2023.

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

-- = not analyzed for or not available.

^1- = Initial Calibration Verification (ICV) is outside acceptance limits, low biased.

J = estimated value.

mg/L = milligrams per liter.

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**
	Discontinued sampling based on 2023 Assessment Report				
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**
	31-Jan-24	**260**	**94 F1 ^1**	**0.9**	**590**
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**

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-3 Field Duplicate (continued)	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**
	31-Jan-24	**260**	**93** ^1-	**1.0**	**900**
SW-5	*14-May-10*	***252***	***96.1***	***14.8***	***739***
	28-Oct-15 26-Jan-16 22-Apr-16 26-Jul-16 21-Oct-16	Spring Dry During Sampling Event			
	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**
	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**
	31-Jan-24	**250**	**84** ^1-	**0.3**	**690**
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.

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

2023 Assessment Report refers to "Heglar-Kronquist Landfill Assessment Report" dated December 2023.

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.

Bold *denotes a detected concentration.*

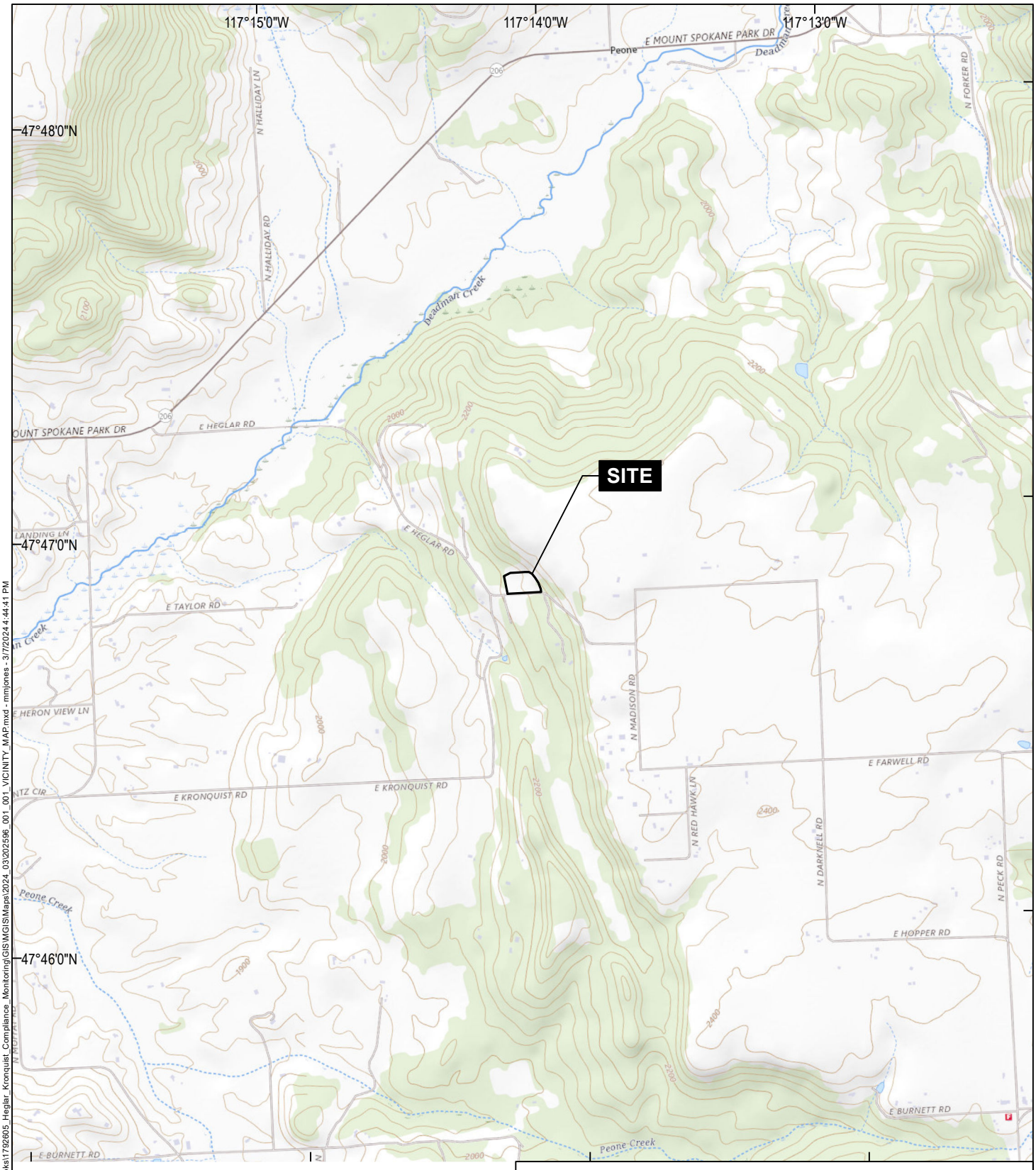
** = results beginning October 2015 are Nitrate + Nitrite as Nitrogen.*

-- = not analyzed for or not available.

mg/L = milligrams per liter.

J = estimated value.

