



DEPARTMENT OF THE ARMY
IOWA ARMY AMMUNITION PLANT
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MIDDLETOWN, IOWA 52638-5000

October 28, 2025

SUBJECT: Iowa Army Ammunition Plant Coal Combustion Residue (CCR) 2025 Annual Water Quality Report

Mick Leat
Iowa Department of Natural Resources
6200 Park Avenue, Suite 200
Des Moines, IA 50319

Dear Mr. Leat,

Iowa Army Ammunition Plant (IAAAP) hereby presents the 2025 Annual Water Quality Report (AWQR) for the Iowa Army Ammunition Plant, Coal Combustion Residue (CCR) Landfill Permit No. 29-SDP-03-82P.

The AWQR is prepared in accordance with 567 IAC 103.1(4)(e), including the results of groundwater elevation measurements and the routine groundwater analysis conducted at the monitoring points and results of all groundwater sampling analysis.

If there are any questions regarding this subject, the point of contact is Ms. Amanda Smith, Environmental Coordinator, at email amanda.j.smith202.civ@army.mil or phone number 319-753-7908.

Sincerely,

Amanda Smith
Environmental Coordinator
Iowa Army Ammunition Plant

Enclosure

cf:
Zach Hill (American Ordnance LLC)
Jen Busard (Iowa Army Ammunition Plant)

2025 ANNUAL WATER QUALITY REPORT

IAAAP – CCR Landfill

Permit No. 29-SDP-3-82P

Site Location:

Iowa Army Ammunition Plant
17575 Highway 79
Middletown, IA 52638

October 20, 2025

Prepared for:

AMERICAN ORDNANCE, LLC

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TABLE OF CONTENTS

1.0	Executive Summary.....	1
1.1	Period of Report Coverage	1
1.2	Priority	1
1.3	Site Status	1
2.0	Site Background	2
2.1	Site History	2
2.2	Site Hydrology	3
2.3	Site Geology	4
2.4	Permit History	6
3.0	Sampling Protocol	7
4.0	Data Summary	7
4.1	Table 1: Monitoring Program Summary Table.....	7
4.2	Table 2: Monitoring Program Implementation Schedule	7
4.3	Table 3: Monitoring Well Maintenance & Performance Revaluation Schedule	7
4.4	Table 4: Monitoring Well Maintenance & Performance Summary.....	8
4.5	Table 5: Background Summary Table.....	8
4.6	Table 6: Summary of Well & Detected Constituent Pairs.....	8
4.7	Table 7: Summary of Ongoing & Newly Identified CL Exceedances	8
4.8	Table 8: Analytical Data Summary	8
4.9	Table 9: Historic CL & AL Exceedances.....	8
4.10	Table 10: GW Quality Assessment Plan Trend Analysis.....	9
5.0	Leachate	9
6.0	Recommendations	9
7.0	References.....	9

Tables:

Table 1	Monitoring Program Summary Table
Table 2	Monitoring Program Implementation Schedule
Table 3	Monitoring Well Maintenance & Performance Revaluation Schedule
Table 4	Monitoring Well Maintenance & Performance Summary
Table 5	Background Summary
Table 6	Summary of Well/Detected Constituent Pairs with No Previous CL Exceedance
Table 7	Summary Table of Ongoing & Newly Identified CL Exceedance
Table 8	Analytical Data Summary
Table 9	Historic CL & AL Exceedances
Table 10	GW Quality Assessment Plan Trend Analysis

Figures:

Figure 1	Site Base Map Including Historical Monitoring Locations
Figure 1A	Site Base Map with Current Monitoring Locations
Figure 2	GW Elevation Map

Appendix A – Laboratory Analytical Report

Appendix B – Field Sampling Forms

Appendix C – Water Level Data

Appendix D – Graphs

Acronyms & Abbreviations:

AL	Action Level
CAMP	Corrective Action Monitoring Plan
CL	Control Limit - Mean plus Two Standard Deviations
GWPS	Groundwater Protection Standard
HAL	Health Advisory Level
MCL	EPA Maximum Contaminant Level
N	Normal
NC	No Change
NM	Not Measured
RL	Reporting Limit
SS	IDNR Statewide Standard for a protected groundwater source
SMCL	Secondary Drinking Water Standard
WL	Water Level
IDNR	Iowa Department of Natural Resources

1.0 EXECUTIVE SUMMARY

1.1 Period of Report Coverage

This report contains information on sampling performed in 2025 in general accordance with 567 Iowa Administrative Code (IAC) Section 104.1(4)e, and the provisions identified in the landfill permit. Well maintenance and installation of HydraSleeve™ sampling devices occurred on August 28, 2025. The annual fall sampling event took place September 25, 2025.

1.2 Priority

There is no request for urgent review by IDNR for this submittal.

1.3 Site Status

The CCR Landfill, also known as the Fly Ash Landfill, is in the west-central portion of IAAAP. Figure 1 provides a site base map of the landfill superimposed on an aerial photograph. The approximate location of leachate collection piping is included on Figure 1, together with monitoring points and piezometer locations. Sampling requirements as defined in the Permit were streamlined in 2016 following quarterly assessments of 2015, as previously reported. Most of the well points and piezometers as shown on Figure 1 are not routinely sampled; five are sampled and others are used solely for assessment of the direction and gradient of groundwater flow. [1]

This AWQR was converted to the new IDNR standard AWQR report format for non-municipal solid waste landfills for the monitoring year 2021. Data from 2016 to present was incorporated into the new report. Data prior to 2016 allowed for field filtering metals however Permit Amendments No. 7 & No. 8 required reporting the total concentration of metals. No data from analysis of field filtered samples is included in this report. Permit Amendment No. 9 discontinued sampling for antimony, lithium, molybdenum, nickel, and thallium. Permit Amendment No. 10 discontinued sampling for cadmium and strontium.

2.0 SITE BACKGROUND

2.1 Site History

The CCR Landfill, operating under IDNR Permit No. 29-SDP-03-82P, has a current capacity of approximately 105,517 cubic yards (CY), although deposition into the landfill is currently limited by administrative policies of the Army. Deposition events are to be limited to events where fly ash cannot be recycled, reused, or transported off site. The CCR Landfill comprises 7.5 acres of fill area with an underground leachate collection system, and a treatment basin (south of the Main Heating Plant). Compacted native clay soils were used to construct the landfill's base, which is consistent with disposal of fly ash previously characterized as non-hazardous. No hazardous wastes have been disposed in the landfill. The former fly ash disposal area used in the 1940s and 1950s, approximately five acres in size, is located immediately west of the CCR landfill. [1]

The CCR landfill has historically received coal combustion residue (fly ash) from the operation of the coal-fired Main Heating Plant at Building No. 500-139 and sludge generated by the operation of the coal pile run-off water treatment facility. In attempts to reduce/reuse and recycle the material, alternative uses for fly ash and sludge from the coal pile run-off water treatment facility have been identified. The off-site recycling of fly ash was initiated in 2004 and the off-site recycling of sludge was initiated in 2013. From 2015 to present, fly ash generated by the coal-fired heating plant has been disposed off-site in a permitted landfill in lieu of disposal in the CCR landfill. [1]

At present, the Contract between AO and the Army allows fly ash and sludge to be placed in the CCR landfill only on an emergency basis. For instance, deposition would be allowed when transportation off-site is not practical due to severe weather, slick roads or an unforeseen breakdown of the transport vehicle. Efforts to minimize deposition in the landfill and a description of excavation events for the historical off-site use of fly ash has been presented in pre-2017 AWQRs. [1]

For each year following recycle activities for fly ash and/or sludge, a Solid By-Product Management Plan report is submitted to the IDNR. IDNR received Solid By-Product Management reports for years 2004 through 2015. No report was required for calendar years 2016 through 2019. A report was submitted for the sludge applied to off-site agricultural land in 2020. [1]

In October 2020, 306,000 gallons of lime sludge was removed from the two concrete sludge basins at the coal pile run-off water treatment facility at the coal fired heating plant and applied as agricultural limestone to off-site farmland in row crop use. The applicator was issued an Iowa Department of Agricultural and Land Stewardship License (LM 00151 003) printed on 14 February 2020 with an expiration date of 1 January 2021.

2.2 Site Hydrology

Regional topography is generally flat in the uplands but dissected by several major drainage ways, with overall topography sloping gently toward the south. Ground surface elevations range from approximately 728 feet above mean sea level (amsl) in the uplands in the north to approximately 531 feet amsl near the southern property boundary at Long Creek, approximately 4 miles south of the CCR landfill. [1]

The CCR landfill is in the Long Creek watershed. Topography in the Long Creek watershed slopes generally to the south toward Long Creek and its tributaries. Long Creek flows generally east-southeast and is fed by three unnamed perennial tributaries from the north and many small intermittent streams. In the eastern portion of this watershed at the confluence of two of the perennial tributaries and Long Creek, Long Creek has been dammed to form George H. Mathes Lake, approximately 6,000 feet south of the landfill. After discharging from Mathes Lake, Long Creek flows south and discharges into the Skunk River approximately 0.5 mile outside of the facility. The ground surface surrounding the CCR landfill slopes gently toward the south, consistent with the regional topography. The elevation of the landfill base is approximately 712 feet amsl at the north end and 710 feet amsl at the south end. The landfill is surrounded by engineered earthen berms, the top of which are at an elevation of 720 feet amsl. Surface drainage within the landfill is controlled within the berms and flows due south where it is intercepted by the leachate collection system. Surface drainage around the landfill flows into ditches surrounding the landfill and is channeled by east-west trending railroad tracks to the south. Surface water around the landfill ultimately flows into a south-flowing intermittent tributary of Long Creek west of the landfill or is culverted beneath the railroad tracks into a south-flowing intermittent tributary of Long Creek. [1]

