Alternative Source Demonstration: Spring 2024

Cedar Rapids/Linn County Solid Waste Agency

Site 2

Permit No. 57-SDP-01-72P

Submittal Date: August 2, 2024

Solid Waste Agency
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Certification

I hereby certify that this report was prepared by me or under my direct personal supervision and that I am a qualified groundwater scientist based on the requirements noted in IAC 567—113.10(1)"d".

08/02/2024

Richard Wilson — Date

Pages or sheets covered by this seal:

All

Certification page (PE or ground water scientist signature) ***113.10(1)"d"***

For the purposes of this rule, a "qualified groundwater scientist" means a scientist or an engineer who has received a baccalaureate or postgraduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields demonstrated by state registration, professional certifications, or completion of accredited university programs that enable that individual to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action.

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1 Background Information and Understanding

The Cedar Rapids Linn County Solid Waste Agency (CRLCSWA or Agency) Site 2 Landfill (Site) is located northeast of the City of Marion, Iowa at 1954 County Home Road. The Site 2 landfill is a municipal solid waste landfill (MSWLF) originally permitted in 1972 and provides solid waste disposal services for commercial, industrial, and residential generators. The Site 2 property consists of approximately 360 acres of land and is regulated under the requirements of 567 Iowa Administrative Code (IAC) and Iowa Department of Natural Resources (IDNR) Solid Waste Disposal Permit No. 57-SDP-01-72P.

In accordance with IAC 567 Chapter 113, the Site has a Hydrologic Monitoring System Plan (HMSP) [HDR, 2021] in place which provides a framework for the effective monitoring of the uppermost aquifer at Site 2, to protect human health and the environment. The surrounding land use is primarily agricultural, except for the Linn County secondary roads maintenance facility adjacent to the northeast corner of the property and Prospect Meadows Sports Complex located to the east of the property; both of which are located upgradient of the Site. A site map showing the full CRLCSWA Site 2 property, existing landfill, and groundwater monitoring network is provided as **Figure 1, Attachment A**.

Statistical analysis of the spring 2024 compliance monitoring event sampling data indicated arsenic, beryllium, cadmium, cobalt, lead, nickel, vanadium, and zinc exceeded either one or both the interwell and intrawell upper prediction limits (UPLs) at monitoring well MW-501 and cobalt was potentially at a statistically significant level (SSL) above the Site's groundwater protection standard (GWPS) at monitoring well MW-304R.

Based on a review of Site activities and groundwater data, an alternative source appears to be contributing to the elevated metals concentrations at monitoring well MW-501 and cobalt concentrations in groundwater proximal to MW-304R. The elevated concentrations do not appear to be the result of a release from the lined landfill cells immediately adjacent to MW-304R and MW-501. The purpose of this document is to provide a summary and justification of the alternative source impacting metal concentrations in groundwater at and adjacent to monitoring wells MW-304R and MW-501.

2 MW-304R Historical Details

Monitoring well MW-304R is located on the west side of the MSWLF. The well is identified as a downgradient monitoring well relative to the Phase 4 cell. The water table of the upper aquifer at monitoring well MW-304R is located in the alluvial sediments deposited by Indian Creek and historical tributaries. The sediments in the screen interval of MW-304R are poorly graded sand and sandy lean clay as indicated on the well's boring log [HDR, 2021]. Monitoring well MW-304R is a replacement well for MW-304. Grading activities in the vicinity of the monitoring location required MW-304 to be abandoned and replaced with the new well, MW-304R, on August 31, 2020. The sediments in the screen interval of MW-304 were identified as poorly graded sand as indicated on the well's boring log [HDR, 2021]. Construction details of monitoring wells MW-304 and MW-304R are summarized on the following **Table 1**.

Table 1: Well Construction Details: MW-304 and MW-304R

Monitoring Well ID	MW-304	MW-304R
Top of Casing Elevation (feet AMSL)	825.28	834.09
Ground Surface Elevation (feet AMSL)	822.53	831.59
Top of Screen Elevation (feet AMSL)	814.53	814.59
Bottom of Screen Elevation (feet AMSL)	804.53	804.59

AMSL = Above Mean Sea Level

A time-series of cobalt concentrations measured in groundwater samples from monitoring well MW-304 and MW-304R are depicted on **Graph 1, Attachment B**. Cobalt was initially identified at a statistically significant increase (SSI) in monitoring well MW-304 during the fall 2018 compliance monitoring event. The fall 2018 cobalt concentration at monitoring well MW-304 was 0.00976 milligrams per liter (mg/L). Following the fall 2018 event, cobalt concentrations hovered between 0.002 to 0.003 mg/L until the monitoring well was replaced. Initial samples collected from MW-304R had elevated cobalt concentrations with subsequent events showing a general decreasing trend with seasonal oscillations.

With the eighth groundwater sample collected from monitoring well MW-304R, the population of cobalt concentrations that were elevated was sufficient enough to identify a potential SSL above the GWPS that was established at the time of the spring 2024 compliance monitoring event. During the spring 2024 compliance monitoring event, the GWPS for cobalt at monitoring well MW-304R was the UPL (0.00288 mg/L) which was calculated from the background concentrations from monitoring wells MW-9AR and MW-201B.

2.1 MW-304R Cobalt Alternative Source

As discussed in the Alternative Source Demonstration: Cobalt Report dated August 8, 2023 [HDR, 2023], an inward groundwater flow gradient was demonstrated near the 13-acre, Phase 1, Phase 2, Phase 3, Phase 4, and Phase 5A cells due to the presence of a groundwater underdrain collection and control system. Based on the inward gradient of groundwater flow towards the landfill cells, it does not appear that the elevated cobalt concentrations are the result of a potential release from the landfill unit. If a release were to occur, the likely pathway for contamination would be to the groundwater underdrain collection and control system. Groundwater is sampled at underdrain monitoring locations GU-1, GU-O, and GU-P for the 13-acre, Phase 1, Phase 2, Phase 3, Phase 4, and Phase 5A cells.

The replacement of monitoring well MW-304 with MW-304R could have caused the recent elevated cobalt concentrations measured at the monitoring location. This increase could be related to well construction techniques or materials influencing the chemistry in the groundwater at that location. The steady decreasing trend of cobalt concentrations following the installation of monitoring well MW-304R could be the result of the well construction materials and groundwater equilibrating overtime.

However, another alternative source appears to be contributing to elevated cobalt concentrations at monitoring well MW-304R and at other monitoring locations in the floodplain of Indian Creek and historical tributaries. It appears that slightly acidic precipitation infiltrating rapidly in the Indian Creek floodplain as well as the lower cation exchange capacity (CEC) of sandy or gravelly substrates of alluvial sediments could be impacting the release and detection of cobalt in groundwater when compared to background monitoring locations (MW-9AR and MW-201B) which are screened in glacial till sediments.

As noted in the ASD dated August 8, 2023, Cobalt is associated with various minerals (manganese and iron oxides) and has been identified as present in glacial deposited sediments. A significant portion of the Site is underlain by weathered and unweathered glacial till deposits with some alluvium deposits on the western edge along Indian Creek. The water table of the upper aquifer transverses the glacial till and alluvium and are considered a contiguous unit at the Site. Thus, there is a source of cobalt present at the Site that is unrelated to the waste material being deposited in the landfill cells. The pH of groundwater can influence the release of metals off a soil substrate and be dissolved in groundwater. Lower pH or acidic groundwater can dissolve oxides or promote cation exchange of available metal species on soil substrates (i.e., clay particles in till and alluvial sediments).

The pH data from groundwater samples collected from monitoring wells screened in glacial till, clay sediments and alluvial, sand/gravelly sediments are depicted on the box and whiskers plots included as **Graph 2, Attachment B**. Based on the available data, pH distribution in the alluvial, sand/gravelly screened material is lower, more acidic, than pH values measured in glacial till screened sediments. The differences in pH values between these sediment types is attributed to the lower CEC of sand and gravelly material relative to clay sediments. The lower CEC of sand and gravelly material reduces the buffering capacity of the sediment against changes in pH due to an influx of either acidic or basic cations. The main input of acidic cations into a groundwater system is generally slightly acidic precipitation infiltration. Based on data provided by the United States Geological Survey (USGS), the pH of precipitation at the Site could be approximately 5.4 standard units (S.U.) [USGS, 2024]. Since clay materials generally have an abundant source of basic cations (i.e., magnesium, calcium, potassium, and sodium) in their clay structure, these cations buffer the slightly acidic precipitation. Thus, the glacial till screened monitoring wells will have relatively higher pH values in groundwater due to this buffering capacity.

In addition to the buffering capacity of the soils, groundwater pH values in alluvial sediments are generally lower than glacial till sediments at the Site due to the reduced overburden of soil for infiltrated water to traverse before entering the groundwater. Infiltration on the east side of the Site from precipitation has a longer residence time due to the thicker glacial till and other Quaternary deposits when compared to the shallower overburden of floodplain deposits of Indian Creek. Thus, less time for slightly acidic precipitation to interact with basic cations in loamy or clay alluvial deposits before reaching more sandy or gravelly substrate.

The box and whiskers plots depicted on **Graph 3, Attachment B** show the relative distribution of cobalt concentrations in groundwater samples from glacial till, clay sediments screened

monitoring wells and sand/gravelly sediments screened monitoring wells. As depicted on the graphs, cobalt concentrations in sand/gravelly screened sediments have a higher median and interquartile range when compared to concentrations measured in glacial till, clay sediments.

To further evaluate current groundwater chemistry in sand/gravelly, alluvial sediments at the Site, additional monitoring wells in the alluvial floodplain were sampled during the verification monitoring event conducted on May 29, 2024. Monitoring wells MW-204A, MW-204B, MW-213A, MW-213B, and MW-218 were sampled and analyzed for the Appendix I metals. The laboratory analytical report for the May 2024 verification and ASD sampling event is included in **Attachment C**. The cobalt concentrations and pH values for the groundwater samples collected from monitoring wells MW-204A, MW-204B, MW-213A, MW-213B, and MW-218 are summarized on **Table 2**.

Table 2: May 2024 ASD Cobalt Concentrations

Monitoring Well ID	Cobalt Concentration (mg/L)	pH (S.U.)
MW-204A	0.000966	6.63
MW-204B [1]	0.120 [0.0108]	6.35
MW-213A	0.00631	6.49
MW-213B	<0.000170	7.16
MW-218	<0.000170	6.78

mg/L = milligrams per liter
S.U. = standard units
[1] Due to high turbidity related to flocculated iron, a field filtered sample was collected and submitted for laboratory analysis. Concentration in brackets is for the field filtered (dissolved) sample.

Monitoring wells MW-204A, MW-204B, and MW-218 are in the same general area as monitoring well MW-304R. As noted on **Table 2**, the lowest measured pH was at monitoring well MW-204B, which also translated to the highest cobalt concentration measured from the additional ASD monitoring wells that were sampled. Based on the inward gradient of the lined landfill, monitoring wells MW-204A, MW-204B, and MW-218 are considered upgradient relative to the landfill cells.

Monitoring wells MW-213A and MW-213B are located southwest of the landfill's Phase 5A cell approximately 1,500 feet. Monitoring wells MW-213A and MW-213B are located up to cross-gradient relative to the landfill and screened in the alluvial sediments along the Indian Creek floodplain. The cobalt concentration measured in the MW-213A groundwater sample during the May 2024 sampling event is comparable or higher than cobalt concentrations measured in samples collected from monitoring wells that are closer to the landfill's waste boundaries. Since MW-213A's monitoring location is not in close proximity to the landfill's waste boundary and it is located in the same general landform as alluvial monitoring wells located adjacent to the landfill's waste boundary, it is recommended that the cobalt concentration of 0.00631 mg/L be

established as an interim site-specific GWPS for evaluating for SSLs. The recommendation assumes future, additional background/upgradient analytical data will be collected in the alluvial landform of the Site to develop a robust background dataset to statistically evaluate monitored constituents in alluvial screened monitoring wells. The interim cobalt GWPS would be sufficient to prevent triggering the assessment of corrective measures at monitoring well MW-304R at this time (additional details in **Section 2.2**). This would provide sufficient time for discussions between CRLCSWA and IDNR on modifying the HMSP monitoring network to account for the unique Site conditions that are being influenced by the variable groundwater flow on the property and applicable compliance monitoring points.

2.2 MW-304R Cobalt Statistical Reevaluation

As mentioned in **Section 2.1**, it is recommended that a site-specific cobalt concentration GWPS be established based on the measured cobalt concentration in the MW-213A groundwater sample collected during the May 2024 sampling event. Therefore, the site-specific GWPS for cobalt would be set at 0.00631 mg/L, pending concurrence. The confidence interval analysis for cobalt at monitoring well MW-304R was conducted with the GWPS set at 0.00631 mg/L. The confidence interval statistical report for MW-304R is included in **Attachment D**. Based on the statistical reevaluation based on the site-specific GWPS cobalt concentration of 0.00631 mg/L, a SSL was not identified at monitoring well MW-304R for cobalt. Therefore, it is recommended that monitoring well MW-304R continue to be monitored under the assessment monitoring program.

3 MW-501 Historical Details

Monitoring well MW-501 is located on the west side of the MSWLF. The well is identified as a downgradient monitoring well relative to the Phase 5A cell. The water table of the upper aquifer at monitoring well MW-501 is located in glacial till sediments which include a coarse sediment glacial outwash interval. The sediments in the screen interval of MW-501 includes the glacial till and outwash as well as unsaturated, coarse-grained alluvial sediments located above the glacial deposits [HDR, 2021]. The monitoring well was installed in December 2020 and groundwater sampling initiated in March 2021.

Monitoring well MW-501 was in the detection monitoring program when the spring 2024 groundwater compliance sampling event was conducted in April 2024. During the groundwater sample collection conducted at MW-501 in April 2024, significant flocculated iron deposits were observed discharging with the groundwater from the monitoring well. The pH of the groundwater sample was measured at 6.08 S.U. Some of the highest metal concentrations that have been measured to date as well as some initial detections of inorganic constituents above laboratory reporting limits were observed during the April 2024 sampling event in the MW-501 groundwater sample. A verification monitoring event was conducted in May 2024. Significant flocculated iron deposits were observed discharging in the groundwater from the monitoring well. The pH of the May 2024 groundwater sample was measured at 5.76 S.U.

3.1 MW-501 Elevated Metals Alternative Source

As discussed in **Section 2.1** and the August 8, 2023, ASD, the landfill does not appear to be contributing to the elevated metal concentrations at MW-501 due to the inward gradient that is induced by the groundwater underdrain collection and control system. The mechanism that is contributing to these elevated concentrations as well as the observed iron flocculation appears to be the same mechanism described in **Section 2.1** for elevated cobalt concentrations at monitoring wells screened in alluvial sediments adjacent to Indian Creek. Rapid infiltration of slightly acidic precipitation and the low CEC of alluvial sediments and coarse-grained glacial outwash sediments is allowing for naturally deposited constituents to be released into groundwater.