FIGURES



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

HALEY ALDRICH

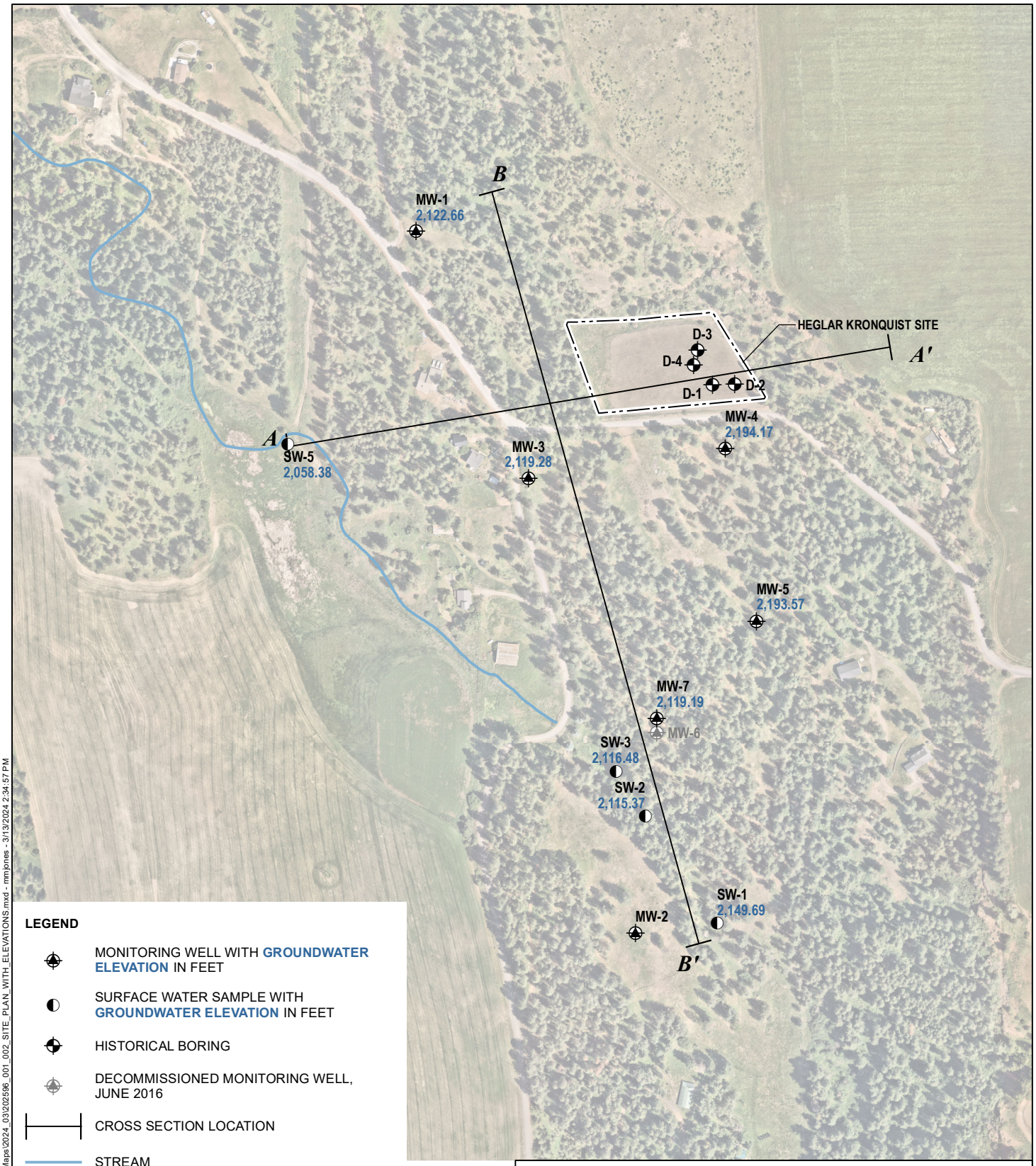
HEGLAR KRONQUIST SITE
MEAD, WASHINGTON

VICINITY MAP

APPROXIMATE SCALE: 1 IN = 2000 FT
MARCH 2024

FIGURE 1

GIS: \\haleyaldrich.com\share\sea_projects\Notebooks\1792605_Heglar_Kronquist_Compliance_Monitoring\GIS\MGIS\Maps\2024_0302025\96_001_001_VICINITY_MAP.mxd - mmjones - 3/7/2024 4:44:41 PM



LEGEND

- MONITORING WELL WITH **GROUNDWATER ELEVATION** IN FEET
- SURFACE WATER SAMPLE WITH **GROUNDWATER ELEVATION** IN FEET
- HISTORICAL BORING
- DECOMMISSIONED MONITORING WELL, JUNE 2016
- CROSS SECTION LOCATION
- 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, 21 MAY 2023

N

0 200 400

SCALE IN FEET

HALEY ALDRICH

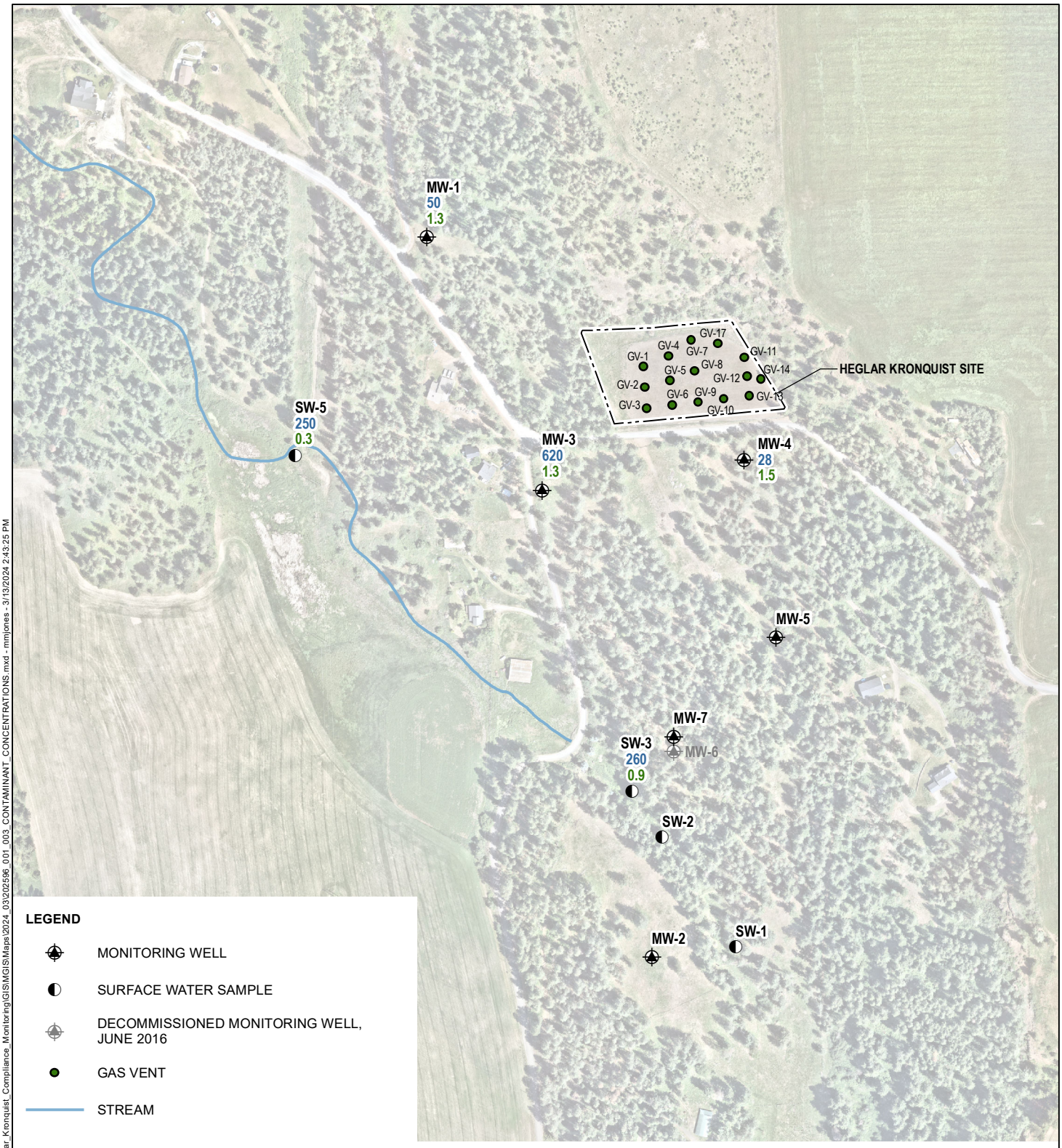
HEGLAR KRONQUIST SITE
MEAD, WASHINGTON

SITE PLAN

MARCH 2024

FIGURE 2

GIS: \\haleyaldrich\share\CF\Projects\0202596\GIS\Maps\2024_03\202596_001_002_SITE_PLAN_WITH_ELEVATIONS.mxd - rmjones - 3/13/2024 2:34:57 PM



LEGEND

- MONITORING WELL
- SURFACE WATER SAMPLE
- DECOMMISSIONED MONITORING WELL, JUNE 2016
- GAS VENT
- 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, 21 MAY 2023