Wells installed at the CCR landfill have been used to evaluate the hydrogeology and hydraulic conductivity of the site. The wells on site include the FLseries wells installed in 1982 (FL-1 through FL-6) and 1984 (FL-7 through FL-10), the Pseries piezometers installed as part of the 1990 hydrogeologic investigation (groups P1 through P4), and CCR landfill permit wells installed in 1991 and 2013 (MW series). A summary of well construction data is provided in Table 1. Depth to the water table in the shallow wells is generally less than 10 feet bgs, which indicates an upward gradient from the till layer into the loess. The surficial loess and Layer 1 of the till are hydraulically connected; however, localized variations in hydraulic conductivity may restrict the water table from fluctuating from the till into the loess and vice versa at times of water infiltration. The well points in the till exhibit low hydraulic conductivities and yield only small quantities of groundwater to wells, as exhibited by well sampling events. The direction of shallow groundwater flow at IAAAP has been generally to the southeast, although localized influence from topographical features and drainages is sometimes present. Groundwater flow directions have been routinely estimated from the elevation measurements within the monitoring wells. Utilizing the shallow till wells to plot a groundwater surface, shallow groundwater flow directions have varied slightly from year to year. The predominant direction was toward the south through 2011. In 2012, the groundwater flow direction was evaluated with the benefit of piezometer and

well construction diagrams. Subsequently, two piezometers were removed from the monitoring plan because siltation and lack of adequate screens provided unreliable water levels. Retired piezometers include NWP-C and SEP-C. It was determined by IDNR that these piezometers need not be replaced. Since 2013, and again as measured in 2021, the direction of shallow groundwater flow has been toward the south-southeast. Figure 2 shows the most recent groundwater potentiometric surface map for the shallow aquifer. Previously noted in past AWQRs was the anomaly in water level contours near piezometer FL-7. Evaluation of contours indicated siltation may have prohibited water in FL-7 to equalize with the fluctuation in groundwater levels on the western edge of the monitoring area. As per correspondence with Michael Leat of IDNR on February 18, 2020, piezometer FL- 7 has been dropped from groundwater level monitoring to generate a more representative groundwater surface map. Water level contours have historically been utilized to characterize upgradient areas from downgradient areas. MW-1 continues to serve as the Upgradient well. [1]

2.3 Site Geology

Surface soils near the landfill consist of loess, typically silt with some clay-sized material approximately 7 to 8 feet thick (to approximately 708 feet amsl). The upper four feet of the loess consists of high plasticity clay, which was utilized to engineer the bottom of the disposal area. The deeper loess has been classified as low plasticity silty clay. Vertical permeability in the (uncompacted) loess tends to be low but greater than its horizontal permeability. The Iowa Geological Survey (IGS) has determined the average vertical permeability of the loess in southeastern Iowa to be 7.3×10^{-6} centimeters per second (cm/sec) (Geotechnics, 1990). This “low” permeability is consistent with slug test results subsequently collected from till layers by Preston Engineering during preventative maintenance activities, further discussed below. [1]

Underlying the loess is glacial till assigned to the Kellersville Till, consisting primarily of silty clay and clayey silt, with thin sand lenses and a particle size distribution of 66 percent clay and 34 percent sand. The till extends to depths greater than 100 feet below ground surface (bgs) (approximately 612 feet amsl) and contains at least four distinct layers at the site (with Layer 1 being the uppermost layer). The lithologic descriptions of the till layers have been documented as follows:

Layer 1 (approximately 8 feet to 41 feet bgs or 708 feet to 675 feet amsl) consists of medium stiff to stiff clay (of varying plasticity) containing a trace to some sand and small pebbles. Sand layers (ranging from 2 inches to 3 feet thick) were encountered near the bottom 5 feet. Vertical permeability (laboratory tested) ranges from 1.7×10^{-7} to 7.2×10^{-9} cm/sec. Bail down tests at the same locations indicate horizontal permeabilities averaging 1.85×10^{-5} , with 1.90×10^{-4} cm/sec being recorded in a piezometer screened in sand layers. In 2006, slug tests performed by Preston Engineering on wells in this layer determined hydraulic conductivities from 1.72×10^{-6} to 3.96×10^{-4} cm/sec. (Preston Engineering, 2006). In 2011, slug tests performed by Preston Engineering on the same wells in this layer determined hydraulic conductivities from 2.49×10^{-10} to 5.08×10^{-8} cm/sec. (Preston Engineering, 2011). The apparent difference in hydraulic

conductivities from 2006 to 2011 may be related to the methodology used, instrument operator interpretation, or silt over slotted piping down-hole. Groundwater monitoring is limited to this layer.

Layer 2 (approximately 41 feet to 70 feet bgs or 675 feet to 646 feet amsl) consists of clay similar to Layer 1, but of a denser consistency. Vertical permeability (laboratory tested) ranges from 13.0×10^{-8} to 5.3×10^{-9} cm/sec. Bail down tests at the same locations indicated horizontal permeabilities averaging 6.45×10^{-6} cm/sec. Hydraulic conductivity results from the 2006 slug tests show a range of 5.00×10^{-8} to 2.82×10^{-5} cm/sec from wells screened in this layer. Hydraulic conductivity results from the 2011 slug tests show 5.08×10^{-8} cm/sec from wells screened in this layer. Three piezometers measure groundwater in this layer: SWP-C, NWP-S, and NEP-W. Groundwater sampling is not being conducted in this layer.

Layer 3 (approximately 70 feet to 98 feet bgs or 646 feet to 618 feet amsl) consists of very stiff to hard sandy, silty clay. The vertical permeability (laboratory tested) is 5.3×10^{-9} cm/sec. This layer could be considered a confining layer, assuming it has negative pore pressure. There are no monitoring points within this layer.

Layer 4 (approximately 98 feet bgs or 618 feet amsl to the top of bedrock) consists of very compacted clayey silt. The vertical permeability (laboratory tested) is 3.9×10^{-8} cm/sec. Bail down tests at the same location indicates horizontal permeability of 2×10^{-7} cm/sec (Geotechnics, 1990). Hydraulic conductivity results from the 2006 slug tests show 1.2×10^{-6} and 4.87×10^{-6} cm/sec from wells screened in this layer. Hydraulic conductivity results from the 2011 slug tests show 5.08×10^{-8} cm/sec from wells screened in this layer. Former monitoring points in this layer include SWP-S, and MW4-91. The difference between vertical and horizontal permeabilities is less pronounced in the denser tills, which serve as confining layers with conductivities below 1×10^{-9} cm/sec. Monitoring is not conducted in this layer. The uppermost bedrock at the IAAAP occurs at 580 feet amsl (135 feet bgs) at the north end of the landfill, and 565 feet amsl (150 feet bgs) at the south end of the landfill (Geotechnics, 1992). The bedrock unit in the area is the Warsaw Shale, calcareous shale that grades into a dolomitic and shaly portion (upper 40 feet) of the Keokuk Limestone, a cherty limestone approximately 70 feet thick. The base of the Keokuk Limestone is identified by the Montrose Chert, which is a 30-foot layer of cherty limestone. The Burlington Limestone underlies the Keokuk Limestone and is estimated to be 70 feet thick within the IAAAP facility. There are no monitoring points within this layer. [1]

2.4 Permit History

A brief history of permit amendments and correspondence is summarized below.

Date	Permit Action	Summary / Notes
1/13/2010	Modified Permit Issued	Permit No. 29-SDP-03-82P, Exp. 1/6/2020
6/18/2010	PA No. 1	Approved the amended closure plan which identified new borrow area, approved alternative method of recording fly ash placed in the landfill, amended the OP by allowing exhumation of 90,000 CY fly ash from the landfill
11/7/2011	PA No. 2	Implement corrective action to repair blockage in leachate collection system
1/10/2012	PA No. 3	Omit requirement to submit sampling forms within 45 days of sampling, require submittal of AWQR, incorporate Certificate of Repair for the subdrain system
7/26/2012	PA No. 4	Designated MW1-91 as upgradient well and FL-9 as downgradient well
11/26/2012	IDNR Letter	IDNR requested a GW Assessment Plan (GAP) be submitted addressing iron, manganese, and sulfate concentrations exceeding SMCLs
3/7/2013	IDNR Letter	Approved the submitted GAP (1/28/2013), requested additional analytical parameters be expanded
2014	Expanded parameters sampled for and results submitted to IDNR	
2014-2015	Correspondence with IDNR regarding HydraSleeve™ sampling	
5/18/2015	PA No. 6	Modified site HMSP requirements
5/26/2016	PA No. 7	Altered sampling parameters
9/27/2016	PA No. 8	Modified provisions for sampling at newly installed wells and implemented a process for discontinuation of supplemental parameters
11/15/2018	PA No. 9	Sampling for antimony, lithium, molybdenum, nickel, and thallium was discontinued
8/28/2019	Permit Renewal	No substantial changes to monitoring or reporting. Permit expires 8/28/2029
12/14/2021	PA No. 10	Sampling for cadmium and strontium was discontinued

3.0 SAMPLING PROTOCOL

The 2025 fall sampling event began on August 28, 2025 with well maintenance performed at each of the 5 wells where groundwater samples are collected. Each of the wells were surged with a PVC slug and groundwater was purged using a peristaltic pump until the water was clear or significantly clearer than the beginning of surging activities. Volumes of groundwater purged and additional information on maintenance performed at each well is included on the field sampling forms located in Appendix B. HydraSleeve™ sampling devices were set in each well at least 1 hour after well maintenance activities were completed.

HydraSleeve™ sampling devices were pulled on September 25, 2025 and sample water collected in the HydraSleeves™ was transferred to laboratory provided samples bottles. Samples were immediately packed on ice and then shipped to Eurofins Test America in Cedar Falls, Iowa for analysis. A duplicate sample was collected for FL-9 for metals and general chemistry. Specific conductance, pH, and temperature were measured in the field using an Oakton PCTS Tester 50.