During the period from 2015 through 2020, annual precipitation totals ranged from approximately 35 to 47 inches. Annual precipitation totals for a Cedar Rapids weather station are depicted on **Graph 4, Attachment B** and the monthly totals are summarized on **Table 3**. For the period of 2021 through 2023, annual precipitation totals only ranged from approximately 27 to 32 inches with the lowest total occurring in the 2023 calendar year. Groundwater sampling at monitoring well MW-501 has been occurring a majority of time during the recent drier years. Precipitation totals measured in 2024 for January through June indicate a similar trajectory for the annual total to be similar to values measured in 2015 through 2020.

Table 3: Monthly Precipitation Totals[1]

Calendar Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015	0.56	1.25	0.85	4.59	4.4	8.94	2.9	2.65	5.25	3.31	4.02	4.49
2016	0.71	0.42	2.73	3.37	2.34	7.22	6.76	7.74	6.8	1.56	2.28	1.17
2017	1.85	0.65	2.09	6.34	4.74	4.95	4.9	3.08	0.64	4.29	0.73	0.8
2018	0.83	1.98	1.63	0.94	5.93	6.72	4.04	7.31	8.42	4.69	1.98	2.39
2019	2.1	2.72	1.52	2.35	7.5	3.98	1.4	4.76	7.03	6.43	1.59	1.45
2020	1.24	0.4	2.81	3.36	4.69	6.29	3.38	2.3	8.05	3.81	2.26	1.52
2021	1.26	0.93	2.22	1.43	3.49	8.59	1.02	3.64	1.34	5.84	0.72	1.24
2022	0.57	0.31	3.31	4.57	2.71	5.8	3.37	3.47	1.03	1.84	3.61	1.8
2023	2.58	3.16	1.22	2	2.23	2.68	2	1.84	0.83	5.47	0.58	2.18
2024	2.86	0.26	3.09	4.04	6.77	3.53						

[1] Monthly precipitation totals are measured in inches.

Measured groundwater elevations at monitoring well MW-501 are depicted on **Graph 5, Attachment B**. From the initial groundwater sampling event in March 2021 through October 2023, groundwater elevation generally trended downward. The October 2023 monitoring event was the lowest measured groundwater elevation at the monitoring well. The groundwater elevation increased at monitoring well MW-501 during the 2024 monitoring events with the highest elevation recorded at the monitoring well during the May 2024 verification monitoring event. The relatively significant rebound is related to the increased amount of precipitation that

has been observed at the Site beginning in late October 2023 which likely infiltrated rapidly at monitoring well MW-501.

With the rapid infiltration of slightly acidic precipitation, groundwater at monitoring well MW-501 would be expected to become more acidic. The pH values measured in groundwater samples collected at monitoring well MW-501 during the April 2024 compliance monitoring event and the May 2024 verification monitoring event were the lowest values recorded at the monitoring well to date. As depicted on **Graph 6, Attachment B**, pH and groundwater elevation appear to have a loose correlation where increased groundwater elevation results in a lower groundwater pH while decreased groundwater elevation results in higher groundwater pH values. The conceptual model for this potential correlation is that increased groundwater elevations is due to increased precipitation inputs and infiltration. This increased precipitation input also increases the inputs of acidic cations which in turn reduce the groundwater pH. With the high volume of low pH water, dissolution of inorganic constituents, especially those bonded with oxides, would be released into the groundwater. When precipitation inputs are lacking or reduced, the quantity of acidic cations replenishing the subsurface is reduced. Also, groundwater currently in the subsurface may have longer contact time with sediments to promote cation exchange of more basic constituents which are not being displaced by fresh precipitation. The drier conditions would also promote oxide deposit formation on the soil substrate which would reduce metal concentrations in groundwater.

The relatively high concentrations of select metals in the April and May 2024 groundwater samples collected from monitoring well MW-501 appears to be related to the recent and relatively higher amounts of precipitation at the Site. The increased concentrations of select metals appear to be related to climate impacts and naturally present hydrogeochemical processes and not related to a release from the landfill cells. It is recommended that monitoring well MW-501 continue to be monitored under the detection monitoring program.

4 Conclusions

Elevated cobalt concentrations measured in groundwater samples collected from monitoring well MW-304R were calculated to be at a SSL above the previous GWPS which was a UPL calculated from cobalt concentrations measured in groundwater samples collected from monitoring wells MW-9AR and MW-201B. Following evaluation of precipitation inputs and relative differences in groundwater constituents between clay, glacial till sediments and sand/gravelly alluvial sediments, it was recommended that a revised site-specific GWPS be established for cobalt. A cobalt concentration measured in the groundwater sample collected from monitoring well MW-213A is recommended to be the cobalt site-specific GWPS at a concentration of 0.00631 mg/L. Based on this updated GWPS, a SSL was not identified at monitoring well MW-304R for cobalt and it is recommended that the assessment monitoring program continue at that monitoring well.

Select metal constituents were initially detected above laboratory reporting limits or at significantly higher concentrations during the April 2024 compliance monitoring event at monitoring well MW-501. The elevated concentrations were confirmed based on the results of

the May 2024 verification monitoring event. Increased precipitation and infiltration during the end of 2023 and into early 2024, appears to be influencing subsurface groundwater chemistry. With the increase in slightly acidic precipitation to the subsurface soils and groundwater, dissolution of naturally present oxides and cation exchange processes appear to be causing naturally present metal constituents to be released into the groundwater. Since the elevated constituents in groundwater appear to be the result of climate and natural subsurface hydrogeochemistry and not the result of a release from the landfill, it is recommended that monitoring well MW-501 be retained in the detection monitoring program at the Site.

5 References

HDR, 2021, *Hydrologic Monitoring System Plan – Cedar Rapids Linn County Solid Waste Agency – Site 2*, September

HDR, 2023, *Alternative Source Demonstration: Cobalt – Cedar Rapids Linn County Solid Waste Agency – Site 2*, August

Howard R. Green Company, 2004, *Hydrogeologic Investigation and Hydrologic Monitoring System Planning Report – Cedar Rapids / Linn County Solid Waste Agency*, June

United States Geological Survey (USGS), 2024, pH of rainfall in the USA, 2002, Water Science School, https://www.usgs.gov/media/images/ph-rainfall-usa-2002, Accessed in July

Attachment A

Figures

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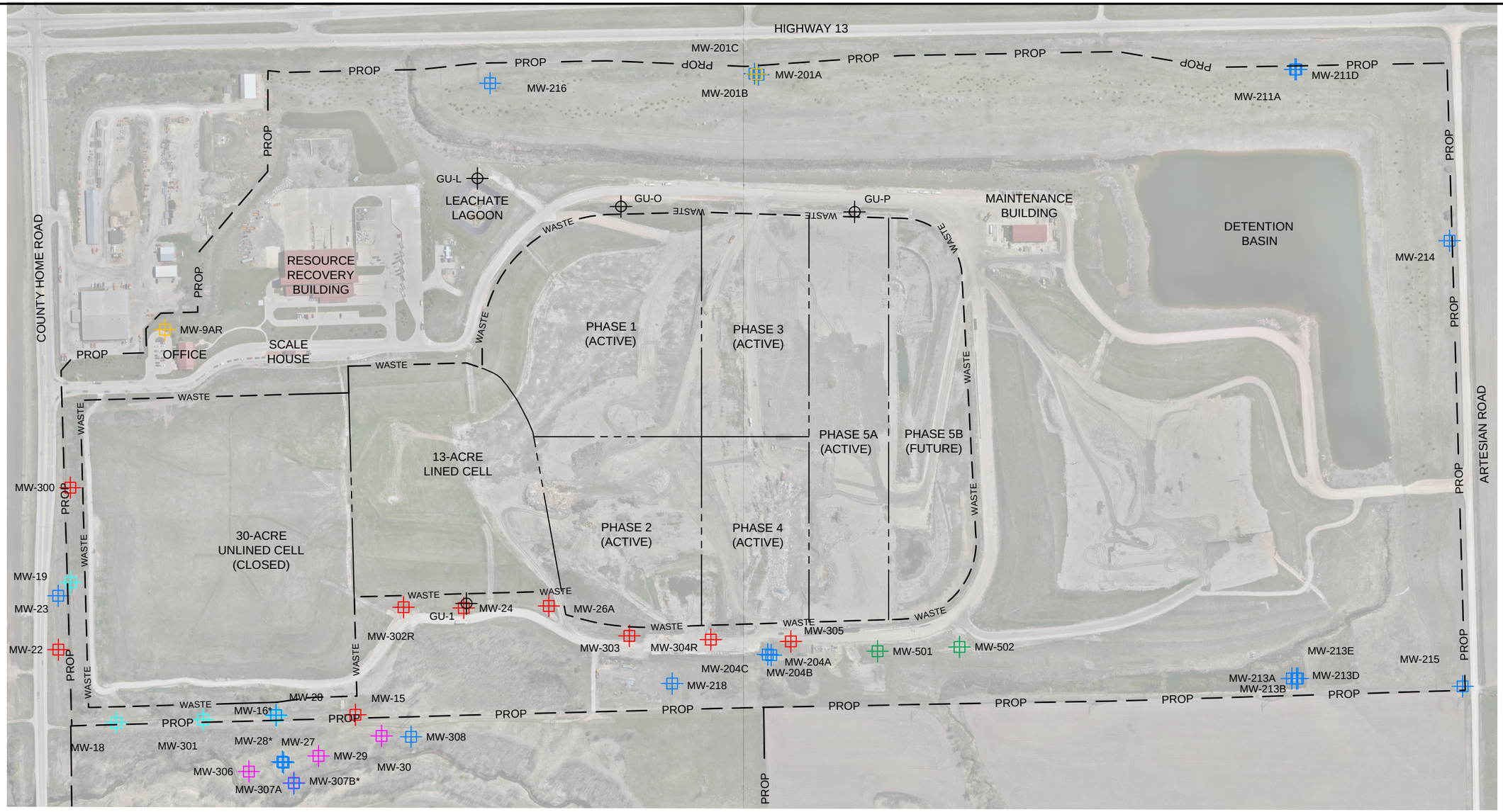

LEGEND

- WASTE — PERMITTED EDGE OF WASTE
- CELL BOUNDARY
- PROP — PROPERTY LINE

- ASSESSMENT MONITORING WELL
- BACKGROUND MONITORING WELL
- DETECTION MONITORING WELL
- CORRECTIVE ACTION WELL
- WELL - WATER LEVEL ONLY
- DELINEATION WELL

NOTES

1. AERIAL PHOTOGRAPH INFORMATION OBTAINED BY AEROVIEW AND UPDATED APRIL 15, 2024.

400 0 400 800

SCALE IN FEET

HDR

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CEDAR RAPIDS LINN COUNTY SOLID WASTE AGENCY - SITE 2 SITE MAP

2024 ALTERNATIVE SOURCE DEMONSTRATION: SPRING 2024

DATE
JULY 2024

FIGURE
1

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Attachment B

Graphs

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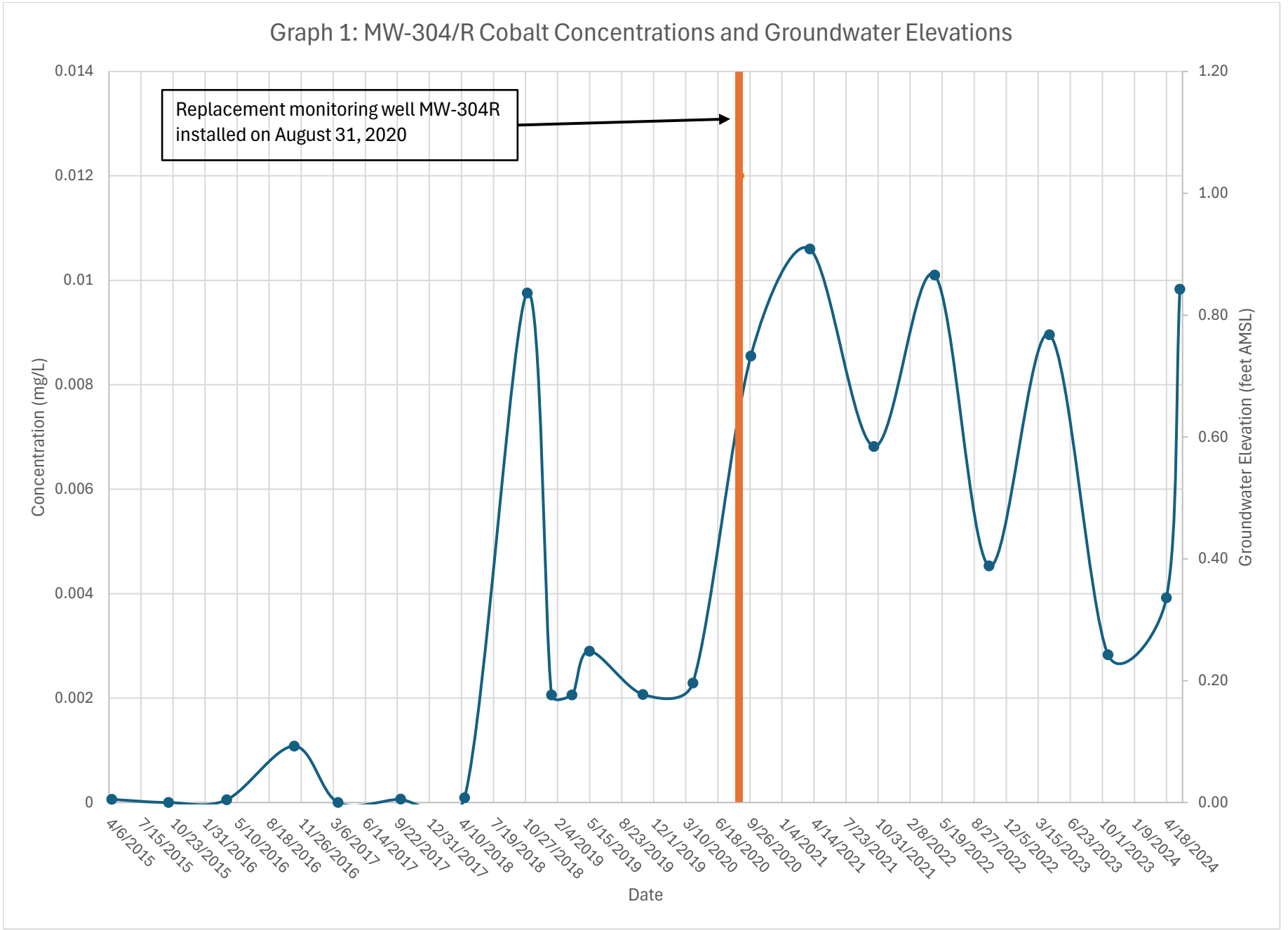
Graph 1: MW-304/R Cobalt Concentrations and Groundwater Elevations
Replacement monitoring well MW-304R installed on August 31, 2020
Concentration (mg/L)
Groundwater Elevation (feet AMSL)
Date
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
1.20
1.00
0.80
0.60
0.40
0.20
0.00
4/6/2015
7/15/2015
10/23/2015
1/31/2016
5/10/2016
8/18/2016
11/26/2016
3/6/2017
6/14/2017
9/22/2017
12/31/2017
4/10/2018
7/19/2018
10/27/2018
2/4/2019
5/15/2019
8/23/2019
12/1/2019
3/10/2020
6/18/2020
9/26/2020
1/4/2021
4/14/2021
7/23/2021
10/31/2021
2/8/2022
5/19/2022
8/27/2022
12/5/2022
3/15/2023
6/23/2023
10/1/2023
1/9/2024
4/18/2024