N

0 200 400
SCALE IN FEET

HALEY ALDRICH

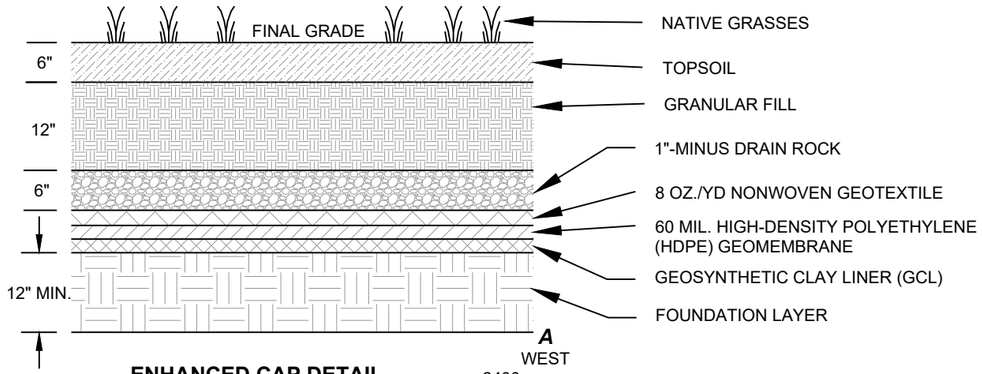
HEGLAR KRONQUIST SITE
MEAD, WASHINGTON

CONTAMINANT CONCENTRATIONS JANUARY 2024

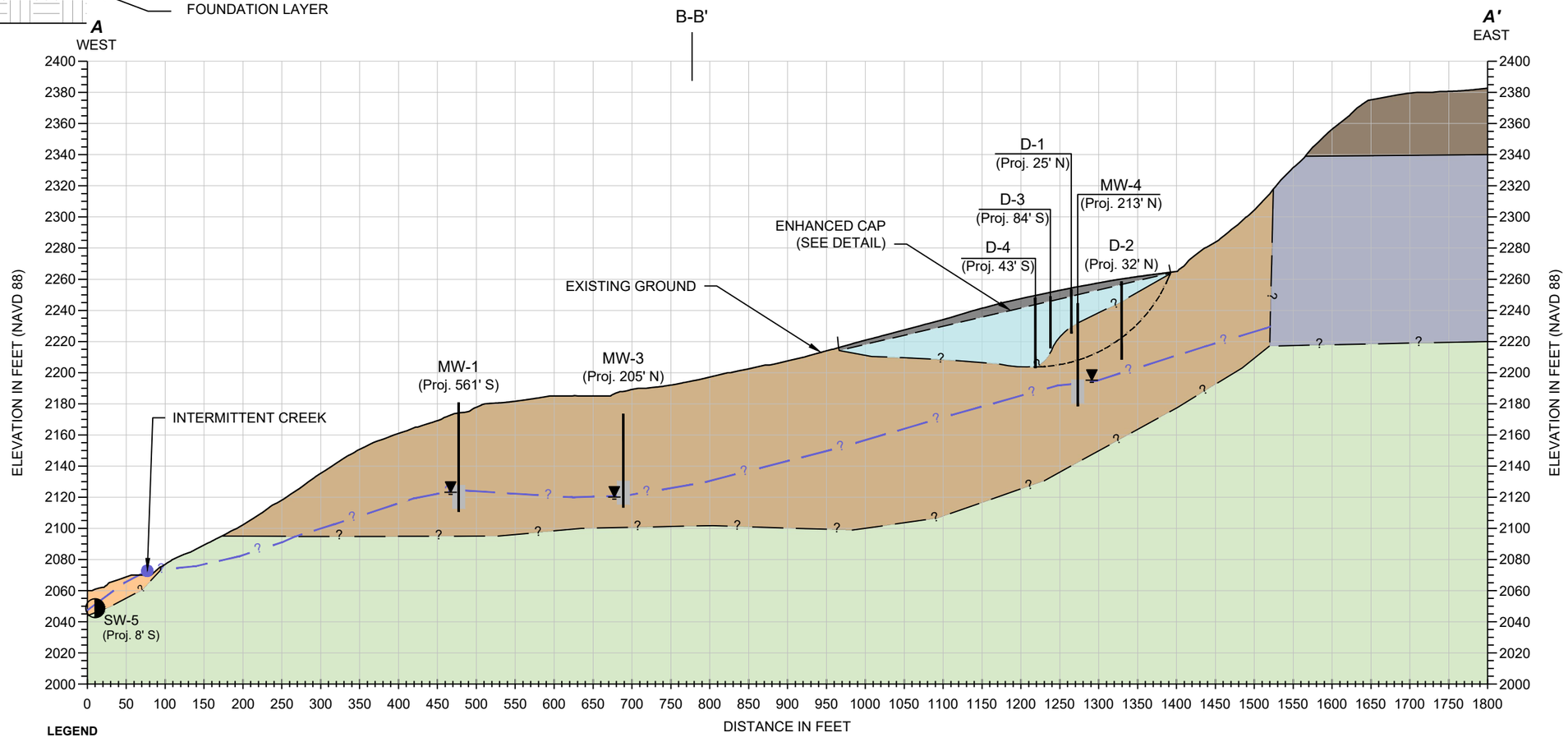
MARCH 2024

FIGURE 3

GIS: \\haleyaldrich\share\seaa_projects\Notebooks\1792605_Heglar_Kronquist_Compliance_Monitoring\GIS\MGISMaps\2024_03\202596_001_003_CONTAMINANT_CONCENTRATIONS.mxd - mmjones - 3/13/2024 2:43:25 PM



ENHANCED CAP DETAIL



LEGEND

- APPROXIMATE BOTTOM OF LANDFILL
- APPROXIMATE GROUNDWATER LEVEL
- ESU 1: LANDSLIDE BLOCK
- ESU 2: LATAH FORMATION
- ESU 3: PALOUSE FORMATION
- ESU 4: BASALT
- ESU 5: ALLUVIUM
- ESU 6: DROSS

LEGEND

BORING NAME WITH OFFSET — MW-1 (Proj. 11' SW)
BORING LOCATION
WELL SCREEN — GROUNDWATER TABLE

NOTES

1. ALL LOCATIONS ARE APPROXIMATE
2. EXISTING GROUND SOURCE: UNITED STATES GEOLOGICAL SURVEY (USGS), 2019.
3. SUBSURFACE INFORMATION SOURCED FROM THE FINAL REMEDIAL INVESTIGATION REPORT (EXPONENT, 2011).
4. GROUNDWATER DATA BASED ON DEPTH TO WATER MEASUREMENTS COLLECTED ON APRIL 26TH 2023 BY HALEY & ALDRICH.
5. ENHANCED CAP DETAIL SOURCED FROM CLEANUP ACTION CONSTRUCTION COMPLETION REPORT, HART CROWSER, 2015

HORIZ. 0 160 320
VERT. 0 80 160
SCALE IN FEET

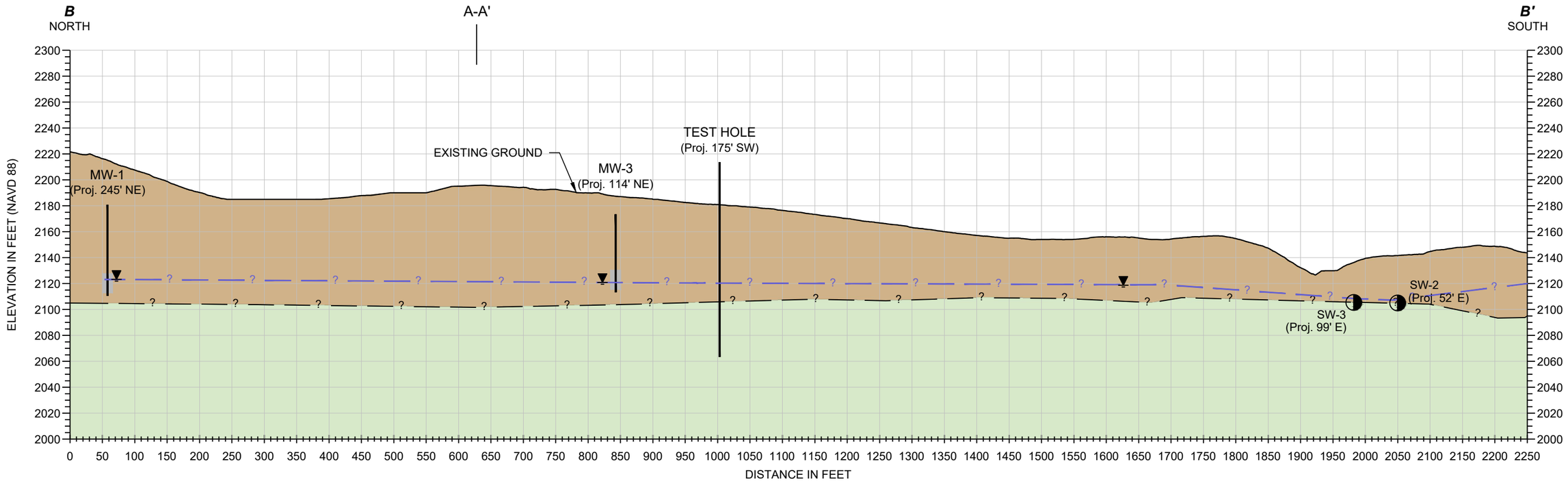
HALEY ALDRICH

HELGAR KRONQUIST SITE
MEAD, WASHINGTON

CROSS SECTION A-A'

MARCH 2024

FIGURE 4



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LEGEND

BORING NAME WITH OFFSET — MW-1 (Proj. 11' SW)

BORING LOCATION

WELL SCREEN — GROUNDWATER TABLE

LEGEND

APPROXIMATE GROUNDWATER LEVEL

SURFACE WATER SAMPLE

ESU 1: LANDSLIDE BLOCK

ESU 2: LATAH FORMATION

NOTES

1. ALL LOCATIONS ARE APPROXIMATE
2. EXISTING GROUND SOURCE: UNITED STATES GEOLOGICAL SURVEY (USGS). 2019,
3. SUBSURFACE INFORMATION SOURCED FROM THE FINAL REMEDIAL INVESTIGATION REPORT (EXPONENT, 2011).
4. GROUNDWATER DATA BASED ON DEPTH TO WATER MEASURMENTS COLLECTED ON APRIL 26TH 2023 BY HALEY & ALDRICH.