4.0 DATA SUMMARY

4.1 Table 1: Monitoring Program Summary Table

Table 1 provides a summary of the wells in the hydrological monitoring system. There are currently five (5) monitoring wells that are sampled in the system and an additional eleven (11) monitoring wells used for gathering groundwater level data. An additional thirteen (13) monitoring wells are present on the site but are not regularly sampled.

The number of samples in each monitoring program begins with the 2016 samples collected.

4.2 Table 2: Monitoring Program Implementation Schedule

Table 2 tracks compliance with permitted sampling frequencies and required parameters to aid in scheduling. It is anticipated that sampling will continue in the fall of 2026 for permit required parameters (included in comments of Table 2).

4.3 Table 3: Monitoring Well Maintenance & Performance Revaluation Schedule

Table 3 tracks compliance with applicable regulations. Annual sampling and groundwater elevation monitoring is required by the permit.

4.4 Table 4: Monitoring Well Maintenance & Performance Summary

Table 4 provides a summary of the well depths, screen elevation, and most recent groundwater level measurements. MW6-91 and FL-9 had submerged screens during the 2025 sampling event.

4.5 Table 5: Background Summary Table

Table 5 summarizes the background levels detected for each constituent. The only well considered as background is MW1-91. Background levels were determined using the mean of GW data collected MW1-91 plus two (2) standard deviations. An upper and lower background limit was determined for alkalinity and pH.

4.6 Table 6: Summary of Well & Detected Constituent Pairs

Table 6 provides a summary of background levels compared to detections during the most recent sampling event for constituent pairs that had not been previously identified as having a control limit exceedance.

4.7 Table 7: Summary of Ongoing & Newly Identified CL Exceedances

Table 7 compares the most recent results to the control limit and the groundwater protection standard. There was an exceedance of the groundwater protection standards (MCL / SS) in the upgradient well, MW1-91 (control limit), for manganese. There was an exceedance of the groundwater protection standards in MW3-91, for cobalt. The background (control limit) for cobalt is above the groundwater protection standards. Cobalt in MW3-91 was below the control limit.

4.8 Table 8: Analytical Data Summary

Table 8 provides a summary of all of the analytical data for each well. Data going back to 2016 is backfilled into the table.

4.9 Table 9: Historic CL & AL Exceedances

Table 9 provides a summary of control limits and action levels from 2016 to the present for each well and constituent pair.

4.10 Table 10: GW Quality Assessment Plan Trend Analysis

Table 10 provides a summary of the trends of current action level exceedances. No trend analysis was provided for MW1-91 since the exceedance is in the upgradient well. No trend analysis was provided for MW3-91 since the exceedance was below the control limit.

5.0 LEACHATE

Leachate, when generated at the landfill, is collected by a system of parallel 4-inch perforated tiles located beneath the landfill, as depicted on Figures 1 and 1a. From a collection sump, leachate is routed to a holding pond south of the coal storage yard. The holding pond also receives runoff from the adjacent coal storage yard and boiler blowdown effluent from the heating plant. Water from the holding pond is pumped to the treatment basin south of the Main Heating Plant to further adjust the pH and reduce total suspended solids per National Pollutant Discharge Elimination System (NPDES) permit IA2900900. [1] After treatment, water from the treatment basin is discharged to the sanitary sewer and ends at the main facility sewage plant.

6.0 RECOMMENDATIONS

Special Provision (5)(d) of the permit allows for the discontinuation of supplemental parameters after three consecutive test results show concentrations below the lowest action level if approved by IDNR. No changes to the current permit required parameters is recommended at this time.

7.0 REFERENCES

[1] 2020 AWQR (11/18/2020) prepared by EnviroNet for American Ordnance, LLC

- Portions of text copied from 2020 AWQR prepared by EnviroNet including site history, location information, geological and hydrological information, and leachate information.

IAAAP - CCR Landfill

*2025 Annual Water Quality Report
Permit #29-SDP-3-82P*

*American Ordnance, LLC
17575 Highway 79
Middletown, IA 52638*

October 20, 2025

*Prepared by:
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Acronyms/ Abbreviations

AL = Action Level
CL = Control Limit (M+/-2SD)
GWQAP = Groundwater Quality Assessment Plan
LEL = Lower Explosive Limit
M+/-2SD = Mean Plus/Minus Two Standard Deviations
MCL = EPA Maximum Contaminant Level
SMCL = EPA Secondary MCL
NC = No Change
NM = Not Measured
RAMP = Remedial Action/Mitigation Plan
RL = Reporting Limit
SS = Statewide Standard
TSS = Total Suspended Solids

Table 1
Monitoring Program Summary
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Monitoring Well	Formation	Current Monitoring Program	Change for next sampling event	Control Limit Exceedances	Total # of Samples in each monitoring program since 2016		
					Routine	Supplemental	Remedial Action
FL-9	Weathered Till	Routine/Supplemental	0	Calcium, Magnesium, Sulfate, pH	135	95	0
MW1-91	Weathered Till	Background	0	N/A	-	-	0
MW3-91	Weathered Till	Routine/Supplemental	0	Boron, Calcium, Magnesium, Potassium, Chloride, Sulfate, pH	135	95	0
MW5-91	Weathered Till	Routine/Supplemental	0	Sodium, Boron, Potassium, Sulfate	135	95	0
MW6-91	Weathered Till	Routine/Supplemental	0	Boron, Calcium, Magnesium, Sulfate	135	95	0

Other Monitoring Points		
Monitoring Well	Formation	Current Monitoring Program
FL-1	Weathered Till	Water Level
FL-2	Weathered Till	Water Level
FL-3	Weathered Till	Water Level
FL-4	Weathered Till	Water Level
FL-5	Weathered Till	None
FL-6	Weathered Till	Water Level
FL-7	Weathered Till	None
FL-8	Weathered Till	Water Level
FL-10	Weathered Till	Water Level
P1A-90 (SWP-N)	Weathered Till	None
P1B-90 (SWP-C)	Weathered Till	None
P1C-90 (SWP-S)	Weathered Till	None
P2A-90 (NWP-N)	Weathered Till	Water Level
P2B-90 (NWP-C)	Weathered Till	ABANDONED
P2C-90 (NWP-S)	Weathered Till	None
P3A-90 (NEP-E)	Weathered Till	None
P3B-90 (NEP-C)	Weathered Till	ABANDONED
P3C-90 (NEP-W)	Weathered Till	None
P4A-90 (SEP-E)	Weathered Till	None
P4B-90 (SEP-C)	Weathered Till	ABANDONED
P4C-90 (SEP-W)	N/A	None
P5A-13 *	Weathered Till	Water Level*
MW 2-91	Weathered Till	None
MW 4-91	Weathered Till	None
MW 7-13	Weathered Till	None
MW 8-13	Weathered Till	Water Level
MW 9-13	Weathered Till	Water Level

Comments:

1. Duplicate samples are not counted toward the number of samples in each monitoring program
- *P5A-13 was observed to have a broken casing and a water level measurement was not taken

This worksheet;

- 1) Provides a summary of the monitoring points and in which phase of monitoring they are in,
- 2) Verifies conformance with the approved HMSP network,
- 3) Gives a summary of the monitored aquifer,
- 4) Provides the size of the dataset,
- 5) Provides a summary of current contaminants above background and whether they exceed a Control Limit
- 6) States the phase for the next sampling event,
- 7) Mentions additional site sampling that may be occurring on a temporary basis to achieve a delineation or remedial action goal, and
- 8) Provides any deviations to current HMSP.

Table 2
Monitoring Program Implementation Schedule
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Monitoring Well	Recent Sampling Dates and Constituents					Upcoming Sampling Dates and Constituents	
	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025	Fall 2026	Fall 2027
FL-9	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List
MW1-91	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List
MW3-91	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List
MW5-91	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List
MW6-91	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List	Permit Required List
FL-1	WL	WL	WL	WL	WL	WL	WL
FL-2	WL	WL	WL	WL	WL	WL	WL
FL-3	WL	WL	WL	WL	WL	WL	WL
FL-4	WL	WL	WL	WL	WL	WL	WL
FL-6	WL	WL	WL	WL	WL	WL	WL
FL-8	WL	WL	WL	WL	WL	WL	WL
FL-10	WL	WL	WL	WL	WL	WL	WL
P2A-90 (NWP-N)	WL	WL	WL	WL	WL	WL	WL
P5A-13 *	WL	WL	WL	WL	WL	WL	WL
MW 8-13	WL	WL	WL	WL	WL	WL	WL
MW 9-13	WL	WL	WL	WL	WL	WL	WL

Permit required list:	
bicarbonate alkalinity	total cobalt
chloride	total copper
pH	total iron
sulfate	total lead
total aluminum	total manganese
total arsenic	total magnesium
total barium	total potassium
total beryllium	total selenium
total boron	total sodium
total calcium	total zinc

Comments:

1. WL = Water Level Only

*P5A-13 was observed to have a broken casing and a water level measurement was not taken

This worksheet;

Table 3
Monitoring Well Maintenance and Performance Revaluation Schedule
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Compliance with:	Monitoring Calendar Years							
	2020	2021	2022	2023	2024	2025	2026	2027
567 IAC 103.1(4)(d) Annual Sampling	Completed	Completed	Completed	Completed	Completed	Completed	Scheduled	Scheduled
HMSP / Permit Issued 8/28/2019, Special Provision X - WL Elevation Readings during Sampling Events	Completed	Completed	Scheduled	Completed	Completed	Completed	Scheduled	Scheduled

Comments:

This worksheet;
1) Summarizes compliance, and
2) Aids in scheduling future tasks.