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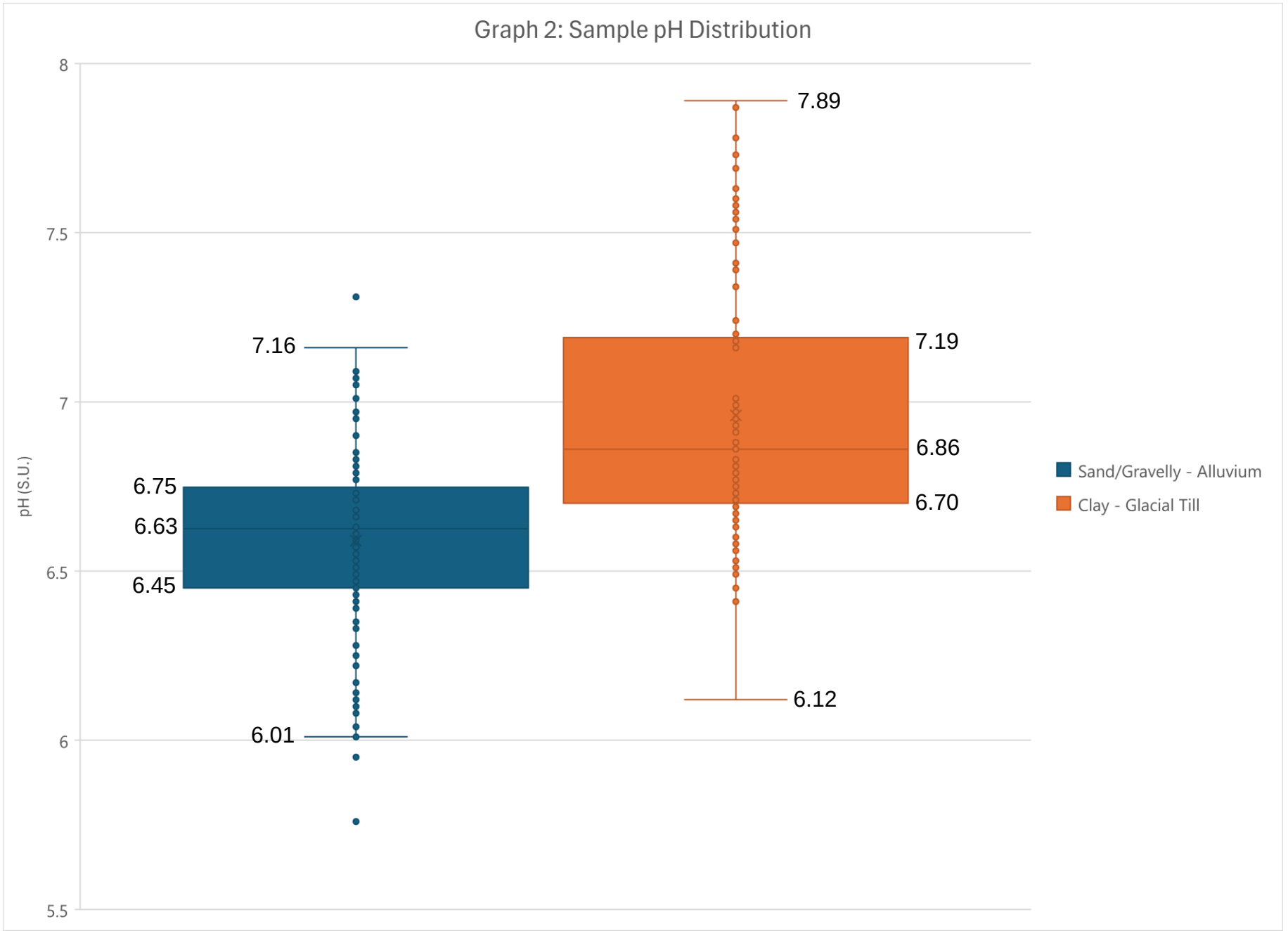
Graph 2: Sample pH Distribution
8
7.5
7
6.5
6
5.5
pH (S.U.)
7.89
7.16
7.19
6.86
6.75
6.63
6.45
6.70
6.12
6.01
Sand/Gravelly - Alluvium
Clay - Glacial Till

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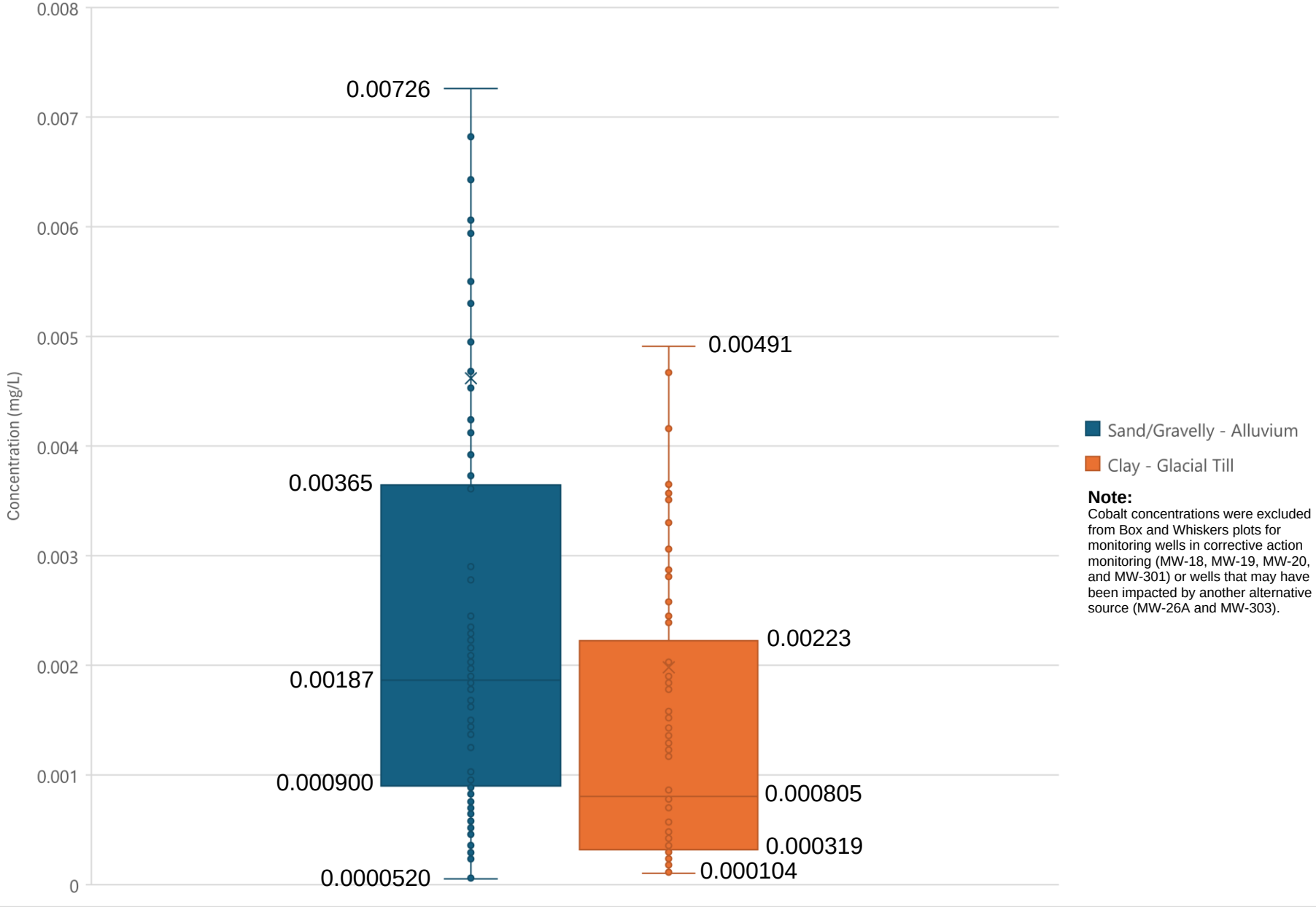
Graph 3: Sample Cobalt Distribution



Note:
Cobalt concentrations were excluded from Box and Whiskers plots for monitoring wells in corrective action monitoring (MW-18, MW-19, MW-20, and MW-301) or wells that may have been impacted by another alternative source (MW-26A and MW-303).

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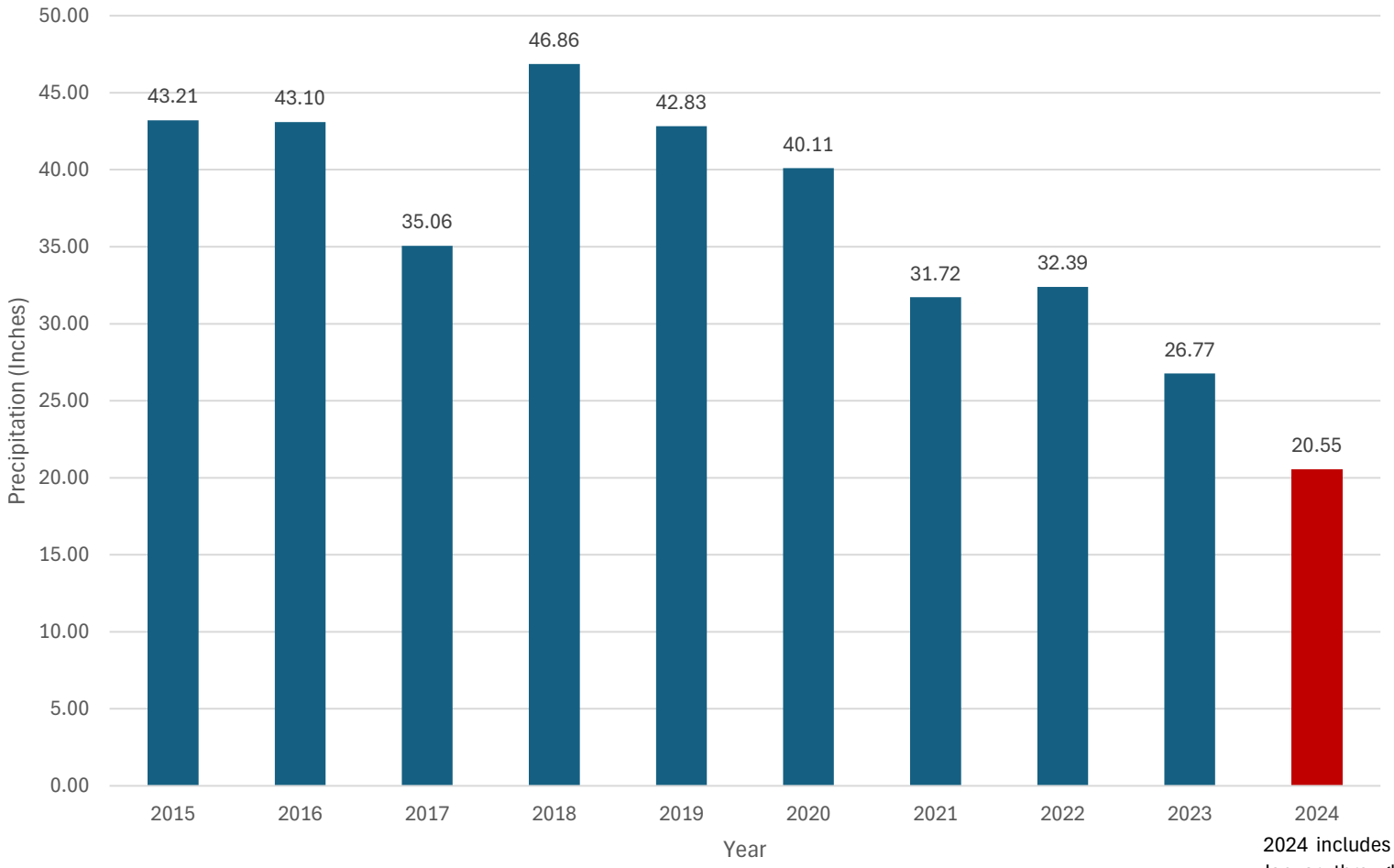
Graph 4: Annual Precipitation Totals



Source: High Plains Regional Climate Center (HPRCC)
CLIMOD, Station ID - Cedar Rapids No. 1.

2024 includes January through June monthly totals only.