HORIZ. 0 140 280
VERT. 0 70 140
SCALE IN FEET

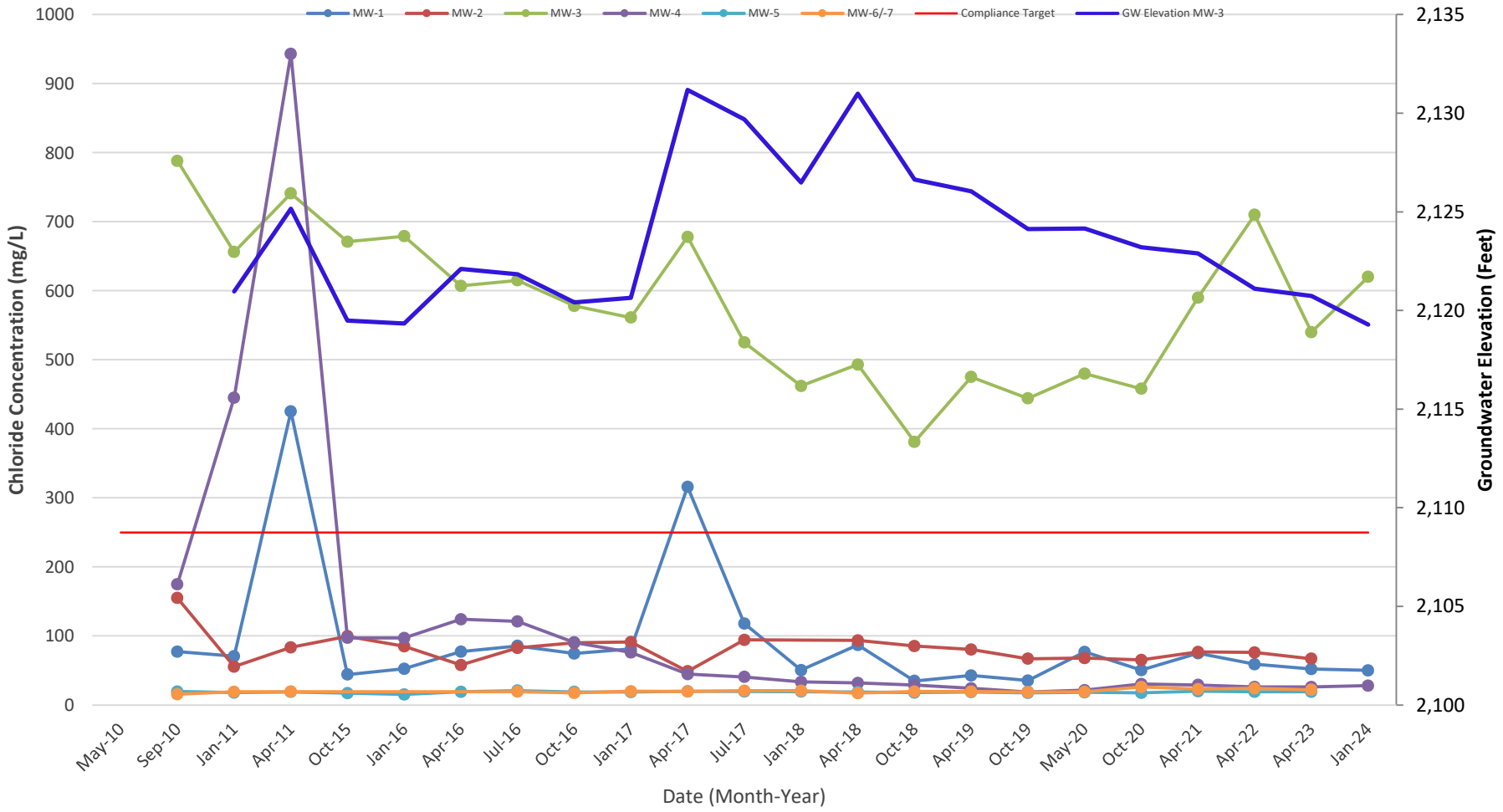
HALEY ALDRICH

HELGAR KRONQUIST SITE
MEAD, WASHINGTON

CROSS SECTION B-B'

MARCH 2024

FIGURE 5



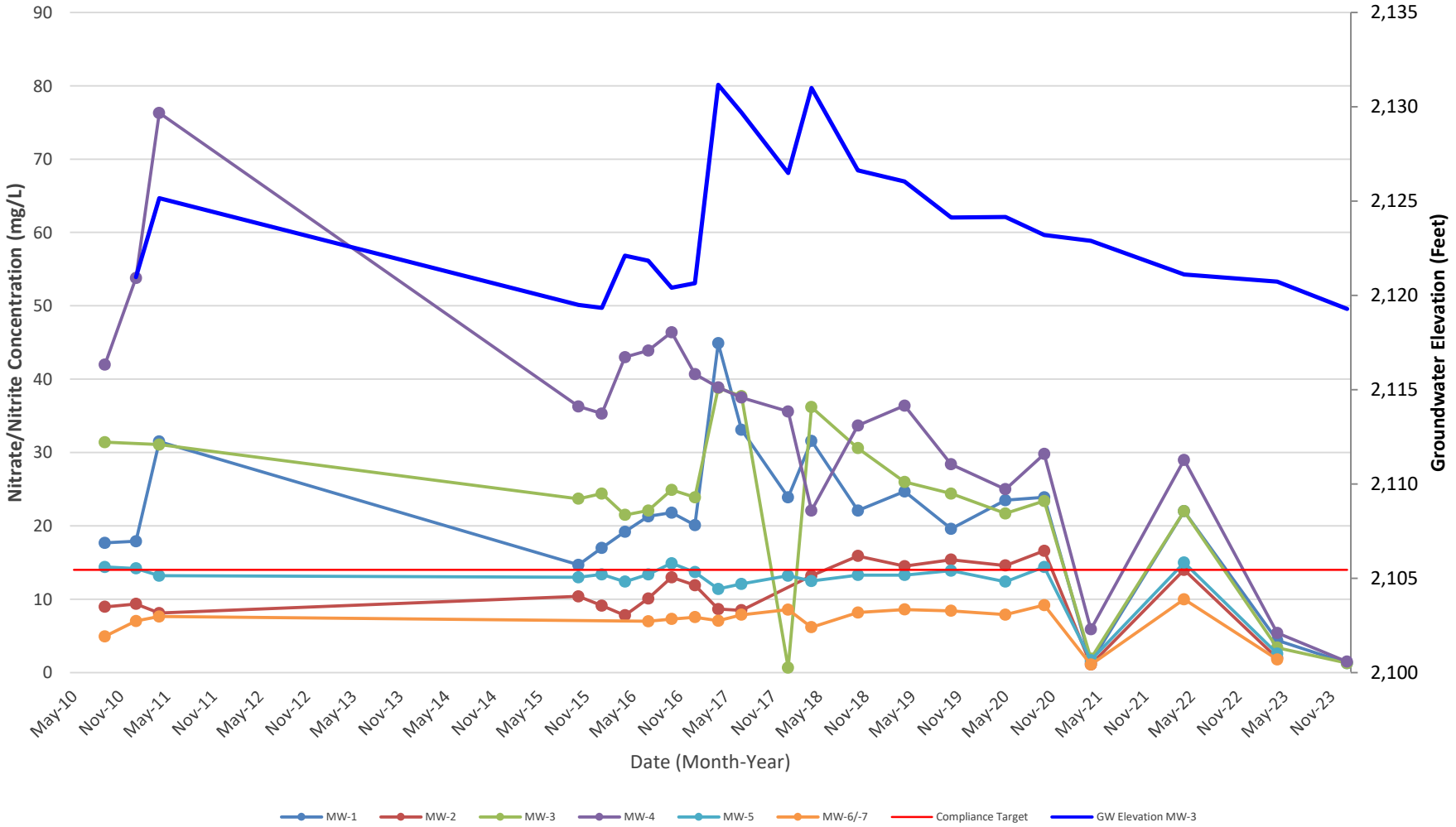
Notes:
1. Sampling discontinued at locations MW-2, 5, and 6/7 based on 2023 Assessment Report, dated December