Table 4
Monitoring Well Maintenance and Performance Summary
2025 Annual Water Quality Report
IAAAP - CCR Landfill
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Well	Top of Casing	Top of Screen	Total Depth		Date of Measurements		Maximum Depth Discrepancy (ft)	Baseline Permeability (cm/s/date)	Current Permeability	
					9/3/2024	9/25/2025			-	% Change
FL-9	714.11	700.81	23.6	Groundwater Level (ft)	4.4	8.39	-2.28	(a) (b) 2006 / 2011	-	
				Groundwater Elevation (ft MSL)	709.71	705.72				
				Measured Well Depth (ft)	25.88	25.88				
				Submerged screen	Yes	Yes				
MW1-91	716.15	709.55	15.5	Groundwater Level (ft)	6.09	7.23	-1.15	(a) (b) 2006 / 2011	-	
				Groundwater Elevation (ft MSL)	710.06	708.92				
				Measured Well Depth (ft)	16.65	16.65				
				Submerged screen	Yes	No				
MW3-91	716.04	709.53	14.7	Groundwater Level (ft)	8.05	9.03	-2	(a) (b) 2006 / 2011	-	
				Groundwater Elevation (ft MSL)	707.99	707.01				
				Measured Well Depth (ft)	16.7	16.7				
				Submerged screen	No	No				
MW5-91	716.89	709.25	15	Groundwater Level (ft)	8.7	9.72	-2	(a) (b) 2006 / 2011	-	
				Groundwater Elevation (ft MSL)	708.19	707.17				
				Measured Well Depth (ft)	17.04	17.04				
				Submerged screen	No	No				
MW6-91	711.55	704.88	15	Groundwater Level (ft)	5.3	6.67	-1.75	(a) (b) 2006 / 2011	-	
				Groundwater Elevation (ft MSL)	706.25	704.88				
				Measured Well Depth (ft)	16.75	16.75				
				Submerged screen	Yes	No				

Comments:

1. (a) Preston Engineering performed slug tests in 2006 and determined that hydraulic conductivities ranged $1.72 \times 10E-6$ to $3.96 \times 10E-4$ cm/sec.
2. (b) Preston Engineering performed slug tests in 2011 and determined that hydraulic conductivities ranged from $2.49 \times 10E-10$ to $5.08 \times 10E-8$ cm/sec

This worksheet;
1) Summarizes data used to evaluate Monitoring Well Maintenance and Performance, and
2) Identifies monitoring wells that have submerged screens.

Table 5
Background Summary
2025 Annual Water Quality Report
IAAAP - CCR Landfill
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Upgradient / Background (MW1-91)							
Constituent	Units	Samples	Detections	Background level	Statistical Test	Action Level	Source
Inorganics							
Aluminum	µg/l	10	10	918.56	M+2SD	200	SMCL
Arsenic	µg/l	10	8	5.27	M+2SD	10	MCL
Barium	µg/l	10	10	270.26	M+2SD	2000	MCL
Beryllium	µg/l	10	0	0.66	M+2SD	4	MCL
Boron	µg/l	10	1	125.63	M+2SD	6000	SS
Calcium	µg/l	10	10	84652.24	M+2SD	--	--
Cobalt	µg/l	10	7	28.26	M+2SD	2.8	SS
Copper	µg/l	10	3	12.86	M+2SD	1300	MCL
Iron	µg/l	10	10	7557.76	M+2SD	300	SMCL
Lead (Pb)	µg/l	10	9	4.19	M+2SD	15	MCL
Magnesium	µg/l	10	10	33656.75	M+2SD	--	--
Manganese	µg/l	10	10	1885.69	M+2SD	300	MCL
Potassium	µg/l	10	8	4249.41	M+2SD	--	--
Selenium	µg/l	10	0	5.87	M+2SD	50	MCL
Sodium	µg/l	10	10	23092.44	M+2SD	20000	HAL
Zinc	µg/l	10	1	181.05	M+2SD	2000	HAL
General Chemistry							
Chloride	µg/l	10	10	24124.96	M+2SD	250000	SMCL
Sulfate	µg/l	10	10	39640.17	M+2SD	250000	SMCL
Alkalinity	µg/l	10	10	78768.78 to 343703.94	M+/-2SD	--	--
pH	µg/l	10	10	6.74 to 7.33	M+/-2SD	6.5 to 8.5	SMCL

Comments:

1. Data since Fall 2016
2. Data below RL calculated as 1/2 of RL
3. RED indicates background exceeds Action Level

This worksheet;
1) Summarizes the size and quality of the data record of the background data,
2) Summarizes the current statistical method,
3) Examines how background levels were determined,
4) Examines whether background levels are reasonable,
5) Identifies background water quality that is impacted.

Table 6
Summary of Well/Detected Constituent Pairs With No Immediately Preceding Control Limit Exceedances
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Well	Constituent	Units	Most recent result	Control Limit
FL-9	None	-	-	-
MW3-91	Calcium	µg/l	142000	84652.24
	Magnesium	µg/l	39300	33656.75
	Sodium	µg/l	35000	23092.44
	Chloride	µg/l	59700	24124.96
MW5-91	None	-	-	-
MW6-91	Magnesium		37500	-

This worksheet;

1) Presents a summary of background comparisons for well constituents pairs that are in the routine monitoring program. If exceedances are confirmed an investigation of a new release is necessary.

Table 7
Summary of Ongoing and Newly Identified Control Limit Exceedances
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Well	Constituent	Units	Most recent result	Control Limit	Action Level/ Statewide Standard
MW1-91 (Background)	Manganese	µg/l	464	1885.69	300
	Cobalt	µg/l	2.8	28.26	2.8
FL-9	Calcium	µg/l	130000	84652.24	--
	Magnesium	µg/l	48700	33656.75	--
	Sulfate	µg/l	302000	39640.17	250000
	pH	SU	7.46	6.74 to 7.33	6.5 to 8.5
MW3-91	Boron	µg/l	128	125.63	6000
	Sulfate	µg/l	554000	39640.17	250000
	pH	SU	6.68	6.74 to 7.33	6.5 to 8.5
MW5-91	Boron	µg/l	199	125.63	6000
	Sulfate	µg/l	188000	39640.17	250000
MW6-91	Boron	µg/l	157	125.63	6000
	Calcium	µg/l	107000	84652.24	--
	Sulfate	µg/l	282000	39640.17	250000

Comments:

1. RED indicates background exceeds Action Level
2. This table lists constituents with two or more consecutive CL exceedances. Constituents which have not exceeded CL in two or more consecutive years are not listed.

Table 8
Analytical Data Summary
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Constituent (CAS #)	Sample Date	Units	MW1-91 Bkgrnd	FL-9 DwnGrad	MW3-91 DwnGrad	MW5-91 DwnGrad	MW6-91 DwnGrad
Aluminum* SMCL: 200 CL: 918.56	9/8/2016	µg/l	154	<50	248	<50	158
	(D) 9/8/2016	µg/l	141	NM	NM	NM	NM
	9/13/2017	µg/l	526	<50	<50	<50	262
	(D) 9/13/2017	µg/l	NM	<50	NM	NM	NM
	9/5/2018	µg/l	413	185	277	<50	2090
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	2350
	9/17/2019	µg/l	1080	175	257	<75	233
	(D) 9/17/2019	µg/l	NM	NM	199	NM	NM
	9/15/2020	µg/l	158	468	117	69.4	73.8
	(D) 9/15/2020	µg/l	NM	NM	NM	111	NM
	9/7/2021	µg/l	372	49.2	311	24	154
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	239
	9/6/2022	µg/l	583	67.3	760	31.6	54.3
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	132
	9/5/2023	µg/l	93.7	317	56.2	27.5	34.6
	(D) 9/5/2023	µg/l	NM	NM	NM	25.3	NM
	9/3/2024	µg/l	77.6	24.1	27	<21	<21
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	21.1
	9/25/2025	µg/l	200	50.3	128	58.7	147
	(D) 9/25/2025	µg/l	NM	129	NM	NM	NM
Arsenic (Total) (7440-38-2) MCL: 10 CL: 5.27	9/8/2016	µg/l	2.6	<2	<2	<2	<2
	(D) 9/8/2016	µg/l	2.6	NM	NM	NM	NM
	9/13/2017	µg/l	5	<2	<2	<2	<2
	(D) 9/13/2017	µg/l	NM	<2	NM	NM	NM
	9/5/2018	µg/l	<2	<2	<2	<2	<2
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<2
	9/17/2019	µg/l	<10	<10	<10	<10	<10
	(D) 9/17/2019	µg/l	NM	NM	<10	NM	NM
	9/15/2020	µg/l	2.17	<0.88	<0.88	<0.88	<0.88
	(D) 9/15/2020	µg/l	NM	NM	NM	<0.88	NM
	9/7/2021	µg/l	3.1	<0.75	<0.75	<0.75	<0.075
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	<0.075
	9/6/2022	µg/l	3.46	<0.75	1.18	<0.27	<0.75
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	<0.75
	9/5/2023	µg/l	1.72	<0.53	<0.53	<0.53	<0.53
	(D) 9/5/2023	µg/l	NM	NM	NM	<0.53	NM
	9/3/2024	µg/l	2.21	<0.53	<0.53	<0.53	0.6
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	3.12	<0.53	0.917	<0.53	0.536
	(D) 9/25/2025	µg/l	NM	0.791	NM	NM	NM
Barium (Total) (7440-39-3) MCL: 2000 CL: 270.26	9/8/2016	µg/l	100	63.4	66.9	97.3	66.7
	(D) 9/8/2016	µg/l	99.4	NM	NM	NM	NM
	9/13/2017	µg/l	260	53.6	66.6	105	143
	(D) 9/13/2017	µg/l	NM	55	NM	NM	NM
	9/5/2018	µg/l	111	61.2	135	132	104
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	111
	9/17/2019	µg/l	260	628	108	128	166
	(D) 9/17/2019	µg/l	NM	NM	105	NM	NM
	9/15/2020	µg/l	171	58.7	55.2	129	47.6
	(D) 9/15/2020	µg/l	NM	NM	NM	123	NM