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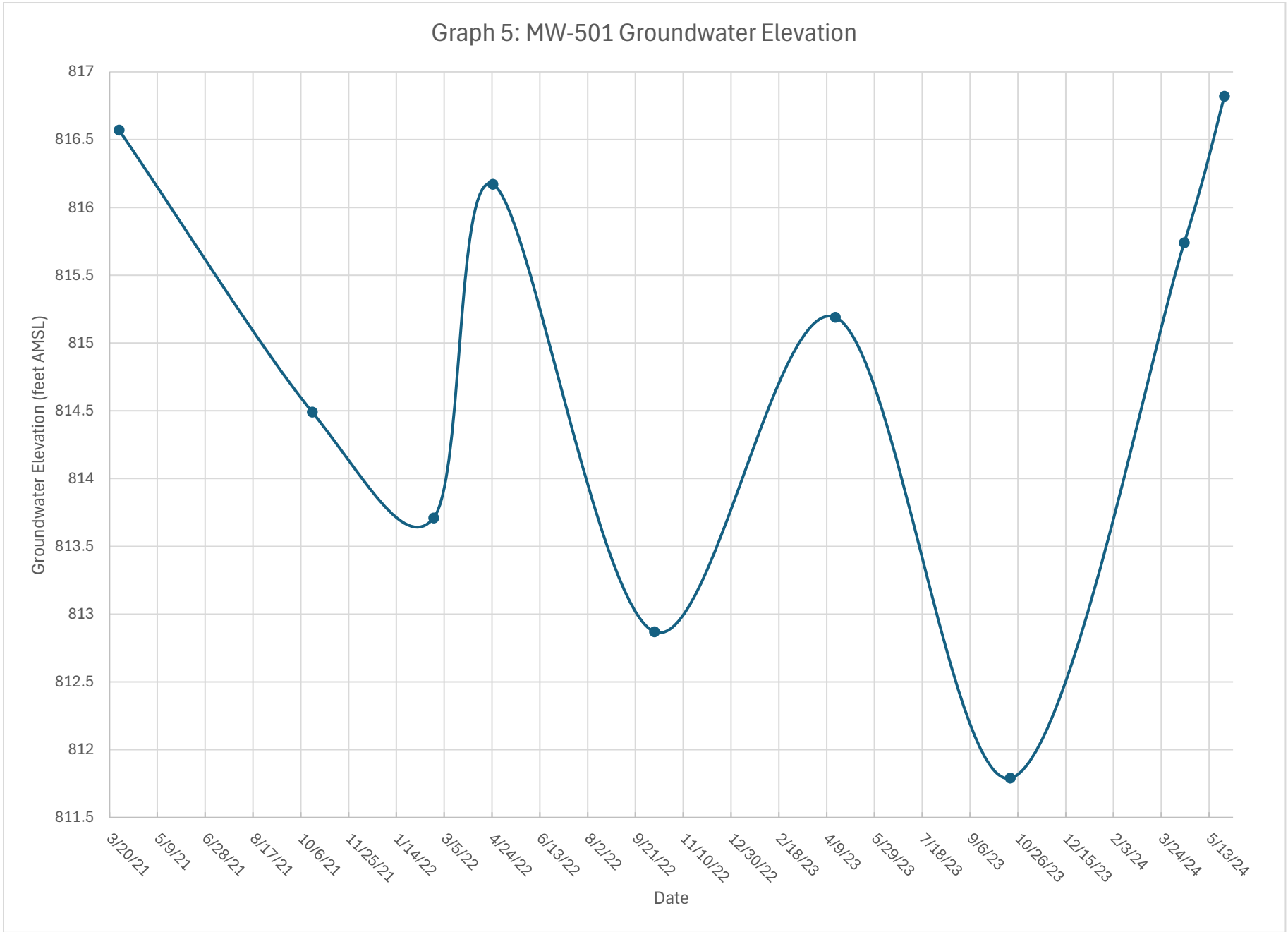
Graph 5: MW-501 Groundwater Elevation
Groundwater Elevation (feet AMSL)
817
816.5
816
815.5
815
814.5
814
813.5
813
812.5
812
811.5
3/20/21
5/9/21
6/28/21
8/17/21
10/6/21
11/25/21
1/14/22
3/5/22
4/24/22
6/13/22
8/2/22
9/21/22
11/10/22
12/30/22
2/18/23
4/9/23
5/29/23
7/18/23
9/6/23
10/26/23
12/15/23
2/3/24
3/24/24
5/13/24
Date

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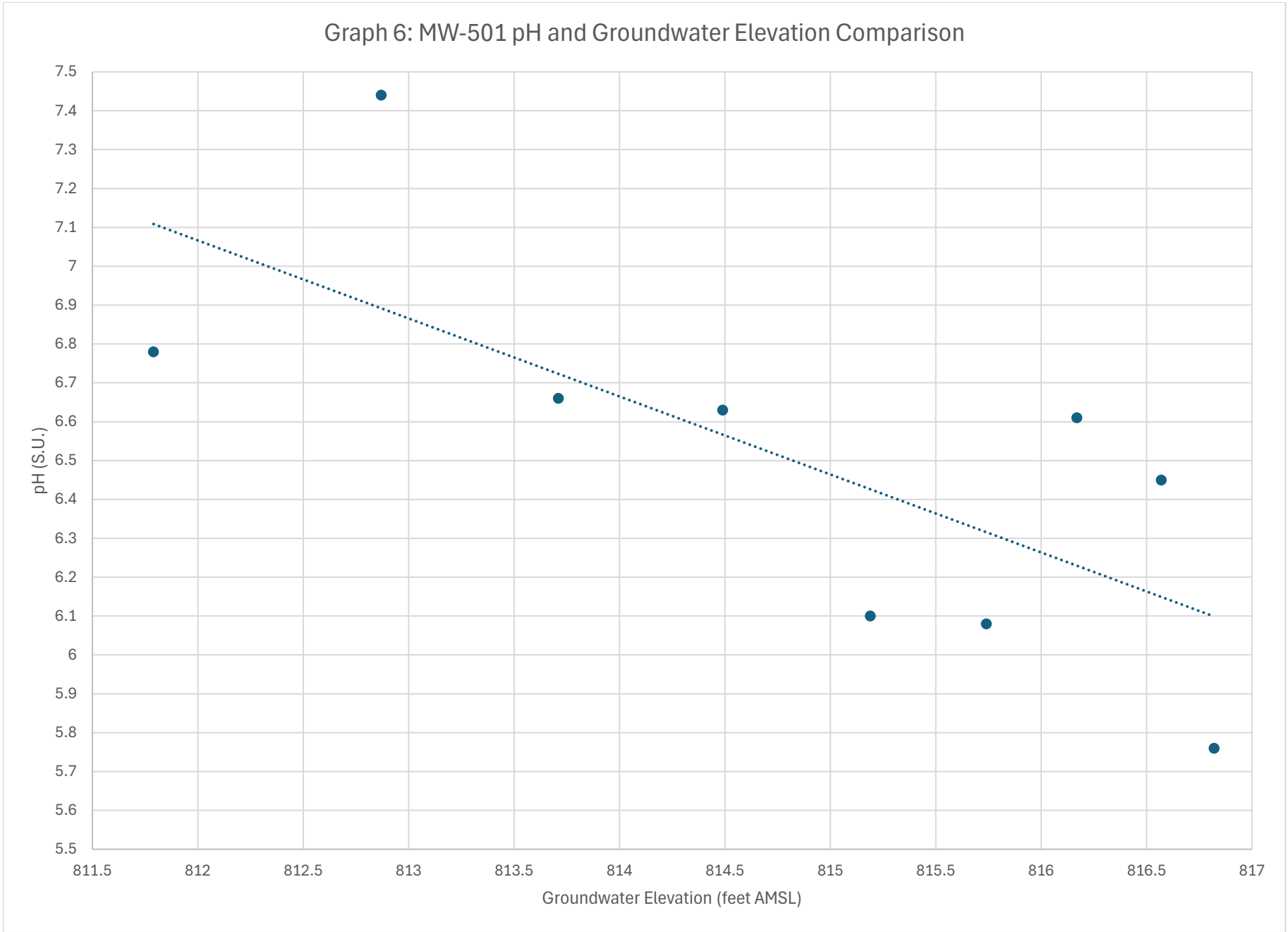
Graph 6: MW-501 pH and Groundwater Elevation Comparison
pH (S.U.)
7.5
7.4
7.3
7.2
7.1
7
6.9
6.8
6.7
6.6
6.5
6.4
6.3
6.2
6.1
6
5.9
5.8
5.7
5.6
5.5
811.5
812
812.5
813
813.5
814
814.5
815
815.5
816
816.5
817
Groundwater Elevation (feet AMSL)

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Attachment C

Laboratory Analytical Reports

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ANALYTICAL REPORT

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Revision 1

Authorized for release by
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Job Narrative
310-282336-1

REVISION

The report being provided is a revision of the original report sent on 7/1/2024. The report (revision 1) is being revised due to Client needed 2,4,5-TP reported on MW-26A.

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 5/30/2024 10:20 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 1.2°C.

Herbicides
Method 8151A: The continuing calibration verification (CCV) associated with batch 410-513167 recovered outside acceptance criteria, low biased, for 2,4-Dichlorophenylacetic acid (Surr) on one column. Results are reported from the passing column. MW-26A (310-282336-1)

Method 8151A: Surrogate recovery for the following sample was outside the upper control limit: MW-26A (310-282336-1). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

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

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

Metals
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: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-282336-1	MW-26A	Water	05/29/24 17:17	05/30/24 10:20
310-282336-2	MW-304R	Water	05/29/24 17:59	05/30/24 10:20
310-282336-3	MW-204A	Water	05/29/24 15:17	05/30/24 10:20
310-282336-4	MW-204B	Water	05/29/24 15:50	05/30/24 10:20
310-282336-5	MW-213A	Water	05/29/24 12:30	05/30/24 10:20
310-282336-6	MW-213B	Water	05/29/24 13:06	05/30/24 10:20
310-282336-7	MW-218	Water	05/29/24 16:39	05/30/24 10:20
310-282336-8	MW-501	Water	05/29/24 14:05	05/30/24 10:20

Detection Summary

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-26A — Lab Sample ID: 310-282336-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.0210		0.00200	0.000530	mg/L	1		6020B	Total/NA
Total Suspended Solids	79.0		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-304R — Lab Sample ID: 310-282336-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	369		5.00	2.10	mg/L	5		9056A	Total/NA
Cobalt	0.00983		0.000500	0.000170	mg/L	1		6020B	Total/NA
Iron	14.0		0.100	0.0360	mg/L	1		6020B	Total/NA
Manganese	2.23		0.0100	0.00360	mg/L	1		6020B	Total/NA
Total Suspended Solids	11.3		5.00	3.70	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	2.81		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-204A — Lab Sample ID: 310-282336-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	396		5.00	2.10	mg/L	5		9056A	Total/NA
Barium	0.0464		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000173	J	0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.000966		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00451	J	0.00500	0.00210	mg/L	1		6020B	Total/NA
Selenium	0.0102		0.00500	0.00140	mg/L	1		6020B	Total/NA
Vanadium	0.00423	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Total Organic Carbon	3.46		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-204B — Lab Sample ID: 310-282336-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	723		20.0	8.40	mg/L	20		9056A	Total/NA
Arsenic	0.00163	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0230		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.0120		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00202	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.00186		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.00568		0.00500	0.00210	mg/L	1		6020B	Total/NA
Vanadium	0.00126	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0101	J	0.0200	0.00970	mg/L	1		6020B	Total/NA
Iron	51.9		0.100	0.0360	mg/L	1		6020B	Total/NA
Manganese	2.17		0.0100	0.00360	mg/L	1		6020B	Total/NA
Arsenic	0.000633	J	0.00200	0.000530	mg/L	1		6020B	Dissolved
Barium	0.0158		0.00200	0.000660	mg/L	1		6020B	Dissolved
Cobalt	0.0108		0.000500	0.000170	mg/L	1		6020B	Dissolved
Nickel	0.00483	J	0.00500	0.00210	mg/L	1		6020B	Dissolved
Zinc	0.0104	J	0.0200	0.00970	mg/L	1		6020B	Dissolved
Iron	38.8		0.100	0.0360	mg/L	1		6020B	Dissolved
Manganese	1.91		0.0100	0.00360	mg/L	1		6020B	Dissolved
Total Suspended Solids	272		30.0	22.2	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	4.79		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-213A — Lab Sample ID: 310-282336-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	192		5.00	2.10	mg/L	5		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-213A (Continued) — Lab Sample ID: 310-282336-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.000927	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0567		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00631		0.000500	0.000170	mg/L	1		6020B	Total/NA
Nickel	0.00310	J	0.00500	0.00210	mg/L	1		6020B	Total/NA
Iron	1.81		0.100	0.0360	mg/L	1		6020B	Total/NA
Manganese	1.73		0.0100	0.00360	mg/L	1		6020B	Total/NA
Total Suspended Solids	3.25		1.88	1.39	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	2.43		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-213B — Lab Sample ID: 310-282336-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	24.9		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.000790	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0952		0.00200	0.000660	mg/L	1		6020B	Total/NA
Lead	0.000425	J	0.000500	0.000260	mg/L	1		6020B	Total/NA
Iron	1.46		0.100	0.0360	mg/L	1		6020B	Total/NA
Manganese	0.169		0.0100	0.00360	mg/L	1		6020B	Total/NA
Total Suspended Solids	4.88		1.88	1.39	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	0.760	J	1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-218 — Lab Sample ID: 310-282336-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	24.7		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00105	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.187		0.00200	0.000660	mg/L	1		6020B	Total/NA
Selenium	0.00478	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Iron	0.550		0.100	0.0360	mg/L	1		6020B	Total/NA
Manganese	0.0413		0.0100	0.00360	mg/L	1		6020B	Total/NA
Total Suspended Solids	5.37		1.88	1.39	mg/L	1		I-3765-85	Total/NA
Total Organic Carbon	1.14		1.00	0.500	mg/L	1		SM 5310C	Total/NA

Client Sample ID: MW-501 — Lab Sample ID: 310-282336-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00618		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0232		0.00200	0.000660	mg/L	1		6020B	Total/NA
Beryllium	0.00227		0.00100	0.000330	mg/L	1		6020B	Total/NA
Cadmium	0.000576		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0525		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00289	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000365	J	0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.107		0.00500	0.00210	mg/L	1		6020B	Total/NA
Vanadium	0.00210	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0702		0.0200	0.00970	mg/L	1		6020B	Total/NA
Iron	52.1		0.100	0.0360	mg/L	1		6020B	Total/NA
Manganese	0.350		0.0100	0.00360	mg/L	1		6020B	Total/NA
Barium	0.0145		0.00200	0.000660	mg/L	1		6020B	Dissolved
Beryllium	0.000392	J	0.00100	0.000330	mg/L	1		6020B	Dissolved
Cadmium	0.000392		0.000200	0.000100	mg/L	1		6020B	Dissolved
Cobalt	0.0475		0.000500	0.000170	mg/L	1		6020B	Dissolved

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-501 (Continued)

Lab Sample ID: 310-282336-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	0.0996		0.00500	0.00210	mg/L	1		6020B	Dissolved
Zinc	0.0546		0.0200	0.00970	mg/L	1		6020B	Dissolved
Iron	0.755		0.100	0.0360	mg/L	1		6020B	Dissolved
Manganese	0.316		0.0100	0.00360	mg/L	1		6020B	Dissolved
Total Suspended Solids	1100		60.0	44.4	mg/L	1		I-3765-85	Total/NA

This Detection Summary does not include radiochemical test results.