Heglar Kronquist
Mead, Washington

Groundwater Chloride Concentrations Versus Time

0202596-000 (17926-05) Mar-24

Figure **6**



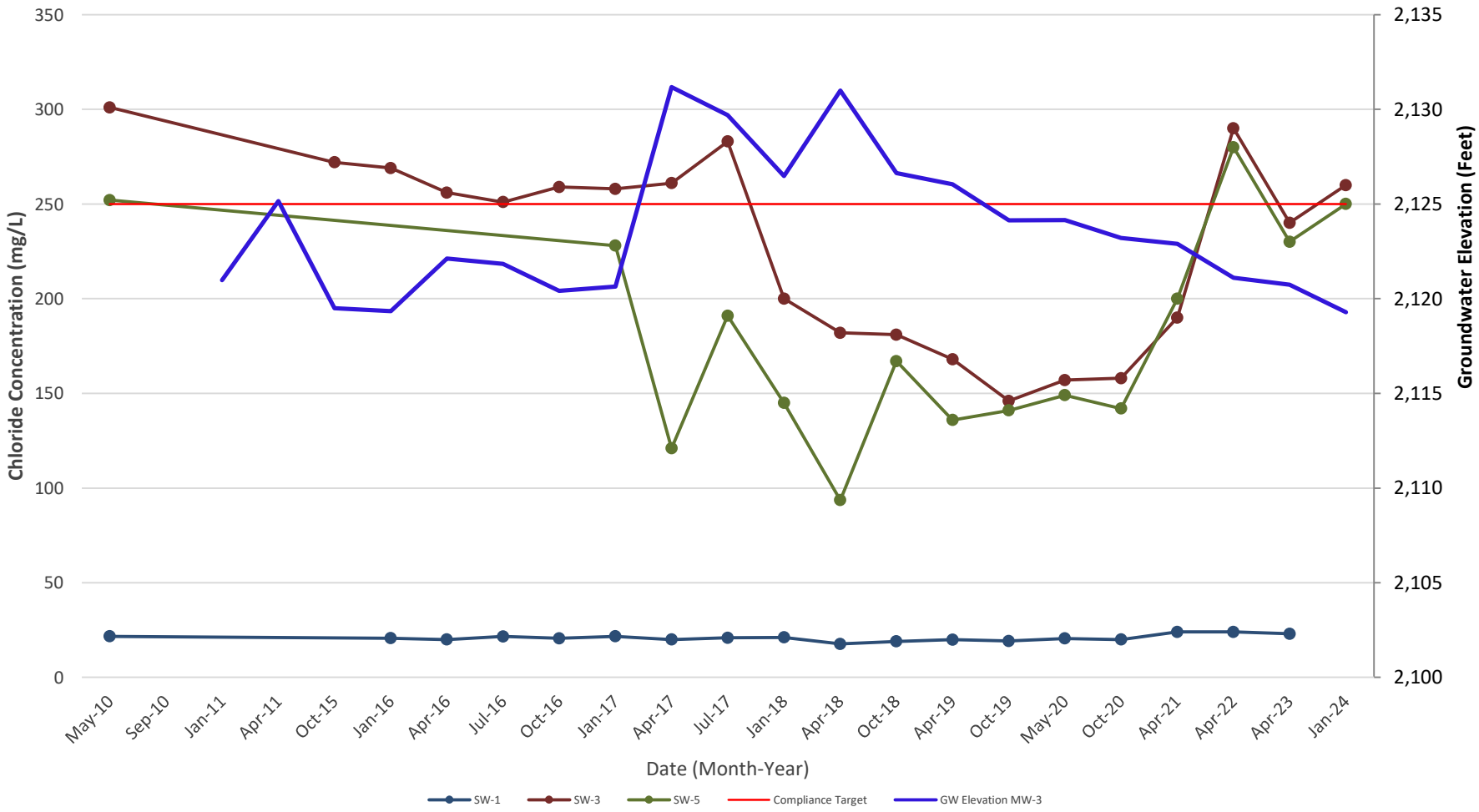
Notes:
1. Sampling discontinued at locations MW-2, 5, and 6/7 based on 2023 Assessment Report, dated December 2023.

Heglar Kronquist
Mead, Washington

Groundwater Nitrate/Nitrite Concentrations Versus Time

0202596-000 (17926-05) Mar-24

Figure
7



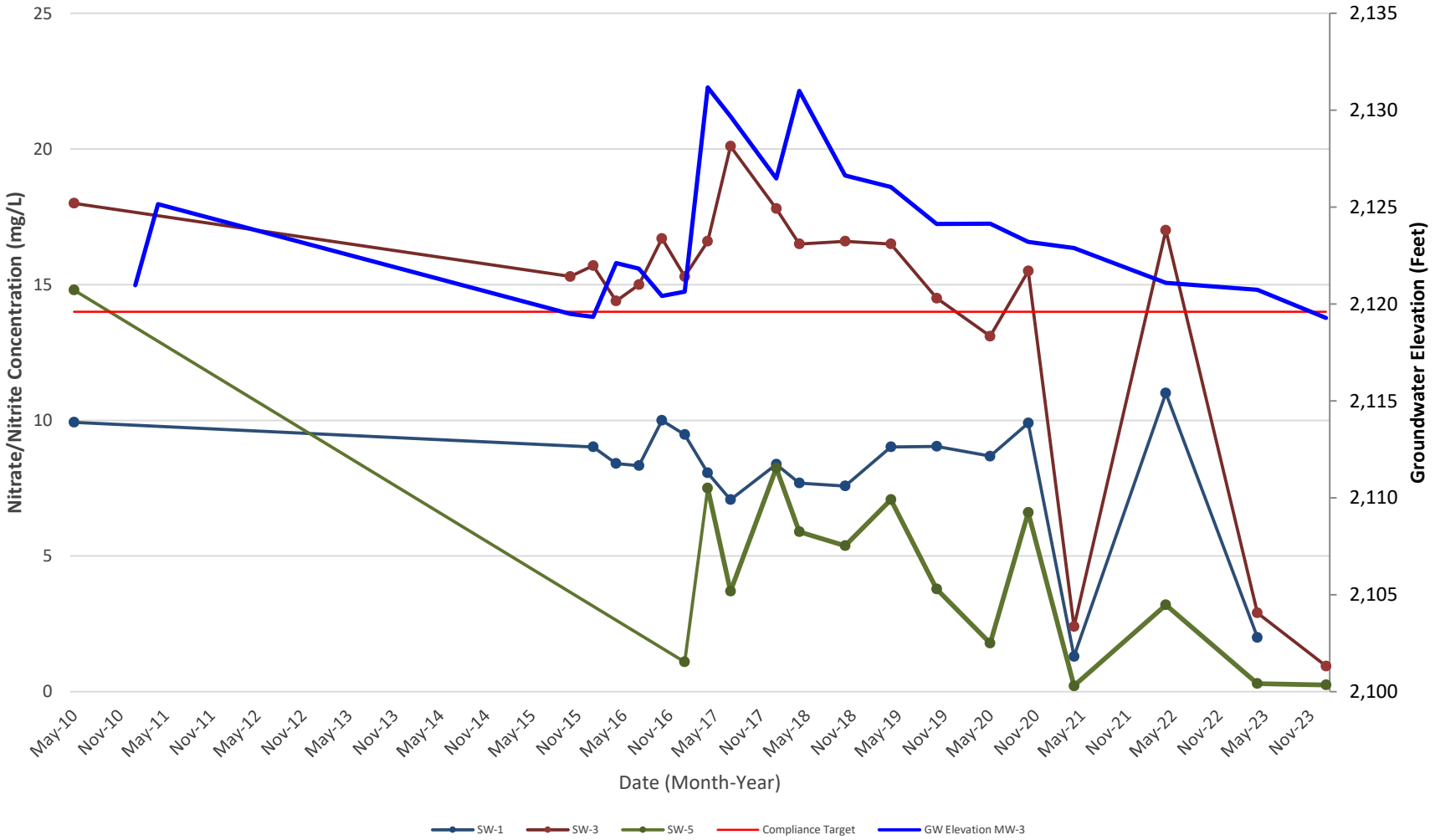
Notes:
1. Sampling discontinued at location SW-1 based on 2023 Assessment Report, dated December 2023.