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
	9/7/2021	µg/l	149	54.4	79.7	83.6	92.6
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	92.8
	9/6/2022	µg/l	183	58.8	90.6	102	91.1
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	90.4
	9/5/2023	µg/l	171	60.5	123	80.1	58.7
	(D) 9/5/2023	µg/l	NM	NM	NM	77	NM
	9/3/2024	µg/l	136	51.3	107	59.5	40.8
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	165	46.8	206	80.5	67
Beryllium (Total) (7440-41-7) MCL: 4 CL: 0.66	(D) 9/25/2025	µg/l	NM	46.2	NM	NM	NM
	9/8/2016	µg/l	<1	<1	<1	<1	<1
	(D) 9/8/2016	µg/l	<1	NM	NM	NM	NM
	9/13/2017	µg/l	<1	<1	<1	<1	<1
	(D) 9/13/2017	µg/l	NM	<1	NM	NM	NM
	9/5/2018	µg/l	<1	<1	<1	<1	<1
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<1
	9/17/2019	µg/l	<1	<1	<1	<1	<1
	(D) 9/17/2019	µg/l	NM	NM	<1	NM	NM
	9/15/2020	µg/l	<0.27	<0.27	<0.27	<0.27	<0.27
	(D) 9/15/2020	µg/l	NM	NM	NM	<0.27	NM
	9/7/2021	µg/l	<0.27	<0.27	<0.27	<0.27	<0.27
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	<0.27
	9/6/2022	µg/l	<0.27	<0.27	<0.27	<0.27	<0.27
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	<0.27
	9/5/2023	µg/l	<0.33	<0.33	<0.33	<0.33	<0.33
	(D) 9/5/2023	µg/l	NM	NM	NM	<0.33	NM
	9/3/2024	µg/l	<0.33	<0.33	<0.33	<0.33	<0.33
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	<0.33	<0.33	<0.33	<0.33	<0.33
	(D) 9/25/2025	µg/l	NM	<0.33	NM	NM	NM
Boron SS: 6000 HAL: 6000 CL: 125.63	9/8/2016	µg/l	<200	<200	<200	<200	<200
	(D) 9/8/2016	µg/l	<200	NM	NM	NM	NM
	9/13/2017	µg/l	<200	<200	<200	<200	<200
	(D) 9/13/2017	µg/l	NM	<200	NM	NM	NM
	9/5/2018	µg/l	<200	<200	<200	<200	<200
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<200
	9/17/2019	µg/l	<100	<100	222	145	108
	(D) 9/17/2019	µg/l	NM	NM	220	NM	NM
	9/15/2020	µg/l	<80	<80	152	105	97.6
	(D) 9/15/2020	µg/l	NM	NM	NM	106	NM
	9/7/2021	µg/l	<58	<58	222	227	353
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	359
	9/6/2022	µg/l	<58	<58	220	132	394
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	394
	9/5/2023	µg/l	82.7	<76	148	160	166
	(D) 9/5/2023	µg/l	NM	NM	NM	150	NM
	9/3/2024	µg/l	<76	<76	166	203	141
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	<82	<82	128	199	157
	(D) 9/25/2025	µg/l	NM	<82	NM	NM	NM
Cadmium (Total) (7440-43-9)* MCL: 5 HAL: 5	9/8/2016	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
	(D) 9/8/2016	µg/l	<0.5	NM	NM	NM	NM
	9/13/2017	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
	(D) 9/13/2017	µg/l	NM	<0.5	NM	NM	NM
	9/5/2018	µg/l	<0.5	<0.5	<0.5	<0.5	<0.5
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<0.5

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
	9/17/2019	µg/l	<5	<5	<5	<5	<5
	(D) 9/17/2019	µg/l	NM	<5	<5	NM	NM
	9/15/2020	µg/l	0.133	0.3	0.231	0.13	0.077
	(D) 9/15/2020	µg/l	NM	NM	NM	0.12	NM
	9/7/2021	µg/l	0.125	0.161	0.102	0.62	0.214
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	0.17
	9/6/2022	µg/l	0.07	0.121	0.237	1.19	0.213
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	0.143
	9/5/2023	µg/l	<0.1	0.314	0.22	0.242	<0.1
	(D) 9/5/2023	µg/l	NM	NM	NM	0.244	NM
	9/3/2024	µg/l	<0.1	0.106	<0.85	<0.1	0.113
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	<0.1	0.114	0.215	0.115	<0.1
	(D) 9/25/2025	µg/l	NM	0.1	NM	NM	NM
Calcium* CL: 84652.24	9/8/2016	µg/l	25800	142000	30800	52000	45200
	(D) 9/8/2016	µg/l	26900	NM	NM	NM	NM
	9/13/2017	µg/l	59700	140000	47300	71100	181000
	(D) 9/13/2017	µg/l	NM	140000	NM	NM	NM
	9/5/2018	µg/l	60400	151000	106000	89300	106000
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	106000
	9/17/2019	µg/l	68100	148000	54000	68000	160000
	(D) 9/17/2019	µg/l	NM	NM	53800	NM	NM
	9/15/2020	µg/l	60200	141000	32700	75000	59000
	(D) 9/15/2020	µg/l	NM	NM	NM	70300	NM
	9/7/2021	µg/l	56200	131000	36700	45000	149000
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	147000
	9/6/2022	µg/l	69300	153000	40300	62500	167000
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	165000
	9/5/2023	µg/l	62400	154000	187000	61900	102000
	(D) 9/5/2023	µg/l	NM	NM	NM	60200	NM
	9/3/2024	µg/l	54200	141000	59300	32800	67400
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	68200	130000	142000	52200	107000
	(D) 9/25/2025	µg/l	NM	123000	NM	NM	NM
Cobalt (Total) (7440-48-4) SS: 2.8 CL: 28.26	9/8/2016	µg/l	<7	<7	<7	<7	<7
	(D) 9/8/2016	µg/l	<7	NM	NM	NM	NM
	9/13/2017	µg/l	39	<7	<7	<7	<7
	(D) 9/13/2017	µg/l	NM	<7	NM	NM	NM
	9/5/2018	µg/l	<2.8	<2.8	<2.8	<2.8	<2.8
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<2.8
	9/17/2019	µg/l	11.8	<5	<5	<5	<5
	(D) 9/17/2019	µg/l	NM	NM	<5	NM	NM
	9/15/2020	µg/l	7.07	0.5	0.847	1.71	0.28
	(D) 9/15/2020	µg/l	NM	NM	NM	2.04	NM
	9/7/2021	µg/l	4.24	0.337	1.59	0.294	1.08
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	1.57
	9/6/2022	µg/l	6.14	0.36	4.53	0.536	2.2
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	2.77
	9/5/2023	µg/l	2.13	1.79	1.78	0.551	0.179
	(D) 9/5/2023	µg/l	NM	NM	NM	0.559	NM
	9/3/2024	µg/l	2.14	0.517	1.36	<0.17	0.569
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	2.8	0.288	4.51	0.901	0.782
	(D) 9/25/2025	µg/l	NM	0.694	NM	NM	NM
Copper (Total) (7440-50-8) MCL: 1300	9/8/2016	µg/l	<20	<20	<20	<20	<20
	(D) 9/8/2016	µg/l	<20	NM	NM	NM	NM