Client: HDR Inc
Job ID: 310-282336-1
Project/Site: CRLCSWA_2 Spring 2024

Client Sample ID: MW-26A
Lab Sample ID: 310-282336-1
Date Collected: 05/29/24 17:17
Matrix: Water
Date Received: 05/30/24 10:20

Method: SW846 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	<0.0230		0.0524	0.0230	ug/L		06/03/24 15:46	06/04/24 12:39	1

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.0210**		0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 16:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**79.0**		15.0	11.1	mg/L			05/31/24 10:56	1

Client Sample Results

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-304R

Date Collected: 05/29/24 17:59
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-2

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	369		5.00	2.10	mg/L			06/06/24 18:00	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	0.00983		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 16:20	1
Iron	14.0		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 16:20	1
Manganese	2.23		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 16:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	11.3		5.00	3.70	mg/L			05/31/24 10:02	1
Total Organic Carbon (SM 5310C)	2.81		1.00	0.500	mg/L			06/01/24 06:45	1

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-204A

Date Collected: 05/29/24 15:17
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-3

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**396**		5.00	2.10	mg/L			06/06/24 18:38	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/31/24 08:45	06/03/24 16:24	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 16:24	1
Barium	**0.0464**		0.00200	0.000660	mg/L		05/31/24 08:45	06/03/24 16:24	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/31/24 08:45	06/03/24 16:24	1
Cadmium	**0.000173**	**J**	0.000200	0.000100	mg/L		05/31/24 08:45	06/03/24 16:24	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/31/24 08:45	06/03/24 16:24	1
Cobalt	**0.000966**		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 16:24	1
Copper	<0.00180		0.00500	0.00180	mg/L		05/31/24 08:45	06/03/24 16:24	1
Lead	<0.000260		0.000500	0.000260	mg/L		05/31/24 08:45	06/03/24 16:24	1
Nickel	**0.00451**	**J**	0.00500	0.00210	mg/L		05/31/24 08:45	06/03/24 16:24	1
Selenium	**0.0102**		0.00500	0.00140	mg/L		05/31/24 08:45	06/03/24 16:24	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/31/24 08:45	06/12/24 19:06	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/31/24 08:45	06/03/24 16:24	1
Vanadium	**0.00423**	**J**	0.00500	0.00110	mg/L		05/31/24 08:45	06/03/24 16:24	1
Zinc	<0.00970		0.0200	0.00970	mg/L		05/31/24 08:45	06/03/24 16:24	1
Iron	<0.0360		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 16:24	1
Manganese	<0.00360		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 16:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.39		1.88	1.39	mg/L			05/31/24 10:02	1
Total Organic Carbon (SM 5310C)	**3.46**		1.00	0.500	mg/L			06/01/24 07:21	1

Client Sample ID: MW-204B

Date Collected: 05/29/24 15:50
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-4

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**723**		20.0	8.40	mg/L			06/07/24 09:06	20

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/31/24 08:45	06/03/24 16:27	1
Arsenic	**0.00163**	**J**	0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 16:27	1
Barium	**0.0230**		0.00200	0.000660	mg/L		05/31/24 08:45	06/03/24 16:27	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/31/24 08:45	06/03/24 16:27	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		05/31/24 08:45	06/03/24 16:27	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/31/24 08:45	06/03/24 16:27	1
Cobalt	**0.0120**		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 16:27	1
Copper	**0.00202**	**J**	0.00500	0.00180	mg/L		05/31/24 08:45	06/03/24 16:27	1
Lead	**0.00186**		0.000500	0.000260	mg/L		05/31/24 08:45	06/03/24 16:27	1
Nickel	**0.00568**		0.00500	0.00210	mg/L		05/31/24 08:45	06/03/24 16:27	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/31/24 08:45	06/03/24 16:27	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/31/24 08:45	06/12/24 19:09	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/31/24 08:45	06/03/24 16:27	1
Vanadium	**0.00126**	**J**	0.00500	0.00110	mg/L		05/31/24 08:45	06/03/24 16:27	1
Zinc	**0.0101**	**J**	0.0200	0.00970	mg/L		05/31/24 08:45	06/03/24 16:27	1
Iron	**51.9**		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 16:27	1
Manganese	**2.17**		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 16:27	1

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		06/03/24 09:00	06/12/24 01:35	1
Arsenic	**0.000633**	**J**	0.00200	0.000530	mg/L		06/03/24 09:00	06/12/24 01:35	1
Barium	**0.0158**		0.00200	0.000660	mg/L		06/03/24 09:00	06/12/24 01:35	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		06/03/24 09:00	06/12/24 01:35	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		06/03/24 09:00	06/12/24 01:35	1
Chromium	<0.00120		0.00500	0.00120	mg/L		06/03/24 09:00	06/12/24 01:35	1
Cobalt	**0.0108**		0.000500	0.000170	mg/L		06/03/24 09:00	06/12/24 01:35	1
Copper	<0.00180		0.00500	0.00180	mg/L		06/03/24 09:00	06/12/24 01:35	1
Lead	<0.000260		0.000500	0.000260	mg/L		06/03/24 09:00	06/12/24 01:35	1
Nickel	**0.00483**	**J**	0.00500	0.00210	mg/L		06/03/24 09:00	06/12/24 01:35	1
Selenium	<0.00140		0.00500	0.00140	mg/L		06/03/24 09:00	06/12/24 01:35	1
Silver	<0.000500		0.00100	0.000500	mg/L		06/03/24 09:00	06/13/24 18:13	1
Thallium	<0.000570		0.00100	0.000570	mg/L		06/03/24 09:00	06/12/24 01:35	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		06/03/24 09:00	06/12/24 01:35	1
Zinc	**0.0104**	**J**	0.0200	0.00970	mg/L		06/03/24 09:00	06/12/24 01:35	1
Iron	**38.8**		0.100	0.0360	mg/L		06/03/24 09:00	06/12/24 01:35	1
Manganese	**1.91**		0.0100	0.00360	mg/L		06/24/24 09:30	06/27/24 21:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**272**		30.0	22.2	mg/L			05/31/24 10:02	1
Total Organic Carbon (SM 5310C)	**4.79**		1.00	0.500	mg/L			06/01/24 09:10	1

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-213A

Date Collected: 05/29/24 12:30
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-5

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**192**		5.00	2.10	mg/L			06/06/24 19:03	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/31/24 08:45	06/03/24 16:45	1
Arsenic	**0.000927**	**J**	0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 16:45	1
Barium	**0.0567**		0.00200	0.000660	mg/L		05/31/24 08:45	06/03/24 16:45	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/31/24 08:45	06/03/24 16:45	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		05/31/24 08:45	06/03/24 16:45	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/31/24 08:45	06/03/24 16:45	1
Cobalt	**0.00631**		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 16:45	1
Copper	<0.00180		0.00500	0.00180	mg/L		05/31/24 08:45	06/03/24 16:45	1
Lead	<0.000260		0.000500	0.000260	mg/L		05/31/24 08:45	06/03/24 16:45	1
Nickel	**0.00310**	**J**	0.00500	0.00210	mg/L		05/31/24 08:45	06/03/24 16:45	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/31/24 08:45	06/03/24 16:45	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/31/24 08:45	06/12/24 19:11	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/31/24 08:45	06/03/24 16:45	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/31/24 08:45	06/03/24 16:45	1
Zinc	<0.00970		0.0200	0.00970	mg/L		05/31/24 08:45	06/03/24 16:45	1
Iron	**1.81**		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 16:45	1
Manganese	**1.73**		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 16:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**3.25**		1.88	1.39	mg/L			05/31/24 10:02	1
Total Organic Carbon (SM 5310C)	**2.43**		1.00	0.500	mg/L			06/01/24 09:46	1

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-213B

Date Collected: 05/29/24 13:06
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-6

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**24.9**		5.00	2.10	mg/L			06/06/24 19:16	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/31/24 08:45	06/03/24 16:49	1
Arsenic	**0.000790**	**J**	0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 16:49	1
Barium	**0.0952**		0.00200	0.000660	mg/L		05/31/24 08:45	06/03/24 16:49	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/31/24 08:45	06/03/24 16:49	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		05/31/24 08:45	06/03/24 16:49	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/31/24 08:45	06/03/24 16:49	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 16:49	1
Copper	<0.00180		0.00500	0.00180	mg/L		05/31/24 08:45	06/03/24 16:49	1
Lead	**0.000425**	**J**	0.000500	0.000260	mg/L		05/31/24 08:45	06/03/24 16:49	1
Nickel	<0.00210		0.00500	0.00210	mg/L		05/31/24 08:45	06/03/24 16:49	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/31/24 08:45	06/03/24 16:49	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/31/24 08:45	06/12/24 19:13	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/31/24 08:45	06/03/24 16:49	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/31/24 08:45	06/03/24 16:49	1
Zinc	<0.00970		0.0200	0.00970	mg/L		05/31/24 08:45	06/03/24 16:49	1
Iron	**1.46**		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 16:49	1
Manganese	**0.169**		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 16:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**4.88**		1.88	1.39	mg/L			05/31/24 10:02	1
Total Organic Carbon (SM 5310C)	**0.760**	**J**	1.00	0.500	mg/L			06/01/24 10:23	1

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-218

Date Collected: 05/29/24 16:39
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-7

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**24.7**		5.00	2.10	mg/L			06/06/24 19:54	5

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/31/24 08:45	06/03/24 16:53	1
Arsenic	**0.00105**	**J**	0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 16:53	1
Barium	**0.187**		0.00200	0.000660	mg/L		05/31/24 08:45	06/03/24 16:53	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/31/24 08:45	06/03/24 16:53	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		05/31/24 08:45	06/03/24 16:53	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/31/24 08:45	06/03/24 16:53	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 16:53	1
Copper	<0.00180		0.00500	0.00180	mg/L		05/31/24 08:45	06/03/24 16:53	1
Lead	<0.000260		0.000500	0.000260	mg/L		05/31/24 08:45	06/03/24 16:53	1
Nickel	<0.00210		0.00500	0.00210	mg/L		05/31/24 08:45	06/03/24 16:53	1
Selenium	**0.00478**	**J**	0.00500	0.00140	mg/L		05/31/24 08:45	06/03/24 16:53	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/31/24 08:45	06/12/24 19:15	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/31/24 08:45	06/03/24 16:53	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/31/24 08:45	06/03/24 16:53	1
Zinc	<0.00970		0.0200	0.00970	mg/L		05/31/24 08:45	06/03/24 16:53	1
Iron	**0.550**		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 16:53	1
Manganese	**0.0413**		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 16:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**5.37**		1.88	1.39	mg/L			05/31/24 10:02	1
Total Organic Carbon (SM 5310C)	**1.14**		1.00	0.500	mg/L			06/01/24 10:59	1

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-501

Date Collected: 05/29/24 14:05
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-8

Matrix: Water

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/31/24 08:45	06/03/24 16:56	1
Arsenic	**0.00618**		0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 16:56	1
Barium	**0.0232**		0.00200	0.000660	mg/L		05/31/24 08:45	06/03/24 16:56	1
Beryllium	**0.00227**		0.00100	0.000330	mg/L		05/31/24 08:45	06/03/24 16:56	1
Cadmium	**0.000576**		0.000200	0.000100	mg/L		05/31/24 08:45	06/03/24 16:56	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/31/24 08:45	06/03/24 16:56	1
Cobalt	**0.0525**		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 16:56	1
Copper	**0.00289**	J	0.00500	0.00180	mg/L		05/31/24 08:45	06/03/24 16:56	1
Lead	**0.000365**	J	0.000500	0.000260	mg/L		05/31/24 08:45	06/03/24 16:56	1
Nickel	**0.107**		0.00500	0.00210	mg/L		05/31/24 08:45	06/03/24 16:56	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/31/24 08:45	06/03/24 16:56	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/31/24 08:45	06/12/24 19:17	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/31/24 08:45	06/03/24 16:56	1
Vanadium	**0.00210**	J	0.00500	0.00110	mg/L		05/31/24 08:45	06/03/24 16:56	1
Zinc	**0.0702**		0.0200	0.00970	mg/L		05/31/24 08:45	06/03/24 16:56	1
Iron	**52.1**		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 16:56	1
Manganese	**0.350**		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 16:56	1

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		06/03/24 09:00	06/12/24 01:38	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		06/03/24 09:00	06/12/24 01:38	1
Barium	**0.0145**		0.00200	0.000660	mg/L		06/03/24 09:00	06/12/24 01:38	1
Beryllium	**0.000392**	J	0.00100	0.000330	mg/L		06/03/24 09:00	06/12/24 01:38	1
Cadmium	**0.000392**		0.000200	0.000100	mg/L		06/03/24 09:00	06/12/24 01:38	1
Chromium	<0.00120		0.00500	0.00120	mg/L		06/03/24 09:00	06/12/24 01:38	1
Cobalt	**0.0475**		0.000500	0.000170	mg/L		06/03/24 09:00	06/12/24 01:38	1
Copper	<0.00180		0.00500	0.00180	mg/L		06/03/24 09:00	06/12/24 01:38	1
Lead	<0.000260		0.000500	0.000260	mg/L		06/03/24 09:00	06/12/24 01:38	1
Nickel	**0.0996**		0.00500	0.00210	mg/L		06/03/24 09:00	06/12/24 01:38	1
Selenium	<0.00140		0.00500	0.00140	mg/L		06/03/24 09:00	06/12/24 01:38	1
Silver	<0.000500		0.00100	0.000500	mg/L		06/03/24 09:00	06/13/24 18:15	1
Thallium	<0.000570		0.00100	0.000570	mg/L		06/03/24 09:00	06/12/24 01:38	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		06/03/24 09:00	06/12/24 01:38	1
Zinc	**0.0546**		0.0200	0.00970	mg/L		06/03/24 09:00	06/12/24 01:38	1
Iron	**0.755**		0.100	0.0360	mg/L		06/03/24 09:00	06/12/24 01:38	1
Manganese	**0.316**		0.0100	0.00360	mg/L		06/24/24 09:30	06/27/24 21:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**1100**		60.0	44.4	mg/L			05/31/24 10:02	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.39		1.88	1.39	mg/L			05/31/24 10:28	1

Definitions/Glossary

Client: HDR Inc
Job ID: 310-282336-1
Project/Site: CRLCSWA_2 Spring 2024

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 410-513048/1-A
Matrix: Water
Analysis Batch: 513167

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513048

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	<0.0220		0.0500	0.0220	ug/L		06/03/24 15:46	06/04/24 08:53	1

Lab Sample ID: LCS 410-513048/2-A
Matrix: Water
Analysis Batch: 513167

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513048

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Silvex (2,4,5-TP)	0.250	0.1800		ug/L		72	62 - 170

Lab Sample ID: LCSD 410-513048/3-A
Matrix: Water
Analysis Batch: 513167

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 513048

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Silvex (2,4,5-TP)	0.250	0.1794		ug/L		72	62 - 170	0	30