Heglar Kronquist
Mead, Washington

Surface Water Chloride Concentrations Versus Time

0202596-000 (17926-05) Mar-24

Figure
8



Notes:
1. Sampling discontinued at location SW-1 based on 2023 Assessment Report, dated December 2023.

Heglar Kronquist
Mead, Washington

Surface Water Nitrate/Nitrite Concentrations Versus Time

0202596-000 (17926-05) Mar-24

Figure
9

APPENDIX A
Quality Assurance Review and Analytical Laboratory Report

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

Data Usability Summary Report

Project Name: Heglar Kronquist

Project Description: Water Samples

Sample Date(s): 31 January 2024

Analytical Laboratory: Eurofins Test America Laboratories – Spokane, Washington

Validation Performed by: Santa McKenna

Validation Reviewed by: Katherine Miller

Validation Date: 15 March 2024

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

1. Sample Delivery Group Number 590-23025
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.
- Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances under New York State Department of Environmental Conservation's (NYSDEC's) Part 375 Remedial Programs.
- The project-specific Sampling Analysis Plan (SAP)/Quality Assurance Project Plan (QAPP), herein referred to as the specified limits (see references section). Written in 2013, the QAPP referenced the NFG written at the time. Data in this report has been reviewed against the most recent NFG.

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

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

1. Sample Delivery Group Number 590-23025

1.1 SAMPLE MANAGEMENT

This DUSR summarizes the review of SDG number(s) 590-23025-1, dated 15 February 2024.

Samples were collected, preserved, and shipped following standard chain of custody (COC) protocols.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Date	Matrix	Methods
MW-1	N	590-23025-1	1/31/2024	Groundwater	A, B, C, D
MW-3	N	590-23025-2	1/31/2024	Groundwater	A, B, C, D
MW-4	N	590-23025-3	1/31/2024	Groundwater	A, B, C, D
MW-400	FD	590-23025-4	1/31/2024	Groundwater	A, B, C, D
SW-3	N	590-23025-5	1/31/2024	Surface water	A, B, C, D
SW-5	N	590-23025-6	1/31/2024	Surface water	A, B, C, D
SW-300	N	590-23025-7	1/31/2024	Surface water	A, B, C, D

Method Holding Times			
A.	EPA 300	Chloride	28 days for liquid, unpreserved
B.	SW 6010D	Total and Dissolved Sodium	180 days for liquid, preserved
C.	EPA 353.2	Nitrogen, Nitrate-Nitrite	28 days for liquid, unpreserved
D.	SM 2540C	Total Dissolved Solids	7 days

1.2 CASE NARRATIVE

The laboratory report case narrative lists various quality control exceedances (e.g., low level initial calibration verification) not evaluated by this review thus, no qualifiers were applied to the reported results.

1.3 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.

Cooler(s) temperature on arrival to the laboratory was: 2.6C.

1.4 REPORTING LIMITS AND SAMPLE DILUTIONS

All sample dilutions were reviewed and found to be justified. Only detected analytes were reported from a sample dilution analysis.

1.5 LABORATORY CONTROL SAMPLES

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

1.6 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)
590-23025-6	SW-300	EPA 300
590-23025-5	SW-3	SW 6010D

The MS/MSD recoveries and the 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	6010D	SW-3	Sodium	67%/67%	J/UJ	All samples

1.7 BLANK SAMPLE ANALYSIS

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

1.8 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)
590-23025-6	SW-300	EPA 300
590-23025-5	SW-3	SW 6010D

The following sample(s) were used for field duplicate analysis. RPDs were all below 35 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)
SW-3	SW-300	EPA 300, SW 6010D, EPA 353.2, SM 2540C
SW-4	SW-400	EPA 300, SW 6010D, EPA 353.2, SM 2540C

Field Duplicate RPD Calculations:

Method	Analyte (mg/L)	Units	Primary Sample ID	Duplicate Sample ID	% RPD	Qualification
			SW-3	SW-300		
	Total Dissolved Solids		590	900	42%	J/UJ, RPD > 35%

1.9 PRECISION AND ACCURACY

Refer to Section E 1.7. Some measurement of analytical accuracy and precision was reported for each method with the site samples.

1.10 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. The qualifiers applied to this dataset are summarized in the table below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
MW-1	Sodium	64	64 J	MS/MSD %R low
MW-3	Sodium	210	210 J	MS/MSD %R low
MW-4	Sodium	45	45 J	MS/MSD %R low
MW-400	Sodium	45	45 J	MS/MSD %R low
SW-3	Sodium	94	94 J	MS/MSD %R low
	Total Dissolved Solids	590	590 J	Field Duplicate calculations
SW-5	Sodium	84	84 J	MS/MSD %R low
SW-300	Sodium	93	93 J	MS/MSD %R low
	Total Dissolved Solids	900	900 J	Field Duplicate calculations

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 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.
  - Field blanks are prepared to identify contamination that may have been introduced during field activity. Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport.
- 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 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 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 micrograms per kilogram
  - µg/L micrograms per liter
  - µg/m^3 micrograms per cubic meter
  - mg/kg milligrams per kilogram
  - mg/L milligrams per liter
  - ppb v/v parts per billion volume/volume
  - pCi/L picocuries per liter
  - pg/g picograms per gram
  - pg/L picograms per liter
- 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)
- Fractions:

- N Normal (method cannot be filtered)
- D Dissolved (filtered)
- T Total (unfiltered)

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
EIS	Extraction Internal Standard
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 Factor
RT	Retention Time
SAP	Sampling Analysis Plan
SDG	Sample Delivery Group
SIM	Selected ion monitoring
SOP	Standard Operating Procedure
SPE	Solid-Phase Extraction
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TKN	Total Kjeldahl Nitrogen
TPH	Total Petroleum Hydrocarbon
TPU	Total Propagated Uncertainty
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compound
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, 2020a. National Functional Guidelines for Inorganic Superfund Methods Data Review. EPA-542-R-20-006. November.

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ANALYTICAL REPORT

PREPARED FOR

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

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JOB DESCRIPTION

Heglar Kronquist

JOB NUMBER

590-23025-1

Eurofins Spokane
11922 East 1st Ave
Spokane WA 99206

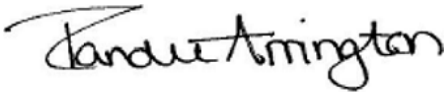
See page two for job notes and contact information.

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



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

Table of Contents

Job Narrative
590-23025-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 2/1/2024 10:25 AM. 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 time was 2.6°C

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

Metals
Method 6010D: The low level initial calibration verification (ICVL) associated with batch 590-45842 recovered below the lower control limit for Sodium. The samples associated with this ICV were 10x the spike amount for the affected analytes; therefore, the data have been reported.