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
SMCL: 1000 CL: 12.86	9/13/2017	µg/l	<20	<20	<20	<20	<20
	(D) 9/13/2017	µg/l	NM	<20	NM	NM	NM
	9/5/2018	µg/l	<20	<20	<20	<20	<20
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<20
	9/17/2019	µg/l	<10	<10	<10	<10	<10
	(D) 9/17/2019	µg/l	NM	NM	<10	NM	NM
	9/15/2020	µg/l	1.79	2.5	6.06	2.1	4.42
	(D) 9/15/2020	µg/l	NM	NM	NM	2.6	NM
	9/7/2021	µg/l	1.8	<1.4	3.17	1.49	<1.4
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	1.93
	9/6/2022	µg/l	<1.8	1.8	3.41	2.72	<1.8
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	<1.8
	9/5/2023	µg/l	2.69	6.01	<1.8	<1.8	2.49
	(D) 9/5/2023	µg/l	NM	NM	NM	<1.8	NM
	9/3/2024	µg/l	<1.8	<1.8	2.45	<1.8	4.26
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	<3.2	<3.2	<3.2	<3.2	<3.2
	(D) 9/25/2025	µg/l	NM	<3.2	NM	NM	NM
Iron SMCL: 300 CL: 7557.76	9/8/2016	µg/l	1780	<100	381	<100	161
	(D) 9/8/2016	µg/l	1880	NM	NM	NM	NM
	9/13/2017	µg/l	1140	<100	110	<100	265
	(D) 9/13/2017	µg/l	NM	<100	NM	NM	NM
	9/5/2018	µg/l	1100	354	553	<100	2150
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	2530
	9/17/2019	µg/l	7380	264	348	<50	220
	(D) 9/17/2019	µg/l	NM	NM	289	NM	NM
	9/15/2020	µg/l	3600	148	149	179	78.3
	(D) 9/15/2020	µg/l	NM	NM	NM	256	NM
	9/7/2021	µg/l	3890	129	370	<36	160
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	255
	9/6/2022	µg/l	7110	138	1600	59.1	72.6
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	157
	9/5/2023	µg/l	1320	750	116	50.8	<36
	(D) 9/5/2023	µg/l	NM	NM	NM	48.9	NM
	9/3/2024	µg/l	1240	141	56.9	<36	<36
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	4030	190	362	110	168
	(D) 9/25/2025	µg/l	NM	496	NM	NM	NM
Lead (Total) (7439-92-1) MCL: 15 CL: 4.19	9/8/2016	µg/l	0.8	<0.5	<0.5	<0.5	<0.5
	(D) 9/8/2016	µg/l	0.5	NM	NM	NM	NM
	9/13/2017	µg/l	3	<0.5	<0.5	<0.5	1.2
	(D) 9/13/2017	µg/l	NM	<0.5	NM	NM	NM
	9/5/2018	µg/l	0.785	<0.5	<0.5	<0.5	2.08
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	2.47
	9/17/2019	µg/l	<10	<10	<10	<10	<10
	(D) 9/17/2019	µg/l	NM	NM	<10	NM	NM
	9/15/2020	µg/l	1.19	0.6	0.449	0.64	0.22
	(D) 9/15/2020	µg/l	NM	NM	NM	0.75	NM
	9/7/2021	µg/l	1.89	0.535	0.682	<0.21	0.512
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	0.781
	9/6/2022	µg/l	1.95	0.652	1.35	<0.24	<0.24
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	<0.24
	9/5/2023	µg/l	0.739	3.34	0.62	0.48	0.365
	(D) 9/5/2023	µg/l	NM	NM	NM	0.451	NM
	9/3/2024	µg/l	0.433	<0.26	<0.26	<0.26	<0.26
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
	9/25/2025	µg/l	0.874	0.546	0.63	0.455	0.345
	(D) 9/25/2025	µg/l	NM	1.34	NM	NM	NM
Magnesium CL: 33656.75	9/8/2016	µg/l	10500	59500	10200	22300	17400
	(D) 9/8/2016	µg/l	11400	NM	NM	NM	NM
	9/13/2017	µg/l	26300	53600	17000	25100	70900
	(D) 9/13/2017	µg/l	NM	53600	NM	NM	NM
	9/5/2018	µg/l	30700	63600	39700	36800	42100
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	42500
	9/17/2019	µg/l	26200	58600	16100	29500	62400
	(D) 9/17/2019	µg/l	NM	NM	16100	NM	NM
	9/15/2020	µg/l	25000	51200	11100	29900	20400
	(D) 9/15/2020	µg/l	NM	NM	NM	28600	NM
	9/7/2021	µg/l	15900	52400	11700	19600	63000
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	62300
	9/6/2022	µg/l	25500	56900	14300	27200	65300
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	65700
	9/5/2023	µg/l	17300	53600	57300	25100	33500
	(D) 9/5/2023	µg/l	NM	NM	NM	24200	NM
	9/3/2024	µg/l	12300	54300	16300	15000	20800
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	21300	48700	39300	22600	37500
	(D) 9/25/2025	µg/l	NM	49700	NM	NM	NM
Manganese MCL: 300 CL: 1885.69	9/8/2016	µg/l	395	<10	<10	<10	<10
	(D) 9/8/2016	µg/l	431	NM	NM	NM	NM
	9/13/2017	µg/l	2300	14.6	43.7	33.5	456
	(D) 9/13/2017	µg/l	NM	12.6	NM	NM	NM
	9/5/2018	µg/l	299	23.1	177	11.6	312
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	387
	9/17/2019	µg/l	1240	184	61	<5	17
	(D) 9/17/2019	µg/l	NM	NM	53.9	NM	NM
	9/15/2020	µg/l	389	36.6	22.6	80.5	7
	(D) 9/15/2020	µg/l	NM	NM	NM	101	NM
	9/7/2021	µg/l	309	12.5	64.4	10.6	49.6
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	62.2
	9/6/2022	µg/l	1080	18.2	264	33.1	237
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	281
	9/5/2023	µg/l	233	91	71	26.9	5.44
	(D) 9/5/2023	µg/l	NM	NM	NM	26.7	NM
	9/3/2024	µg/l	204	116	234	5.4	56.9
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	464	14.3	220	40.5	64
	(D) 9/25/2025	µg/l	NM	39	NM	NM	NM
Potassium* CL: 4249.41	9/8/2016	µg/l	1530	<1000	1870	<1000	1220
	(D) 9/8/2016	µg/l	1330	NM	NM	NM	NM
	9/13/2017	µg/l	<1000	<1000	1740	<1000	<1000
	(D) 9/13/2017	µg/l	NM	<1000	NM	NM	NM
	9/5/2018	µg/l	<1000	<1000	2200	<1000	1490
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	1610
	9/17/2019	µg/l	2820	562	1890	<500	1280
	(D) 9/17/2019	µg/l	NM	NM	1830	NM	NM
	9/15/2020	µg/l	1150	455	722	344	774
	(D) 9/15/2020	µg/l	NM	NM	NM	331	NM
	9/7/2021	µg/l	3750	407	1120	281	667
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	659
	9/6/2022	µg/l	2430	447	963	488	595
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	611

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
	9/5/2023	µg/l	2500	332	1780	212	557
	(D) 9/5/2023	µg/l	NM	NM	NM	209	NM
	9/3/2024	µg/l	3630	422	1400	221	782
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	2630	327	3170	242	632
	(D) 9/25/2025	µg/l	NM	347	NM	NM	NM
Selenium (Total) (7782-49-2) MCL: 50 CL: 5.87	9/8/2016	µg/l	<5	7.2	<5	<5	<5
	(D) 9/8/2016	µg/l	<5	NM	NM	NM	NM
	9/13/2017	µg/l	<5	7.2	<5	<5	<5
	(D) 9/13/2017	µg/l	NM	7.4	NM	NM	NM
	9/5/2018	µg/l	<5	7.26	<5	<5	<5
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<5
	9/17/2019	µg/l	<15	<15	<15	<15	<15
	(D) 9/17/2019	µg/l	NM	NM	<15	NM	NM
	9/15/2020	µg/l	<1	4.5	1.51	<1	<1
	(D) 9/15/2020	µg/l	NM	NM	NM	<1	NM
	9/7/2021	µg/l	<0.96	5.75	<0.96	<0.96	<0.96
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	<0.96
	9/6/2022	µg/l	<0.96	6.08	<0.96	<0.96	<0.96
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	<0.96
	9/5/2023	µg/l	<1.4	5.58	<1.4	<1.4	<1.4
	(D) 9/5/2023	µg/l	NM	NM	NM	<1.4	NM
	9/3/2024	µg/l	<1.4	2.49	<1.4	<1.4	<1.4
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	<1.4	2.98	<1.4	<1.4	<1.4
	(D) 9/25/2025	µg/l	NM	2.82	NM	NM	NM
Sodium* HAL: 20000 CL: 23092.44	9/8/2016	µg/l	4390	15400	4780	21600	4080
	(D) 9/8/2016	µg/l	5110	NM	NM	NM	NM
	9/13/2017	µg/l	19200	17600	14000	24800	23800
	(D) 9/13/2017	µg/l	NM	17600	NM	NM	NM
	9/5/2018	µg/l	17800	16600	23300	1000	12100
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	12100
	9/17/2019	µg/l	17700	18000	9360	25900	21800
	(D) 9/17/2019	µg/l	NM	NM	9490	NM	NM
	9/15/2020	µg/l	15800	14800	9140	22800	7950
	(D) 9/15/2020	µg/l	NM	NM	NM	22400	NM
	9/7/2021	µg/l	10100	15700	9180	21900	36900
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	36500
	9/6/2022	µg/l	16600	17600	10600	23400	37500
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	37600
	9/5/2023	µg/l	9900	17500	53300	24100	14900
	(D) 9/5/2023	µg/l	NM	NM	NM	23400	NM
	9/3/2024	µg/l	3530	16100	10800	18500	7640
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	11800	15000	35000	20900	14500
	(D) 9/25/2025	µg/l	NM	15400	NM	NM	NM
Strontium* HAL: 4000	9/8/2016	µg/l	<100	239	<1000	169	<1000
	(D) 9/8/2016	µg/l	<100	NM	NM	NM	NM
	9/13/2017	µg/l	175	280	174	247	338
	(D) 9/13/2017	µg/l	NM	280	NM	NM	NM
	9/5/2018	µg/l	178	260	298	100	169
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	161
	9/17/2019	µg/l	205	287	199	237	318
	(D) 9/17/2019	µg/l	NM	NM	199	NM	NM
	9/15/2020	µg/l	180	233	124	262	112
	(D) 9/15/2020	µg/l	NM	NM	NM	233	NM

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
	9/7/2021	µg/l	155	255	133	172	267
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	262
	9/6/2022	µg/l	200	290	156	220	276
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	274
	9/5/2023	µg/l	170	304	593	189	167
	(D) 9/5/2023	µg/l	NM	NM	NM	181	NM
	9/3/2024	µg/l	145	242	197	131	135
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	171	214	460	169	187
Zinc (Total) (7440-66-6) SMCL: 5000 HAL: 2000 CL: 181.05	(D) 9/25/2025	µg/l	NM	215	NM	NM	NM
	9/8/2016	µg/l	<20	<20	<20	<20	<20
	(D) 9/8/2016	µg/l	<20	NM	NM	NM	NM
	9/13/2017	µg/l	267	<20	<20	<20	<20
	(D) 9/13/2017	µg/l	NM	<20	NM	NM	NM
	9/5/2018	µg/l	<20	<20	22.5	<20	<20
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	<20
	9/17/2019	µg/l	<50	<50	<50	<50	<50
	(D) 9/17/2019	µg/l	NM	NM	<50	NM	NM
	9/15/2020	µg/l	<10	128	<10	<10	<10
	(D) 9/15/2020	µg/l	NM	NM	NM	<10	NM
	9/7/2021	µg/l	<10	11.2	<10	<10	<10
	(D) 9/7/2021	µg/l	NM	NM	NM	NM	<10
	9/6/2022	µg/l	<10	14.2	12.6	<10	<10
	(D) 9/6/2022	µg/l	NM	NM	NM	NM	<10
	9/5/2023	µg/l	<6.4	32.3	8.19	<6.4	<6.4
	(D) 9/5/2023	µg/l	NM	NM	NM	<6.4	NM
	9/3/2024	µg/l	<9.7	11.9	<9.7	<9.7	<9.7
Chloride SMCL: 250000 CL: 24124.96	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	<13	14.2	<13	<13	<13
	(D) 9/25/2025	µg/l	NM	18.1	NM	NM	NM
	9/8/2016	µg/l	10300	<5000	<5000	12500	5290
	(D) 9/8/2016	µg/l	12100	NM	NM	NM	NM
	9/13/2017	µg/l	21700	<5000	10200	15800	39700
	(D) 9/13/2017	µg/l	NM	<5000	NM	NM	NM
	9/5/2018	µg/l	23300	<5000	47500	26300	12000
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	14300
	9/17/2019	µg/l	17500	3300	4200	15400	28900
	(D) 9/17/2019	µg/l	NM	NM	3500	NM	NM
	9/15/2020	µg/l	10200	4500	5540	16700	9790
	(D) 9/15/2020	µg/l	NM	NM	NM	14500	NM
	9/7/2021	µg/l	8800	4550	2380	2690	21600
	(D) 9/7/2021	µg/l	NM	4020	NM	NM	NM
	9/6/2022	µg/l	11900	358	<2.25	4250	19400
	(D) 9/6/2022	µg/l	NM	3610	NM	NM	NM
	9/5/2023	µg/l	14300	3130	68500	7700	13600
Sulfate SMCL: 250000 CL: 39640.17	(D) 9/5/2023	µg/l	NM	NM	NM	6370	NM
	9/3/2024	µg/l	3970	4650	15400	4660	10100
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	12900	2600	59700	10300	20600
	(D) 9/25/2025	µg/l	NM	2560	NM	NM	NM
	9/8/2016	µg/l	8750	352000	17400	69800	40900
	(D) 9/8/2016	µg/l	8560	NM	NM	NM	NM
	9/13/2017	µg/l	25900	340000	92000	64900	441000
	(D) 9/13/2017	µg/l	NM	337000	NM	NM	NM
	9/5/2018	µg/l	24600	351000	224000	79500	90600
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	119000