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-423954/3
Matrix: Water
Analysis Batch: 423954

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	<0.420		1.00	0.420	mg/L			06/06/24 17:23	1

Lab Sample ID: LCS 310-423954/4
Matrix: Water
Analysis Batch: 423954

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	10.0	10.13		mg/L		101	90 - 110

Lab Sample ID: 310-282336-2 MS
Matrix: Water
Analysis Batch: 423954

Client Sample ID: MW-304R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfate	369		25.0	380.8	4	mg/L		49	80 - 120

Lab Sample ID: 310-282336-2 MSD
Matrix: Water
Analysis Batch: 423954

Client Sample ID: MW-304R
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfate	369		25.0	382.3	4	mg/L		55	80 - 120	0	15

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-423146/1-A
Matrix: Water
Analysis Batch: 423437

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423146

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/31/24 08:45	06/03/24 15:56	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		05/31/24 08:45	06/03/24 15:56	1
Barium	<0.000660		0.00200	0.000660	mg/L		05/31/24 08:45	06/03/24 15:56	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/31/24 08:45	06/03/24 15:56	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		05/31/24 08:45	06/03/24 15:56	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/31/24 08:45	06/03/24 15:56	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		05/31/24 08:45	06/03/24 15:56	1
Copper	<0.00180		0.00500	0.00180	mg/L		05/31/24 08:45	06/03/24 15:56	1
Lead	<0.000260		0.000500	0.000260	mg/L		05/31/24 08:45	06/03/24 15:56	1
Nickel	<0.00210		0.00500	0.00210	mg/L		05/31/24 08:45	06/03/24 15:56	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/31/24 08:45	06/03/24 15:56	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/31/24 08:45	06/03/24 15:56	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/31/24 08:45	06/03/24 15:56	1
Zinc	<0.00970		0.0200	0.00970	mg/L		05/31/24 08:45	06/03/24 15:56	1
Iron	<0.0360		0.100	0.0360	mg/L		05/31/24 08:45	06/03/24 15:56	1
Manganese	<0.00360		0.0100	0.00360	mg/L		05/31/24 08:45	06/03/24 15:56	1

Lab Sample ID: MB 310-423146/1-A
Matrix: Water
Analysis Batch: 424410

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423146

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	<0.000500		0.00100	0.000500	mg/L		05/31/24 08:45	06/12/24 19:02	1

Lab Sample ID: LCS 310-423146/2-A
Matrix: Water
Analysis Batch: 423437

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423146

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2162		mg/L		108	80 - 120
Arsenic	0.200	0.2206		mg/L		110	80 - 120
Barium	0.100	0.1106		mg/L		111	80 - 120
Beryllium	0.100	0.1064		mg/L		106	80 - 120
Cadmium	0.100	0.1009		mg/L		101	80 - 120
Chromium	0.100	0.1043		mg/L		104	80 - 120
Cobalt	0.100	0.1020		mg/L		102	80 - 120
Copper	0.200	0.2076		mg/L		104	80 - 120
Lead	0.200	0.2179		mg/L		109	80 - 120
Nickel	0.200	0.2194		mg/L		110	80 - 120
Selenium	0.400	0.3871		mg/L		97	80 - 120
Thallium	0.100	0.09167		mg/L		92	80 - 120
Vanadium	0.100	0.1019		mg/L		102	80 - 120
Zinc	0.200	0.1992		mg/L		100	80 - 120
Iron	0.200	0.2120		mg/L		106	80 - 120
Manganese	0.100	0.1025		mg/L		103	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-423146/2-A
Matrix: Water
Analysis Batch: 424410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423146

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Silver			0.100	0.1150		mg/L		115	80 - 120		

Lab Sample ID: 310-282336-1 MS
Matrix: Water
Analysis Batch: 423437

Client Sample ID: MW-26A
Prep Type: Total/NA
Prep Batch: 423146

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony	<0.00100		0.200	0.1997		mg/L		100	75 - 125		
Arsenic	0.0210		0.200	0.2407		mg/L		110	75 - 125		
Barium	0.537		0.100	0.6400	4	mg/L		103	75 - 125		
Beryllium	<0.000330		0.100	0.1010		mg/L		101	75 - 125		
Cadmium	<0.000100		0.100	0.09649		mg/L		96	75 - 125		
Chromium	<0.00120		0.100	0.1003		mg/L		100	75 - 125		
Cobalt	0.0709		0.100	0.1705		mg/L		100	75 - 125		
Copper	0.00183	J	0.200	0.1900		mg/L		94	75 - 125		
Lead	0.000918		0.200	0.1975		mg/L		98	75 - 125		
Nickel	0.0445		0.200	0.2367		mg/L		96	75 - 125		
Selenium	<0.00140		0.400	0.3923		mg/L		98	75 - 125		
Thallium	<0.000570	F1	0.100	0.07156	F1	mg/L		72	75 - 125		
Vanadium	<0.00110		0.100	0.1021		mg/L		102	75 - 125		
Zinc	<0.00970		0.200	0.1837		mg/L		92	75 - 125		
Iron	40.6		0.200	40.87	4	mg/L		152	75 - 125		

Lab Sample ID: 310-282336-1 MSD
Matrix: Water
Analysis Batch: 423437

Client Sample ID: MW-26A
Prep Type: Total/NA
Prep Batch: 423146

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.00100		0.200	0.1965		mg/L		98	75 - 125	2	20
Arsenic	0.0210		0.200	0.2467		mg/L		113	75 - 125	2	20
Barium	0.537		0.100	0.6677	4	mg/L		131	75 - 125	4	20
Beryllium	<0.000330		0.100	0.1013		mg/L		101	75 - 125	0	20
Cadmium	<0.000100		0.100	0.1000		mg/L		100	75 - 125	4	20
Chromium	<0.00120		0.100	0.1031		mg/L		103	75 - 125	3	20
Cobalt	0.0709		0.100	0.1693		mg/L		98	75 - 125	1	20
Copper	0.00183	J	0.200	0.1916		mg/L		95	75 - 125	1	20
Lead	0.000918		0.200	0.1993		mg/L		99	75 - 125	1	20
Nickel	0.0445		0.200	0.2413		mg/L		98	75 - 125	2	20
Selenium	<0.00140		0.400	0.3981		mg/L		100	75 - 125	1	20
Thallium	<0.000570	F1	0.100	0.07441	F1	mg/L		74	75 - 125	4	20
Vanadium	<0.00110		0.100	0.1032		mg/L		103	75 - 125	1	20
Zinc	<0.00970		0.200	0.1836		mg/L		92	75 - 125	0	20
Iron	40.6		0.200	41.43	4	mg/L		436	75 - 125	1	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-282218-A-1-B DU
Matrix: Water
Analysis Batch: 423437

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 423146

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	<0.00100			<0.00100		mg/L				NC	20
Arsenic	0.000970	J		0.001012	J	mg/L				4	20
Barium	0.0343			0.03456		mg/L				0.8	20
Beryllium	0.00961			0.009006		mg/L				6	20
Cadmium	<0.000100			<0.000100		mg/L				NC	20
Chromium	0.00570			0.005751		mg/L				0.8	20
Cobalt	0.000580			0.0005760		mg/L				0.7	20
Copper	<0.00180			<0.00180		mg/L				NC	20
Lead	<0.000260			<0.000260		mg/L				NC	20
Nickel	0.00382	J		0.003806	J	mg/L				0.3	20
Selenium	<0.00140			<0.00140		mg/L				NC	20
Thallium	<0.000570			<0.000570		mg/L				NC	20
Vanadium	<0.00110			<0.00110		mg/L				NC	20
Zinc	0.0228			0.02315		mg/L				2	20
Iron	12.6			12.75		mg/L				1	20
Manganese	4.73			4.811		mg/L				2	20

Lab Sample ID: MB 310-423240/1-A
Matrix: Water
Analysis Batch: 424262

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423240

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		06/03/24 09:00	06/11/24 17:00	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		06/03/24 09:00	06/11/24 17:00	1
Barium	<0.000660		0.00200	0.000660	mg/L		06/03/24 09:00	06/11/24 17:00	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		06/03/24 09:00	06/11/24 17:00	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		06/03/24 09:00	06/11/24 17:00	1
Chromium	<0.00120		0.00500	0.00120	mg/L		06/03/24 09:00	06/11/24 17:00	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		06/03/24 09:00	06/11/24 17:00	1
Copper	<0.00180		0.00500	0.00180	mg/L		06/03/24 09:00	06/11/24 17:00	1
Lead	<0.000260		0.000500	0.000260	mg/L		06/03/24 09:00	06/11/24 17:00	1
Nickel	<0.00210		0.00500	0.00210	mg/L		06/03/24 09:00	06/11/24 17:00	1
Selenium	<0.00140		0.00500	0.00140	mg/L		06/03/24 09:00	06/11/24 17:00	1
Thallium	<0.000570		0.00100	0.000570	mg/L		06/03/24 09:00	06/11/24 17:00	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		06/03/24 09:00	06/11/24 17:00	1
Zinc	<0.00970		0.0200	0.00970	mg/L		06/03/24 09:00	06/11/24 17:00	1
Iron	<0.0360		0.100	0.0360	mg/L		06/03/24 09:00	06/11/24 17:00	1
Manganese	<0.00360		0.0100	0.00360	mg/L		06/03/24 09:00	06/11/24 17:00	1

Lab Sample ID: MB 310-423240/1-A
Matrix: Water
Analysis Batch: 424525

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423240

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	<0.000500		0.00100	0.000500	mg/L		06/03/24 09:00	06/13/24 14:05	1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-423240/2-A
Matrix: Water
Analysis Batch: 424262

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.1996		mg/L		100	80 - 120
Arsenic	0.200	0.1913		mg/L		96	80 - 120
Barium	0.100	0.09785		mg/L		98	80 - 120
Beryllium	0.100	0.09251		mg/L		93	80 - 120
Cadmium	0.100	0.09093		mg/L		91	80 - 120
Chromium	0.100	0.09248		mg/L		92	80 - 120
Cobalt	0.100	0.09739		mg/L		97	80 - 120
Copper	0.200	0.1893		mg/L		95	80 - 120
Lead	0.200	0.1936		mg/L		97	80 - 120
Nickel	0.200	0.1953		mg/L		98	80 - 120
Selenium	0.400	0.3674		mg/L		92	80 - 120
Thallium	0.100	0.08781		mg/L		88	80 - 120
Vanadium	0.100	0.09300		mg/L		93	80 - 120
Zinc	0.200	0.1835		mg/L		92	80 - 120
Iron	0.200	0.1956		mg/L		98	80 - 120

Lab Sample ID: LCS 310-423240/2-A
Matrix: Water
Analysis Batch: 424525

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Silver	0.100	0.1087		mg/L		109	80 - 120

Lab Sample ID: 310-282416-A-1-B MS
Matrix: Water
Analysis Batch: 424262

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	<0.00100		0.200	0.2120		mg/L		106	75 - 125
Arsenic	0.00913		0.200	0.2209		mg/L		106	75 - 125
Barium	0.351		0.100	0.4736		mg/L		123	75 - 125
Beryllium	<0.000330		0.100	0.1022		mg/L		102	75 - 125
Cadmium	0.000111	J	0.100	0.1007		mg/L		101	75 - 125
Chromium	<0.00120		0.100	0.09769		mg/L		98	75 - 125
Cobalt	0.00273		0.100	0.1022		mg/L		100	75 - 125
Copper	<0.00180		0.200	0.1919		mg/L		96	75 - 125
Lead	<0.000260		0.200	0.2020		mg/L		101	75 - 125
Nickel	0.00248	J	0.200	0.2028		mg/L		100	75 - 125
Selenium	<0.00140		0.400	0.3882		mg/L		97	75 - 125
Thallium	<0.000570		0.100	0.07963		mg/L		80	75 - 125
Vanadium	<0.00110		0.100	0.09983		mg/L		100	75 - 125
Zinc	<0.00970		0.200	0.1978		mg/L		99	75 - 125
Iron	3.61		0.200	3.900	4	mg/L		144	75 - 125
Manganese	1.37	*+	0.100	1.488	4	mg/L		120	75 - 125

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-282416-A-1-B MS
Matrix: Water
Analysis Batch: 424569

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Silver	<0.000500		0.100	0.1060		mg/L		106	75 - 125

Lab Sample ID: 310-282416-A-1-C MSD
Matrix: Water
Analysis Batch: 424262

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony	<0.00100		0.200	0.2070		mg/L		103	75 - 125	2	20
Arsenic	0.00913		0.200	0.2167		mg/L		104	75 - 125	2	20
Barium	0.351		0.100	0.4364		mg/L		86	75 - 125	8	20
Beryllium	<0.000330		0.100	0.09612		mg/L		96	75 - 125	6	20
Cadmium	0.000111	J	0.100	0.09555		mg/L		95	75 - 125	5	20
Chromium	<0.00120		0.100	0.09406		mg/L		94	75 - 125	4	20
Cobalt	0.00273		0.100	0.09882		mg/L		96	75 - 125	3	20
Copper	<0.00180		0.200	0.1885		mg/L		94	75 - 125	2	20
Lead	<0.000260		0.200	0.1930		mg/L		96	75 - 125	5	20
Nickel	0.00248	J	0.200	0.1955		mg/L		97	75 - 125	4	20
Selenium	<0.00140		0.400	0.3845		mg/L		96	75 - 125	1	20
Thallium	<0.000570		0.100	0.07549		mg/L		75	75 - 125	5	20
Vanadium	<0.00110		0.100	0.09615		mg/L		96	75 - 125	4	20
Zinc	<0.00970		0.200	0.1918		mg/L		96	75 - 125	3	20
Iron	3.61		0.200	3.678	4	mg/L		33	75 - 125	6	20
Manganese	1.37	*+	0.100	1.398	4	mg/L		30	75 - 125	6	20

Lab Sample ID: 310-282416-A-1-C MSD
Matrix: Water
Analysis Batch: 424569

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Silver	<0.000500		0.100	0.1087		mg/L		109	75 - 125	3	20

Lab Sample ID: 310-282420-A-1-B DU
Matrix: Water
Analysis Batch: 424262

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00100		<0.00100		mg/L		NC	20
Arsenic	<0.000530		<0.000530		mg/L		NC	20
Beryllium	<0.000330		<0.000330		mg/L		NC	20
Cadmium	0.000343		0.0003460		mg/L		0.9	20
Chromium	<0.00120		<0.00120		mg/L		NC	20
Cobalt	0.000968		0.0009550		mg/L		1	20
Copper	<0.00180		<0.00180		mg/L		NC	20
Lead	<0.000260		<0.000260		mg/L		NC	20
Nickel	0.00366	J	0.003613	J	mg/L		1	20
Selenium	<0.00140		<0.00140		mg/L		NC	20
Thallium	<0.000570		<0.000570		mg/L		NC	20
Vanadium	0.00117	J	0.001177	J	mg/L		0.9	20
Zinc	<0.00970		<0.00970		mg/L		NC	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-282420-A-1-B DU
Matrix: Water
Analysis Batch: 424262