Method 6010D: The low level initial calibration verification (ICVL) associated with batch 590-45836 recovered above the upper control limit for Sodium. The samples associated with this ICV were either 10x the spike amount, have hits below the RL, or non-detects for the affected analytes; therefore, the data have been reported.

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

General Chemistry
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

Job ID: 590-23025-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
590-23025-1	MW-1	Water	01/31/24 14:30	02/01/24 10:25
590-23025-2	MW-3	Water	01/31/24 15:55	02/01/24 10:25
590-23025-3	MW-4	Water	01/31/24 17:10	02/01/24 10:25
590-23025-4	MW-400	Water	01/31/24 17:40	02/01/24 10:25
590-23025-5	SW-3	Water	01/31/24 14:55	02/01/24 10:25
590-23025-6	SW-5	Water	01/31/24 17:30	02/01/24 10:25
590-23025-7	SW-300	Water	01/31/24 15:25	02/01/24 10:25

Definitions/Glossary

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

Job ID: 590-23025-1

Qualifiers

Metals

Qualifier	Qualifier Description
^1-	Initial Calibration Verification (ICV) is outside acceptance limits, low biased.
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 Results

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

Job ID: 590-23025-1

Client Sample ID: MW-1
Lab Sample ID: 590-23025-1
Date Collected: 01/31/24 14:30
Matrix: Water
Date Received: 02/01/24 10:25

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	50		0.80		mg/L			02/06/24 12:30	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	64	^1-	0.50		mg/L		02/13/24 09:15	02/14/24 16:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	1.3		0.15		mg/L			02/14/24 14:12	1
Total Dissolved Solids (SM 2540C)	500		25		mg/L			02/07/24 14:48	1

Client Sample ID: MW-3
Lab Sample ID: 590-23025-2
Date Collected: 01/31/24 15:55
Matrix: Water
Date Received: 02/01/24 10:25

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	620		8.0		mg/L			02/06/24 12:40	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	210	^1-	1.0		mg/L		02/13/24 09:15	02/14/24 18:11	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	1.3		0.15		mg/L			02/14/24 14:14	1
Total Dissolved Solids (SM 2540C)	1200		25		mg/L			02/07/24 14:48	1

Client Sample ID: MW-4
Lab Sample ID: 590-23025-3
Date Collected: 01/31/24 17:10
Matrix: Water
Date Received: 02/01/24 10:25

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28		0.80		mg/L			02/06/24 13:10	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	45	^1-	0.50		mg/L		02/13/24 09:15	02/14/24 16:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	1.5		0.15		mg/L			02/14/24 14:16	1
Total Dissolved Solids (SM 2540C)	660		25		mg/L			02/07/24 14:48	1

Client Sample ID: MW-400
Lab Sample ID: 590-23025-4
Date Collected: 01/31/24 17:40
Matrix: Water
Date Received: 02/01/24 10:25

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28		0.80		mg/L			02/06/24 13:20	1

Client Sample ID: MW-400

Lab Sample ID: 590-23025-4
Matrix: Water
Date Collected: 01/31/24 17:40
Date Received: 02/01/24 10:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	45	^1-	0.50		mg/L		02/13/24 09:15	02/14/24 16:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	1.2		0.15		mg/L			02/14/24 14:18	1
Total Dissolved Solids (SM 2540C)	510		25		mg/L			02/07/24 14:48	1

Client Sample ID: SW-3

Lab Sample ID: 590-23025-5
Matrix: Water
Date Collected: 01/31/24 14:55
Date Received: 02/01/24 10:25

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	260		8.0		mg/L			02/06/24 13:30	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	94	F1 ^1-	0.50		mg/L		02/14/24 11:14	02/14/24 17:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	0.94		0.15		mg/L			02/14/24 14:20	1
Total Dissolved Solids (SM 2540C)	590		25		mg/L			02/07/24 14:48	1

Client Sample ID: SW-5

Lab Sample ID: 590-23025-6
Matrix: Water
Date Collected: 01/31/24 17:30
Date Received: 02/01/24 10:25

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	250		8.0		mg/L			02/06/24 14:31	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	84	^1-	0.50		mg/L		02/14/24 11:14	02/14/24 17:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	0.25		0.15		mg/L			02/14/24 14:21	1
Total Dissolved Solids (SM 2540C)	690		25		mg/L			02/07/24 14:48	1

Client Sample ID: SW-300

Lab Sample ID: 590-23025-7
Matrix: Water
Date Collected: 01/31/24 15:25
Date Received: 02/01/24 10:25

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	260		8.0		mg/L			02/06/24 15:11	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	93	^1-	0.50		mg/L		02/14/24 11:14	02/14/24 17:46	1

Client Sample Results

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

Job ID: 590-23025-1

Client Sample ID: SW-300

Date Collected: 01/31/24 15:25
Date Received: 02/01/24 10:25

Lab Sample ID: 590-23025-7

Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N (EPA 353.2)	0.98		0.15		mg/L			02/14/24 14:23	1
Total Dissolved Solids (SM 2540C)	900		25		mg/L			02/07/24 14:48	1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 590-45686/1003
Matrix: Water
Analysis Batch: 45686

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			02/06/24 08:33	1

Lab Sample ID: LCS 590-45686/1004
Matrix: Water
Analysis Batch: 45686

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	12.8		mg/L		102	90 - 110		

Lab Sample ID: MB 590-45708/1001
Matrix: Water
Analysis Batch: 45708

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			02/06/24 14:00	1

Lab Sample ID: LCS 590-45708/1002
Matrix: Water
Analysis Batch: 45708

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		

Lab Sample ID: 590-23025-6 MS
Matrix: Water
Analysis Batch: 45708

Client Sample ID: SW-5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	250		114	358		mg/L		93	80 - 120		

Lab Sample ID: 590-23025-6 MSD
Matrix: Water
Analysis Batch: 45708

Client Sample ID: SW-5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	250		114	358		mg/L		94	80 - 120	0	10

Lab Sample ID: 590-23025-6 DU
Matrix: Water
Analysis Batch: 45708

Client Sample ID: SW-5
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chloride	250			252		mg/L				0.4	18.8

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 590-45789/2-A
Matrix: Water
Analysis Batch: 45836

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 45789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND	^1-	0.50		mg/L		02/13/24 09:14	02/14/24 15:11	1

Lab Sample ID: LCS 590-45789/1-A
Matrix: Water
Analysis Batch: 45836

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 45789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	50.0	49.4	^1-	mg/L		99	80 - 154

Lab Sample ID: MB 590-45822/2-A
Matrix: Water
Analysis Batch: 45842

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 45822

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND	^1-	0.50		mg/L		02/14/24 11:14	02/14/24 17:02	1

Lab Sample ID: LCS 590-45822/1-A
Matrix: Water
Analysis Batch: 45842

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 45822

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	50.0	48.0	^1-	mg/L		96	80 - 154

Lab Sample ID: 590-23025-5 MS
Matrix: Water
Analysis Batch: 45842

Client Sample ID: SW-3
Prep Type: Total Recoverable
Prep Batch: 45822

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sodium	94	F1 ^1-	50.0	128	F1 ^1-	mg/L		67	75 - 125

Lab Sample ID: 590-23025-5 MSD
Matrix: Water
Analysis Batch: 45842

Client Sample ID: SW-3
Prep Type: Total Recoverable
Prep Batch: 45822

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sodium	94	F1 ^1-	50.0	128	F1 ^1-	mg/L		67	75 - 125	0	20

Lab Sample ID: 590-23025-5 DU
Matrix: Water
Analysis Batch: 45842

Client Sample ID: SW-3
Prep Type: Total Recoverable
Prep Batch: 45822

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sodium	94	F1 ^1-	94.0	^1-	mg/L		0.5	20

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 580-451387/5
Matrix: Water
Analysis Batch: 451387