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
	9/17/2019	µg/l	29600	363000	49100	120000	349000
	(D) 9/17/2019	µg/l	NM	NM	49000	NM	NM
	9/15/2020	µg/l	39600	327000	26800	106000	102000
	(D) 9/15/2020	µg/l	NM	NM	NM	120000	NM
	9/7/2021	µg/l	15100	354000	42500	53400	435000
	(D) 9/7/2021	µg/l	NM	355000	NM	NM	NM
	9/6/2022	µg/l	18800	327000	47500	72800	416000
	(D) 9/6/2022	µg/l	NM	319000	NM	NM	NM
	9/5/2023	µg/l	26300	386000	713000	154000	244000
	(D) 9/5/2023	µg/l	NM	NM	NM	137000	NM
	9/3/2024	µg/l	7040	298000	129000	62200	97000
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	19800	302000	554000	188000	282000
	(D) 9/25/2025	µg/l	NM	300000	NM	NM	NM
Alkalinity*	9/8/2016	µg/l	88800	247000	98700	173000	128000
CL: 78768.78 to 343703.94	(D) 9/8/2016	µg/l	88800	NM	NM	NM	NM
	9/13/2017	µg/l	252000	257000	123000	227000	296000
	(D) 9/13/2017	µg/l	NM	257000	NM	NM	NM
	9/5/2018	µg/l	294000	265000	10700	241000	246000
	(D) 9/5/2018	µg/l	NM	NM	NM	NM	243000
	9/17/2019	µg/l	271000	286000	180000	238000	279000
	(D) 9/17/2019	µg/l	NM	NM	178000	NM	NM
	9/15/2020	µg/l	211000	227000	64800	227000	151000
	(D) 9/15/2020	µg/l	NM	NM	NM	227000	NM
	9/7/2021	µg/l	206000	283000	124000	180000	263000
	(D) 9/7/2021	µg/l	NM	283000	NM	NM	NM
	9/6/2022	µg/l	266000	285000	114000	209000	285000
	(D) 9/6/2022	µg/l	NM	266000	NM	NM	NM
	9/5/2023	µg/l	234000	244000	119000	173000	220000
	(D) 9/5/2023	µg/l	NM	NM	NM	173000	NM
	9/3/2024	µg/l	170000	260000	131000	158000	196000
	(D) 9/3/2024	µg/l	NM	NM	NM	NM	NM
	9/25/2025	µg/l	242000	261000	129000	183000	231000
	(D) 9/25/2025	µg/l	NM	260000	NM	NM	NM
ph (field)*	9/8/2016	SU	6.67	7.07	6.58	6.68	6.88
SMCL: 6.5 to 8.5	(D) 9/8/2016	SU	6.67	NM	NM	NM	NM
	9/13/2017	SU	6.86	7.22	6.44	6.76	6.62
	(D) 9/13/2017	SU	NM	7.22	NM	NM	NM
	9/5/2018	SU	6.84	7.22	6.44	6.76	6.62
	(D) 9/5/2018	SU	NM	NM	NM	NM	6.62
	9/17/2019	SU	6.86	7.97	7.22	7.49	7.45
	(D) 9/17/2019	SU	NM	NM	7.22	NM	NM
	9/15/2020	SU	6.71	7.02	6.88	6.5	6.59
	(D) 9/15/2020	SU	NM	NM	NM	6.5	NM
	9/7/2021	SU	8.5	8.2	8	8.1	8
	(D) 9/7/2021	SU	NM	NM	NM	NM	NM
	9/6/2022	SU	7.35	7.49	6.77	7.03	7.14
	(D) 9/6/2022	SU	NM	7.49	NM	NM	NM
	9/5/2023	SU	7.27	7.58	6.9	6.94	7.02
	(D) 9/5/2023	SU	NM	NM	NM	6.94	NM
	9/3/2024	SU	7.2	7.11	6.85	6.79	7.15
	(D) 9/3/2024	SU	NM	NM	NM	NM	7.15
	9/25/2025	SU	6.97	7.36	7	7.15	7.35
	(D) 9/25/2025	SU	NM	7.36	NM	NM	NM
ph (lab)*	9/8/2016	SU	6.82	7.29	6.75	6.82	7.09
	(D) 9/8/2016	SU	6.87	NM	NM	NM	NM

Constituent (CAS #)	Sample Date	Units	MW1-91	FL-9	MW3-91	MW5-91	MW6-91
SMCL: 6.5 to 8.5 CL: 6.74 to 7.33	9/13/2017	SU	7.06	7.44	6.69	6.96	6.82
	(D) 9/13/2017	SU	NM	7.44	NM	NM	NM
	9/5/2018	SU	6.84	7.26	6.73	7.01	6.98
	(D) 9/5/2018	SU	NM	NM	NM	NM	6.98
	9/17/2019	SU	7.3	7.3	7	7	6.9
	(D) 9/17/2019	SU	NM	NM	7	NM	NM
	9/15/2020	SU	7.03	6.96	6.7	6.96	7.21
	(D) 9/15/2020	SU	NM	NM	NM	6.96	NM
	9/7/2021	SU	7.01	7.29	6.5	6.73	6.71
	(D) 9/7/2021	SU	NM	7.41	NM	NM	NM
	9/6/2022	SU	6.99	7.38	6.59	6.78	6.77
	(D) 9/6/2022	SU	NM	7.41	NM	NM	NM
	9/5/2023	SU	7.14	7.51	6.6	7.12	7.14
	(D) 9/5/2023	SU	NM	NM	NM	7.03	NM
	9/3/2024	SU	7.22	7.39	6.74	6.95	7.15
	(D) 9/3/2024	SU	NM	NM	NM	NM	NM
	9/25/2025	SU	7.13	7.46	6.68	6.87	6.97
	(D) 9/25/2025	SU	NM	7.49	NM	NM	NM

Comments:

1. MCL: = USEPA Maximum Contaminant Level
2. HAL: = Health Advisory Level
3. SMCL: = USEPA Secondary MCL:
4. SS: = Iowa Statewide Standards
5. CL: = Control Limit (Background)
6. (D) = Duplicate Sample
7. * = Supplemental Constituent

This worksheet;

- 1) Looks for gaps in data record and if an explanation for those gaps was prepared.
- 2) Examines if RLs are reasonable and if they have changed over the course of the project.

Table 9
Historic Control Limit & Action Level Exceedances
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Monitoring Well	Constituent	F a l l	F a l l	F a l l	F a l l	F a l l	F a l l	F a l l	F a l l	F a l l	F a l l
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MW1-91	Cobalt										
	Manganese										
	Aluminum										
	Iron										
FL-9	Barium										
	Calcium										
	Magnesium										
	Selenium										
	Sulfate										
	pH										
	Aluminum										
	Iron										
MW3-91	Boron										
	Calcium										
	Cobalt										
	Magnesium										
	Chloride										
	Sulfate										
	pH										
	Aluminum										
	Iron										
	Sodium										
MW5-91	Boron										
	Calcium										
	Magnesium										
	Chloride										
	Sulfate										
	Sodium										
MW6-91	Aluminum										
	Boron										
	Calcium										
	Magnesium										
	Sodium										
	Chloride										
	Sulfate										
	Iron										
	Manganese										

Comments:

1. Gray = Control Limit (CL)
2. Black = Action Level (AL)
3. CL from 2021 used for 2016 through 2021

This worksheet;

- 1) Summarizes the historical extent of groundwater impact,
- 2) Tracks GWQAP effectiveness, and
- 3) Potentially highlights sequential degradation of contaminants of concern.

Table 10
Groundwater Quality Assessment Plan Trend Analysis
2025 Annual Water Quality Report
IAAAP - CCR Landfill
Permit No. 29-SDP-03-82P

Well	Current AL Exceedance	Trend
-	-	-

Comments:

1. No Wells in "Corrective Action"

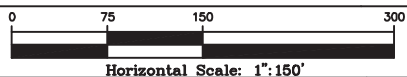
This worksheet;

1) Summarizes progress to ending groundwater quality assessment.



EnviroNET Inc.