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Iron	0.0417	J	<0.0360		mg/L		NC	20

Lab Sample ID: 310-282420-A-1-B DU
Matrix: Water
Analysis Batch: 424409

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Barium	0.0118		0.01107		mg/L		6	20

Lab Sample ID: 310-282420-A-1-B DU
Matrix: Water
Analysis Batch: 424569

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 423240

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Silver	<0.000500		<0.000500		mg/L		NC	20

Lab Sample ID: MB 310-425347/1-A
Matrix: Water
Analysis Batch: 425927

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 425347

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Manganese	<0.00360		0.0100	0.00360	mg/L		06/24/24 09:30	06/27/24 21:18	1

Lab Sample ID: 310-283558-A-1-B MS
Matrix: Water
Analysis Batch: 424981

Client Sample ID: Matrix Spike
Prep Type: Dissolved
Prep Batch: 424660

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.000567	J *+	0.200	0.2044		mg/L		102	75 - 125
Barium	0.0410	*+	0.100	0.1544		mg/L		113	75 - 125
Cadmium	<0.000100	*+	0.100	0.1031		mg/L		103	75 - 125
Cobalt	0.000668	*+	0.100	0.09786		mg/L		97	75 - 125
Copper	0.00191	J *+	0.200	0.2244		mg/L		111	75 - 125
Lead	<0.000260	*+	0.200	0.2023		mg/L		101	75 - 125
Nickel	<0.00210	*+	0.200	0.2080		mg/L		104	75 - 125
Selenium	<0.00140		0.400	0.3952		mg/L		99	75 - 125
Silver	<0.000500		0.100	0.08541		mg/L		85	75 - 125

Lab Sample ID: 310-283558-A-1-C MSD
Matrix: Water
Analysis Batch: 424981

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 424660

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	0.000567	J *+	0.200	0.2204		mg/L		110	75 - 125	7	20
Barium	0.0410	*+	0.100	0.1626		mg/L		122	75 - 125	5	20
Cadmium	<0.000100	*+	0.100	0.1118		mg/L		112	75 - 125	8	20
Cobalt	0.000668	*+	0.100	0.1061		mg/L		105	75 - 125	8	20
Copper	0.00191	J *+	0.200	0.2407		mg/L		119	75 - 125	7	20
Lead	<0.000260	*+	0.200	0.2161		mg/L		108	75 - 125	7	20
Nickel	<0.00210	*+	0.200	0.2258		mg/L		113	75 - 125	8	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-283558-A-1-C MSD
Matrix: Water
Analysis Batch: 424981

Client Sample ID: Matrix Spike Duplicate
Prep Type: Dissolved
Prep Batch: 424660

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Selenium	<0.00140		0.400	0.4261		mg/L		107	75 - 125	8	20
Silver	<0.000500		0.100	0.09225		mg/L		92	75 - 125	8	20

Lab Sample ID: 310-282336-8 DU
Matrix: Water
Analysis Batch: 424981

Client Sample ID: MW-501
Prep Type: Dissolved
Prep Batch: 424660

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Selenium	<0.00140		<0.00140		mg/L		NC	20
Silver	<0.000500		<0.000500		mg/L		NC	20

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-423203/1
Matrix: Water
Analysis Batch: 423203

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<3.70		5.00	3.70	mg/L			05/31/24 10:02	1

Lab Sample ID: LCS 310-423203/2
Matrix: Water
Analysis Batch: 423203

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	93.00		mg/L		93	81 - 116

Lab Sample ID: 310-282344-C-1 DU
Matrix: Water
Analysis Batch: 423203

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	284		272.0		mg/L		4	35

Lab Sample ID: MB 310-423217/1
Matrix: Water
Analysis Batch: 423217

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<3.70		5.00	3.70	mg/L			05/31/24 10:28	1

Lab Sample ID: LCS 310-423217/2
Matrix: Water
Analysis Batch: 423217

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	94.00		mg/L		94	81 - 116

Method: I-3765-85 - Residue, Non-filterable (TSS) (Continued)

Lab Sample ID: 310-282386-A-1 DU
Matrix: Water
Analysis Batch: 423217

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	15.0			16.00		mg/L				13	35

Lab Sample ID: MB 310-423228/1
Matrix: Water
Analysis Batch: 423228

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<3.70		5.00	3.70	mg/L			05/31/24 10:56	1

Lab Sample ID: LCS 310-423228/2
Matrix: Water
Analysis Batch: 423228

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Suspended Solids			100	94.00		mg/L		94	81 - 116		

Lab Sample ID: 310-282433-A-1 DU
Matrix: Water
Analysis Batch: 423228

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Suspended Solids	2100			2760		mg/L				27	35

Method: SM 5310C - TOC

Lab Sample ID: MB 310-423315/11
Matrix: Water
Analysis Batch: 423315

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	<0.500		1.00	0.500	mg/L			05/31/24 18:40	1

Lab Sample ID: LCS 310-423315/12
Matrix: Water
Analysis Batch: 423315

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon			9.99	10.46		mg/L		105	85 - 115		

Lab Sample ID: 310-282319-O-3 MS
Matrix: Water
Analysis Batch: 423315

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Organic Carbon	11.5		4.99	16.04		mg/L		91	85 - 115		

Method: SM 5310C - TOC (Continued)

Lab Sample ID: 310-282204-L-8 DU
Matrix: Water
Analysis Batch: 423315

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	3.81			3.640		mg/L				5	15

GC Semi VOA

Prep Batch: 513048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-1	MW-26A	Total/NA	Water	8151A	
MB 410-513048/1-A	Method Blank	Total/NA	Water	8151A	
LCS 410-513048/2-A	Lab Control Sample	Total/NA	Water	8151A	
LCSD 410-513048/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	

Analysis Batch: 513167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-1	MW-26A	Total/NA	Water	8151A	513048
MB 410-513048/1-A	Method Blank	Total/NA	Water	8151A	513048
LCS 410-513048/2-A	Lab Control Sample	Total/NA	Water	8151A	513048
LCSD 410-513048/3-A	Lab Control Sample Dup	Total/NA	Water	8151A	513048

HPLC/IC

Analysis Batch: 423954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-2	MW-304R	Total/NA	Water	9056A	
310-282336-3	MW-204A	Total/NA	Water	9056A	
310-282336-4	MW-204B	Total/NA	Water	9056A	
310-282336-5	MW-213A	Total/NA	Water	9056A	
310-282336-6	MW-213B	Total/NA	Water	9056A	
310-282336-7	MW-218	Total/NA	Water	9056A	
MB 310-423954/3	Method Blank	Total/NA	Water	9056A	
LCS 310-423954/4	Lab Control Sample	Total/NA	Water	9056A	
310-282336-2 MS	MW-304R	Total/NA	Water	9056A	
310-282336-2 MSD	MW-304R	Total/NA	Water	9056A	

Metals

Prep Batch: 423146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-1	MW-26A	Total/NA	Water	3005A	
310-282336-2	MW-304R	Total/NA	Water	3005A	
310-282336-3	MW-204A	Total/NA	Water	3005A	
310-282336-4	MW-204B	Total/NA	Water	3005A	
310-282336-5	MW-213A	Total/NA	Water	3005A	
310-282336-6	MW-213B	Total/NA	Water	3005A	
310-282336-7	MW-218	Total/NA	Water	3005A	
310-282336-8	MW-501	Total/NA	Water	3005A	
MB 310-423146/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-423146/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-282336-1 MS	MW-26A	Total/NA	Water	3005A	
310-282336-1 MSD	MW-26A	Total/NA	Water	3005A	
310-282218-A-1-B DU	Duplicate	Total/NA	Water	3005A	

Prep Batch: 423240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-4	MW-204B	Dissolved	Water	3005A	
310-282336-8	MW-501	Dissolved	Water	3005A	
MB 310-423240/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-423240/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-282416-A-1-B MS	Matrix Spike	Total/NA	Water	3005A	

Metals (Continued)

Prep Batch: 423240 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282416-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	3005A	
310-282420-A-1-B DU	Duplicate	Total/NA	Water	3005A	

Analysis Batch: 423437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-1	MW-26A	Total/NA	Water	6020B	423146
310-282336-2	MW-304R	Total/NA	Water	6020B	423146
310-282336-3	MW-204A	Total/NA	Water	6020B	423146
310-282336-4	MW-204B	Total/NA	Water	6020B	423146
310-282336-5	MW-213A	Total/NA	Water	6020B	423146
310-282336-6	MW-213B	Total/NA	Water	6020B	423146
310-282336-7	MW-218	Total/NA	Water	6020B	423146
310-282336-8	MW-501	Total/NA	Water	6020B	423146
MB 310-423146/1-A	Method Blank	Total/NA	Water	6020B	423146
LCS 310-423146/2-A	Lab Control Sample	Total/NA	Water	6020B	423146
310-282336-1 MS	MW-26A	Total/NA	Water	6020B	423146
310-282336-1 MSD	MW-26A	Total/NA	Water	6020B	423146
310-282218-A-1-B DU	Duplicate	Total/NA	Water	6020B	423146

Analysis Batch: 424262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-4	MW-204B	Dissolved	Water	6020B	423240
310-282336-8	MW-501	Dissolved	Water	6020B	423240
MB 310-423240/1-A	Method Blank	Total/NA	Water	6020B	423240
LCS 310-423240/2-A	Lab Control Sample	Total/NA	Water	6020B	423240
310-282416-A-1-B MS	Matrix Spike	Total/NA	Water	6020B	423240
310-282416-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	6020B	423240
310-282420-A-1-B DU	Duplicate	Total/NA	Water	6020B	423240

Analysis Batch: 424409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282420-A-1-B DU	Duplicate	Total/NA	Water	6020B	423240

Analysis Batch: 424410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-3	MW-204A	Total/NA	Water	6020B	423146
310-282336-4	MW-204B	Total/NA	Water	6020B	423146
310-282336-5	MW-213A	Total/NA	Water	6020B	423146
310-282336-6	MW-213B	Total/NA	Water	6020B	423146
310-282336-7	MW-218	Total/NA	Water	6020B	423146
310-282336-8	MW-501	Total/NA	Water	6020B	423146
MB 310-423146/1-A	Method Blank	Total/NA	Water	6020B	423146
LCS 310-423146/2-A	Lab Control Sample	Total/NA	Water	6020B	423146

Analysis Batch: 424525

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-423240/1-A	Method Blank	Total/NA	Water	6020B	423240
LCS 310-423240/2-A	Lab Control Sample	Total/NA	Water	6020B	423240

Metals

Analysis Batch: 424569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-4	MW-204B	Dissolved	Water	6020B	423240
310-282336-8	MW-501	Dissolved	Water	6020B	423240
310-282416-A-1-B MS	Matrix Spike	Total/NA	Water	6020B	423240
310-282416-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	6020B	423240
310-282420-A-1-B DU	Duplicate	Total/NA	Water	6020B	423240

Prep Batch: 424660

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283558-A-1-B MS	Matrix Spike	Dissolved	Water	3005A	
310-283558-A-1-C MSD	Matrix Spike Duplicate	Dissolved	Water	3005A	
310-282336-8 DU	MW-501	Dissolved	Water	3005A	

Analysis Batch: 424981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-283558-A-1-B MS	Matrix Spike	Dissolved	Water	6020B	424660
310-283558-A-1-C MSD	Matrix Spike Duplicate	Dissolved	Water	6020B	424660
310-282336-8 DU	MW-501	Dissolved	Water	6020B	424660

Prep Batch: 425347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-4	MW-204B	Dissolved	Water	3005A	
310-282336-8	MW-501	Dissolved	Water	3005A	
MB 310-425347/1-A	Method Blank	Total/NA	Water	3005A	

Analysis Batch: 425927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-4	MW-204B	Dissolved	Water	6020B	425347
310-282336-8	MW-501	Dissolved	Water	6020B	425347
MB 310-425347/1-A	Method Blank	Total/NA	Water	6020B	425347

General Chemistry

Analysis Batch: 423203

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-2	MW-304R	Total/NA	Water	I-3765-85	
310-282336-3	MW-204A	Total/NA	Water	I-3765-85	
310-282336-4	MW-204B	Total/NA	Water	I-3765-85	
310-282336-5	MW-213A	Total/NA	Water	I-3765-85	
310-282336-6	MW-213B	Total/NA	Water	I-3765-85	
310-282336-7	MW-218	Total/NA	Water	I-3765-85	
310-282336-8	MW-501	Total/NA	Water	I-3765-85	
MB 310-423203/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-423203/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-282344-C-1 DU	Duplicate	Total/NA	Water	I-3765-85	

Analysis Batch: 423217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-8	MW-501	Dissolved	Water	I-3765-85	
MB 310-423217/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-423217/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-282386-A-1 DU	Duplicate	Total/NA	Water	I-3765-85	

QC Association Summary

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

General Chemistry

Analysis Batch: 423228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-1	MW-26A	Total/NA	Water	I-3765-85	
MB 310-423228/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-423228/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-282433-A-1 DU	Duplicate	Total/NA	Water	I-3765-85	

Analysis Batch: 423315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282336-2	MW-304R	Total/NA	Water	SM 5310C	
310-282336-3	MW-204A	Total/NA	Water	SM 5310C	
310-282336-4	MW-204B	Total/NA	Water	SM 5310C	
310-282336-5	MW-213A	Total/NA	Water	SM 5310C	
310-282336-6	MW-213B	Total/NA	Water	SM 5310C	
310-282336-7	MW-218	Total/NA	Water	SM 5310C	
MB 310-423315/11	Method Blank	Total/NA	Water	SM 5310C	
LCS 310-423315/12	Lab Control Sample	Total/NA	Water	SM 5310C	
310-282319-O-3 MS	Matrix Spike	Total/NA	Water	SM 5310C	
310-282204-L-8 DU	Duplicate	Total/NA	Water	SM 5310C	

Lab Chronicle

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-26A
Date Collected: 05/29/24 17:17
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	8151A			513048	QJZ6	ELLE	06/03/24 15:46
Total/NA	Analysis	8151A		1	513167	UAMZ	ELLE	06/04/24 12:39
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:03
Total/NA	Analysis	I-3765-85		1	423228	HE7K	EET CF	05/31/24 10:56