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			02/14/24 14:03	1

Lab Sample ID: LCS 580-451387/6
Matrix: Water
Analysis Batch: 451387

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	2.36		mg/L		94	90 - 110		

Lab Sample ID: LCSD 580-451387/7
Matrix: Water
Analysis Batch: 451387

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	2.41		mg/L		96	90 - 110	2	20

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

Lab Sample ID: MB 590-45756/1
Matrix: Water
Analysis Batch: 45756

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			02/07/24 14:48	1

Lab Sample ID: LCS 590-45756/2
Matrix: Water
Analysis Batch: 45756

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	496		mg/L		99	80 - 120		

Lab Chronicle

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

Job ID: 590-23025-1

Client Sample ID: MW-1
Date Collected: 01/31/24 14:30
Date Received: 02/01/24 10:25

Lab Sample ID: 590-23025-1
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	45686	02/06/24 12:30	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45789	02/13/24 09:15	AMB	EET SPK
Dissolved	Analysis	6010D		1			45836	02/14/24 16:05	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	451387	02/14/24 14:12	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45756	02/07/24 14:48	AMB	EET SPK

Client Sample ID: MW-3
Date Collected: 01/31/24 15:55
Date Received: 02/01/24 10:25

Lab Sample ID: 590-23025-2
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		10	5 mL	5 mL	45686	02/06/24 12:40	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45789	02/13/24 09:15	AMB	EET SPK
Dissolved	Analysis	6010D		2			45842	02/14/24 18:11	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	451387	02/14/24 14:14	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45756	02/07/24 14:48	AMB	EET SPK

Client Sample ID: MW-4
Date Collected: 01/31/24 17:10
Date Received: 02/01/24 10:25

Lab Sample ID: 590-23025-3
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		1	5 mL	5 mL	45686	02/06/24 13:10	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45789	02/13/24 09:15	AMB	EET SPK
Dissolved	Analysis	6010D		1			45836	02/14/24 16:13	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	451387	02/14/24 14:16	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45756	02/07/24 14:48	AMB	EET SPK

Client Sample ID: MW-400
Date Collected: 01/31/24 17:40
Date Received: 02/01/24 10:25

Lab Sample ID: 590-23025-4
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	45686	02/06/24 13:20	NMI	EET SPK
Dissolved	Prep	3005A			50 mL	50 mL	45789	02/13/24 09:15	AMB	EET SPK
Dissolved	Analysis	6010D		1			45836	02/14/24 16:18	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	451387	02/14/24 14:18	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45756	02/07/24 14:48	AMB	EET SPK

Lab Chronicle

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

Job ID: 590-23025-1

Client Sample ID: SW-3

Lab Sample ID: 590-23025-5

Date Collected: 01/31/24 14:55

Matrix: Water

Date Received: 02/01/24 10:25

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	45686	02/06/24 13:30	NMI	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45822	02/14/24 11:14	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45842	02/14/24 17:06	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	451387	02/14/24 14:20	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45756	02/07/24 14:48	AMB	EET SPK

Client Sample ID: SW-5

Lab Sample ID: 590-23025-6

Date Collected: 01/31/24 17:30

Matrix: Water

Date Received: 02/01/24 10:25

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	45708	02/06/24 14:31	NMI	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45822	02/14/24 11:14	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45842	02/14/24 17:42	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	451387	02/14/24 14:21	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45756	02/07/24 14:48	AMB	EET SPK

Client Sample ID: SW-300

Lab Sample ID: 590-23025-7

Date Collected: 01/31/24 15:25

Matrix: Water

Date Received: 02/01/24 10:25

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	45708	02/06/24 15:11	NMI	EET SPK
Total Recoverable	Prep	3005A			50 mL	50 mL	45822	02/14/24 11:14	AMB	EET SPK
Total Recoverable	Analysis	6010D		1			45842	02/14/24 17:46	AMB	EET SPK
Total/NA	Analysis	353.2		1	50 mL	50 mL	451387	02/14/24 14:23	FCG	EET SEA
Total/NA	Analysis	SM 2540C		1	100 mL	100 mL	45756	02/07/24 14:48	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

Job ID: 590-23025-1

Laboratory: Eurofins Spokane

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

Authority	Program	Identification Number	Expiration Date
Washington	State	C569	01-07-25

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
California	State	2954	07-07-24
Florida	NELAP	E87575	06-30-24
Louisiana (All)	NELAP	03073	07-01-24
Maine	State	WA01273	05-02-24
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-24
New York	NELAP	11662	03-31-24
Oregon	NELAP	4167	07-07-24
US Fish & Wildlife	US Federal Programs	A20571	06-30-24
USDA	US Federal Programs	525-23-4-22573	01-04-26
Washington	State	C788	07-13-24
Wisconsin	State	399133460	08-31-24

Method Summary

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

Job ID: 590-23025-1

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 450,
Spokane WA, 99201

CHAIN OF CUSTODY RECORD

Phone (617) 886-7400
Fax (617) 886-7600
Page 1 of 1

H&A FILE NO.	0202596-002	LABORATORY	Eurofins
PROJECT NAME	Hegler Kronquist	ADDRESS	
H&A CONTACT	Ward McDonald	CONTACT	
DELIVERY DATE	2/1/24		
TURNAROUND TIME	STD		
PROJECT MANAGER			

Sample No.	Date	Time	Depth	Type	Chloride EPA 300.0	NO3, NO2 EPA 353.2	TDS EPA 160.1	Diss Sodium EPA 6010C	Total Sodium EPA 6010C	Number of Containers
MW-1	1/31/24	14:30		H2O	X	X	X	X		
MW-3		15:55			X	X	X	X		
MW-4		17:10			X	X	X	X		
MW-400		17:40			X	X	X	X		
SW-3		14:55			X	X	X		X	
SW-5		17:30			X	X	X		X	
SW-300		15:25			X	X	X		X	

Analysis Requested

Comments (special instructions, precautions, additional method numbers, etc.)

Laboratory to use applicable DEP CAM methods, unless otherwise directed.

Field Filtered

Not Filtered

2.5, 2.4 corr IR006

Sampled and Relinquished by	Received by
Sign	Sign
Print Craig M	Print Hadley Morris
Firm HLT	Firm EETSpo
Date 2/1/24 Time 10:25	Date 2/1/24 Time 10:25
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

590-23025 Chain of Custody

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

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: 590-8678.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Randee.Arrington@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 1
Company: Eurofins Environment Testing Northwest,		Accreditations Required (See note): State Program - Washington		Job #: 590-23025-1
Address: 5755 8th Street East, ,	Due Date Requested: 2/14/2024			
City: Tacoma	TAT Requested (days):			
State, Zip: WA, 98424				
Phone: 253-922-2310(Tel)	PO #:			
Email:	WO #:			
Project Name: Heglar Kronquist	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)	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:
			Preservation Code:						
MW-1 (590-23025-1)	1/31/24	14:30 Pacific		Water			X	1	
MW-3 (590-23025-2)	1/31/24	15:55 Pacific		Water			X	1	
MW-4 (590-23025-3)	1/31/24	17:10 Pacific		Water			X	1	
MW-400 (590-23025-4)	1/31/24	17:40 Pacific		Water			X	1	
SW-3 (590-23025-5)	1/31/24	14:55 Pacific		Water			X	1	
SW-5 (590-23025-6)	1/31/24	17:30 Pacific		Water			X	1	
SW-300 (590-23025-7)	1/31/24	15:25 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
[signature]	2/1/24 15:50	EET SPO	[signature]	2/2/24 0915	EETN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: TBIL 1.9 11.8

Ver: 06/08/2021

2/15/2024

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Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 590-23025-1

Login Number: 23025
List Number: 1
Creator: Morris, Mackenzie 1

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: 590-23025-1

Login Number: 23025
List Number: 2
Creator: Prigge, Madison

List Source: Eurofins Seattle
List Creation: 02/02/24 12:10 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	IR12 1.9
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	