Client Sample ID: MW-304R
Date Collected: 05/29/24 17:59
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	423954	QTZ5	EET CF	06/06/24 18:00
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:20
Total/NA	Analysis	I-3765-85		1	423203	HE7K	EET CF	05/31/24 10:02
Total/NA	Analysis	SM 5310C		1	423315	HE7K	EET CF	06/01/24 06:45

Client Sample ID: MW-204A
Date Collected: 05/29/24 15:17
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	423954	QTZ5	EET CF	06/06/24 18:38
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:24
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 19:06
Total/NA	Analysis	I-3765-85		1	423203	HE7K	EET CF	05/31/24 10:02
Total/NA	Analysis	SM 5310C		1	423315	HE7K	EET CF	06/01/24 07:21

Client Sample ID: MW-204B
Date Collected: 05/29/24 15:50
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		20	423954	QTZ5	EET CF	06/07/24 09:06
Dissolved	Prep	3005A			423240	KM3E	EET CF	06/03/24 09:00
Dissolved	Analysis	6020B		1	424262	NFT2	EET CF	06/12/24 01:35
Dissolved	Prep	3005A			425347	QTZ5	EET CF	06/24/24 09:30
Dissolved	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 21:25
Dissolved	Prep	3005A			423240	KM3E	EET CF	06/03/24 09:00
Dissolved	Analysis	6020B		1	424569	NFT2	EET CF	06/13/24 18:13
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:27

Lab Chronicle

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-204B

Date Collected: 05/29/24 15:50
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 19:09
Total/NA	Analysis	I-3765-85		1	423203	HE7K	EET CF	05/31/24 10:02
Total/NA	Analysis	SM 5310C		1	423315	HE7K	EET CF	06/01/24 09:10

Client Sample ID: MW-213A

Date Collected: 05/29/24 12:30
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	423954	QTZ5	EET CF	06/06/24 19:03
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:45
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 19:11
Total/NA	Analysis	I-3765-85		1	423203	HE7K	EET CF	05/31/24 10:02
Total/NA	Analysis	SM 5310C		1	423315	HE7K	EET CF	06/01/24 09:46

Client Sample ID: MW-213B

Date Collected: 05/29/24 13:06
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	423954	QTZ5	EET CF	06/06/24 19:16
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:49
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 19:13
Total/NA	Analysis	I-3765-85		1	423203	HE7K	EET CF	05/31/24 10:02
Total/NA	Analysis	SM 5310C		1	423315	HE7K	EET CF	06/01/24 10:23

Client Sample ID: MW-218

Date Collected: 05/29/24 16:39
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	423954	QTZ5	EET CF	06/06/24 19:54
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:53
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 19:15
Total/NA	Analysis	I-3765-85		1	423203	HE7K	EET CF	05/31/24 10:02
Total/NA	Analysis	SM 5310C		1	423315	HE7K	EET CF	06/01/24 10:59

Lab Chronicle

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Client Sample ID: MW-501

Date Collected: 05/29/24 14:05
Date Received: 05/30/24 10:20

Lab Sample ID: 310-282336-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			423240	KM3E	EET CF	06/03/24 09:00
Dissolved	Analysis	6020B		1	424262	NFT2	EET CF	06/12/24 01:38
Dissolved	Prep	3005A			425347	QTZ5	EET CF	06/24/24 09:30
Dissolved	Analysis	6020B		1	425927	DHM5	EET CF	06/27/24 21:28
Dissolved	Prep	3005A			423240	KM3E	EET CF	06/03/24 09:00
Dissolved	Analysis	6020B		1	424569	NFT2	EET CF	06/13/24 18:15
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 16:56
Total/NA	Prep	3005A			423146	KM3E	EET CF	05/31/24 08:45
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 19:17
Dissolved	Analysis	I-3765-85		1	423217	HE7K	EET CF	05/31/24 10:28
Total/NA	Analysis	I-3765-85		1	423203	HE7K	EET CF	05/31/24 10:02

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: HDR Inc
Project/Site: CRLCSWA_2 Spring 2024

Job ID: 310-282336-1

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

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

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-25
Alaska	State	PA00009	06-30-24
Alaska (UST)	State	17-027	02-28-25
Arizona	State	AZ0780	03-12-25
Arkansas DEQ	State	88-00660	08-09-24
California	State	2792	11-30-24
Colorado	State	PA00009	06-16-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-25
Delaware (DW)	State	N/A	01-31-25
Florida	NELAP	E87997	06-09-24
Georgia (DW)	State	C048	01-31-25
Hawaii	State	N/A	01-31-25
Illinois	NELAP	200027	06-09-24
Kansas	NELAP	E-10151	10-31-24
Kentucky (DW)	State	KY90088	12-31-24
Kentucky (UST)	State	0001.01	11-30-24
Kentucky (WW)	State	KY90088	12-31-24
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-25
Massachusetts	State	M-PA009	06-30-25
Michigan	State	9930	01-31-25
Minnesota	NELAP	042-999-487	12-31-24
Mississippi	State	023	01-31-25
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-25
Nebraska	State	NE-OS-32-17	01-31-25
New Hampshire	NELAP	2730	01-10-25
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-25
North Carolina (DW)	State	42705	06-30-24
North Carolina (WW/SW)	State	521	12-31-24
North Dakota	State	R-205	01-31-24 *
Oklahoma	NELAP	9804	08-31-24
Oregon	NELAP	PA200001	09-11-24
Pennsylvania	NELAP	36-00037	06-09-24
Quebec Ministry of Environment and Fight against Climate Change	PALA	507	09-16-24
Rhode Island	State	LAO00338	12-30-24
South Carolina	State	89002	01-31-25
Tennessee	State	02838	01-31-25
Texas	NELAP	T104704194-23-46	06-12-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: HDR Inc
Job ID: 310-282336-1
Project/Site: CRLCSWA_2 Spring 2024

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

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

Authority	Program	Identification Number	Expiration Date
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-28-24
Virginia	NELAP	460182	06-14-24
Washington	State	C457	04-11-24 *
West Virginia (DW)	State	9906 C	01-31-25
West Virginia DEP	State	055	06-20-24
Wyoming	State	8TMS-L	01-31-25
Wyoming (UST)	A2LA	0001.01	11-30-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: HDR Inc
Job ID: 310-282336-1
Project/Site: CRLCSWA_2 Spring 2024

Method	Method Description	Protocol	Laboratory
8151A	Herbicides (GC)	SW846	ELLE
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 5310C	TOC	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
8151A	Extraction (Herbicides)	SW846	ELLE

Protocol References:

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.

USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

eurofins | Environment Testing America

310-282336 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: HDR

City/State: CITY | STATE | Project:

Receipt Information

Date/Time Received: DATE 5-30-24 TIME 1020 | Received By: CC

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☒ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☒ Yes ☐ No *If yes:* Cooler # 1 of 2

Cooler Custody Seals Present? ☐ Yes ☒ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☐ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ Other:_____ ☐ NONE

Thermometer ID: R | Correction Factor (°C): 0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.2 | Corrected Temp (°C): 1.2

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing America

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: HDR

City/State: CITY | STATE | Project:

Receipt Information

Date/Time Received: DATE 5-30-24 | TIME 1020 | Received By: CC

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☑ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No *If yes:* Cooler # 2 of 2

Cooler Custody Seals Present? ☒ Yes ☑ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ Other:_____ ☐ NONE

Thermometer ID: R | Correction Factor (°C): 0.0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.6 | Corrected Temp (°C): 0.6

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Richard Wilson	Lab PM: Calhoun Conner M	Carrier Tracking No(s):	COC No: 310-93721-25730 1
Client Contact: Richard Wilson	Phone: 308-882-6141	E-Mail: Conner Calhoun@et.eurofinsus.com	State of Origin:	Page: 1 of 1 ~~1 of 2~~
Company: HDR Inc	PWSID:			Job #:
Address: 1917 S 67th Street	Due Date Requested			
City: Omaha	TAT Requested (days): Standard			
State Zip: NE, 68106	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order not required			
Email: richard.wilson2@hdrinc.com	WO #:			
Project Name: CRLCSWA_2 Spring 2024	Project #: 31006785			
Site: Iowa	SSOW#:			

Analysis Requested

Preservation Codes:
D - HNO3
N - None
S - H2SO4
A - HCL
Other:

Sample Identification	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)	6020B - Appendix I Metals	I_3765_85 - (TSS)	9056A_ORGFM_28D - Sulfate	5310C - TOC	8151A - 2,4,5-TP	6020B - Arsenic	6020B - Cobalt	6020B - Iron, Mn	6020B- Field Filtered App 1 metals	I_3765_85-Dissolved TSS	6020 B - Iron, MN - Dissolved			Total Number of containers	Special Instructions/Note:
			Preservation Code:																		
MW-26A	5-29-2024	~~11:56~~ 17:17	G	Water	N	N		X			X	X								4	
MW-304R		17:59		Water	N			X	X	X			X	X						6	
MW-204A		15:17		Water	N		X	X	X	X				X						6	
MW-204B		15:50		Water	Y		X	X	X	X				X	X		X			7	
MW-213A		12:30		Water	N		X	X	X	X				X						6	
MW-213B		13:06		Water	N		X	X	X	X				X						6	
MW-218		16:39		Water	N		X	X	X	X				X						6	
MW-501		14:05		Water	Y		X	X						X	X	X	X			4	
				Water																	
				Water																	
				Water																	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

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)

Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date: 5-21-24	Time: 1000	Method of Shipment: FedEx

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	5-30-2024/10:19	HDR	[signature]	5/30/24/1020	
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.

Ver: 04/02/2024

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Calhoun, Conner M	Carrier Tracking No(s):	COC No: 310-72962.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Conner.Calhoun@et.eurofinsus.com	State of Origin: Iowa	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): State - Iowa; State Program - Iowa		Job #: 310-282336-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 6/12/2024	Analysis Requested		Preservation Codes: -
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #:			
Email:	WO #:			
Project Name: CRLCSWA_2 Spring 2024	Project #: 31006785			
Site: 310- HDR- CRLCSWA	SSOW#:			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)	8151A/8151A_AP 2,4,5-TP	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-26A (310-282336-1)	5/29/24	17:17 Central		Water			X	2	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, 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 North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, 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 North Central, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *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
		5/30/24 1600				
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5/31/24 10:15	Company ECLCT

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: rad: 3.5 cor: 3.2

Ver: 04/02/2024

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 310-282336-1

Login Number: 282336
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

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.	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.	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	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 310-282336-1

Login Number: 282336
List Number: 2
Creator: Foreman, Leah M

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC
List Creation: 05/31/24 03:10 PM

Question	Answer	Comment
The cooler's custody seal is 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 acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	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	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

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Attachment D

Statistical Analysis Reports

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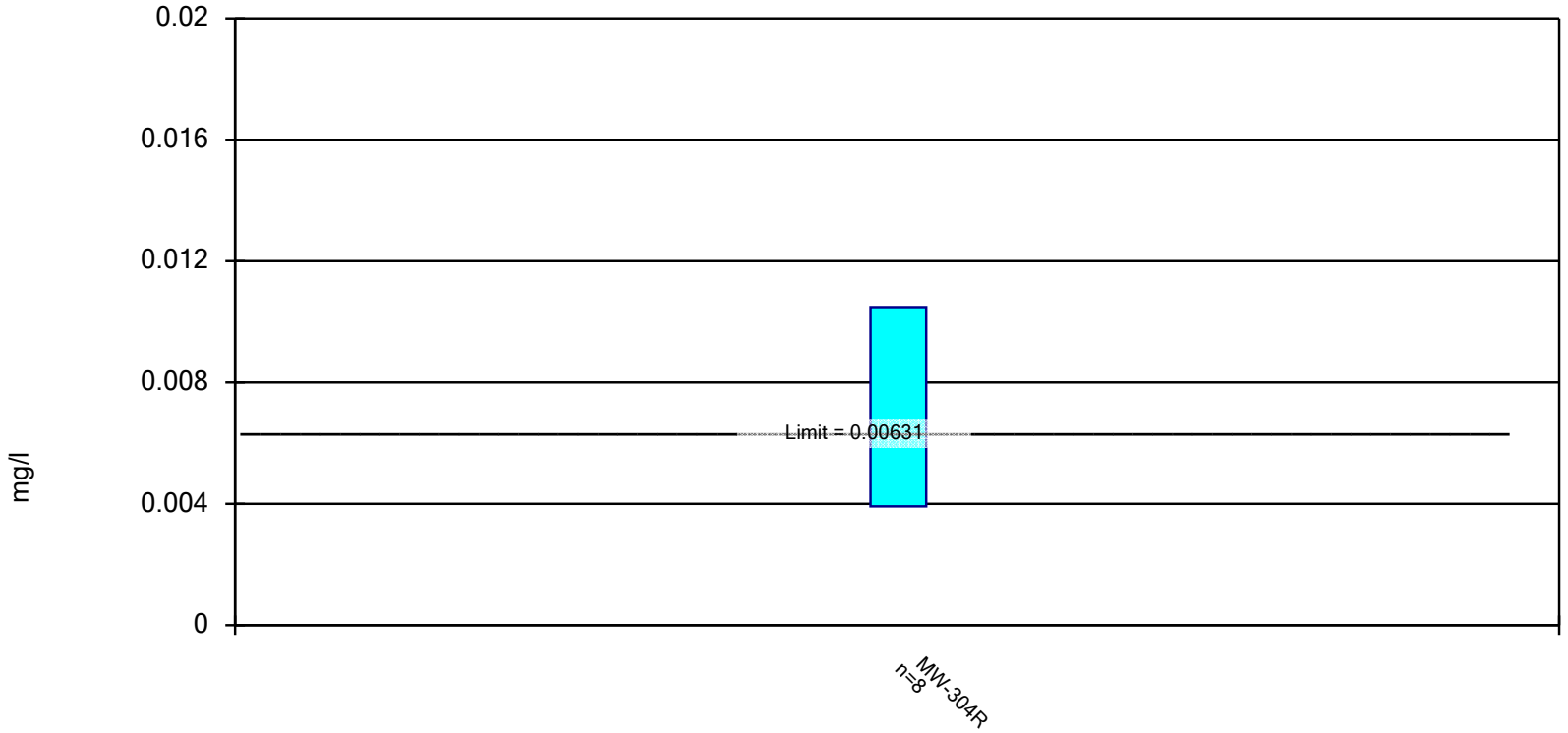
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 7/17/2024 12:08 AM View: Cobalt_Eval

Linn County Data: CRLCSWA_Groundwater Database

Confidence Interval

Linn County Data: CRLCSWA_Groundwater Database Printed 7/17/2024, 12:08 AM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Cobalt (mg/l)	MW-304R	0.01048	0.003917	0.00631	No	8	0.007199	0.003096	0	None	No	0.01	Param.