DESIGNED: JRK
DRAWN: JRF
CHECKED: JRK



Site Base Map Including Historical Monitoring Locations

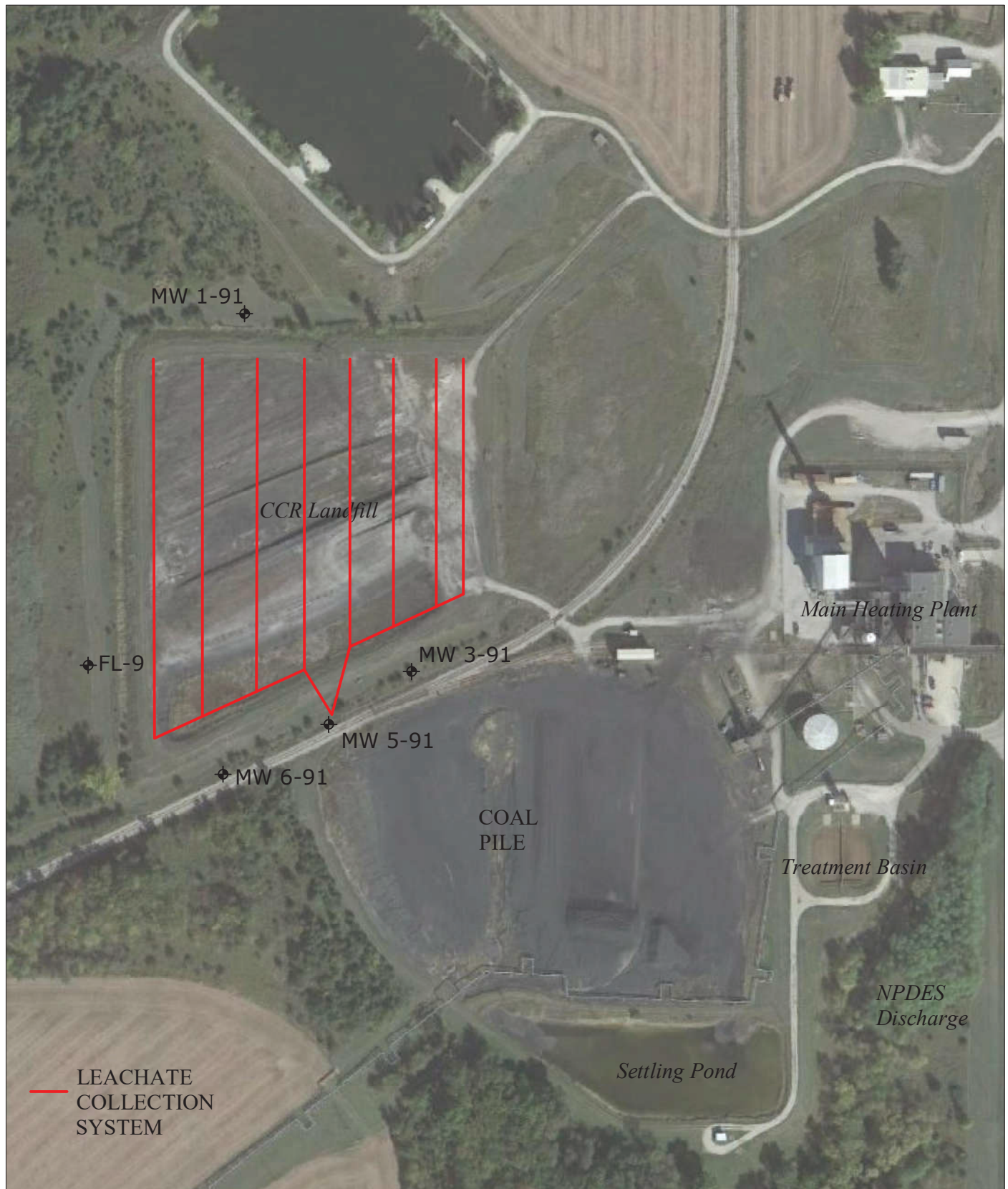
American Ordinance CCR Landfill
Middletown, IA

2020 Annual Water Quality Report

SHEET:
FIGURE 1

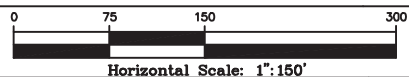
JOB NUMBER:
200005

DATE:
Oct. 2020



EnviroNET Inc.

DESIGNED: JRK
 DRAWN: JRF
 CHECKED: JRK



Site Base Map with Current Monitoring Locations

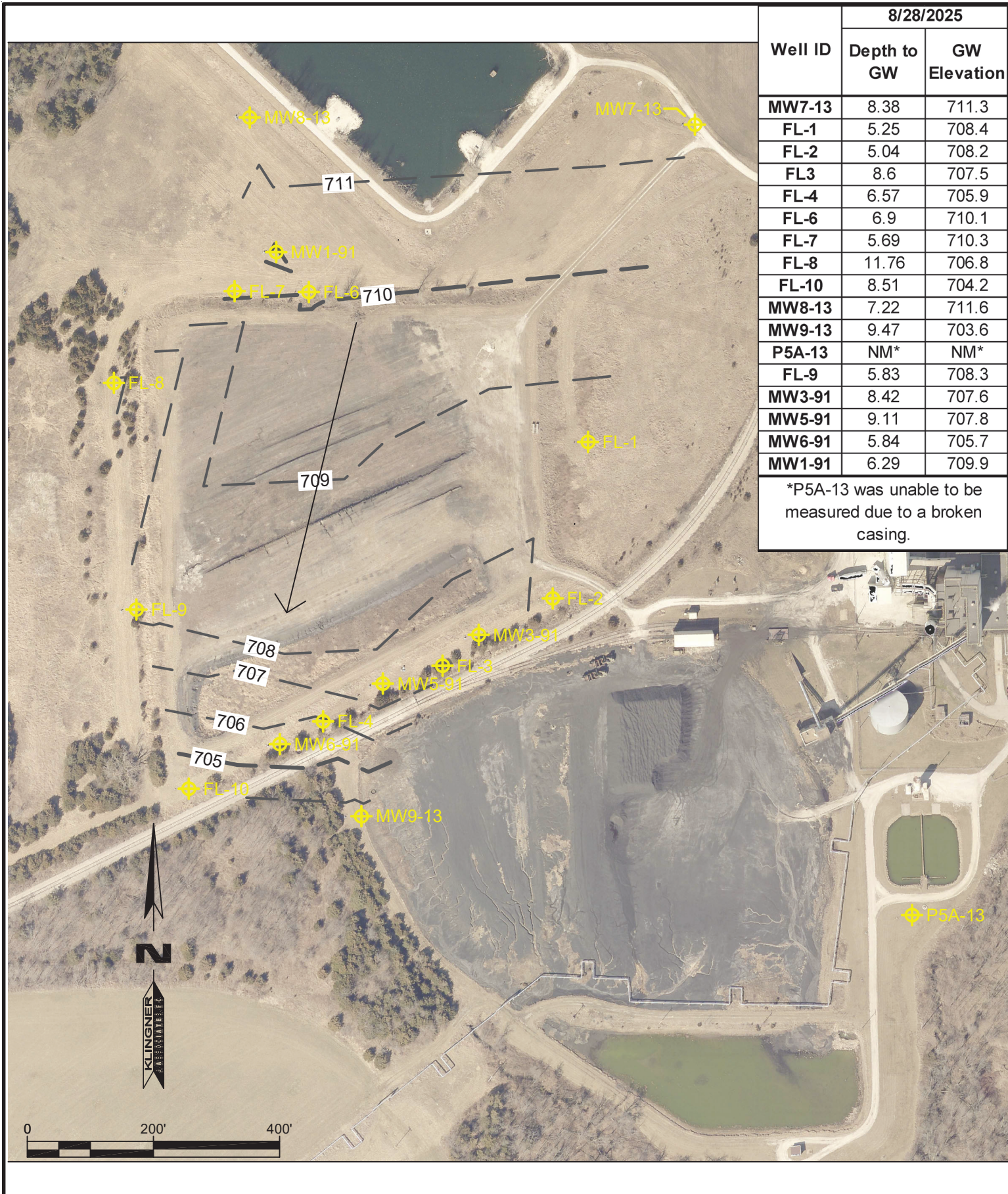
American Ordinance CCR Landfill
 Middletown, IA

2020 Annual Water Quality Report

SHEET:
 FIGURE 1A

JOB NUMBER:
 200005

DATE:
 Oct. 2020



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P:\BURLINGTON\02195_1A\004\084_212056 AMERICAN ORDNANCE - CCR LANDFILL ANNUAL SAMPLING\19.ENV\ROLANDFILL\2025\FIGURE 2 2025 CCR LANDFILL GW ELEVATIONS.DWG

CCR LANDFILL ANNUAL SAMPLING

AMERICAN ORDNANCE, LLC
 IOWA ARMY AMMUNITION PLANT
 17575 DMC HIGHWAY 79
 MIDDLETOWN, IOWA 52638

Non-Reduced Sheet Size: 8.5" x 11"	
DESIGNED JAC	DRAWN STT
FIELD	FIELD BOOK
CHECKED	CHECK DATE
DRAWING ISSUED DATE: 10/17/2025	
PROJECT NO. 2195-84 / 21-2056	

SHEET TITLE GROUNDWATER POTENTIOMETRIC SURFACE MAP SHALLOW AQUAIFER	
SHEET FIGURE 2	

Appendix A

Laboratory Analytical Reports

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Jessica A Coca, P.E.
Klingner & Associates PC
610 N 4th St
Suite #100
Burlington, Iowa 52601

Generated 10/10/2025 4:32:44 PM

JOB DESCRIPTION

American Ordnance CCR Landfill

JOB NUMBER

310-316624-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



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Authorized for release by
Charlotte Collins, Project Management Assistant I
Charlotte.Collins@et.eurofinsus.com
(319)595-2025



Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	5
Detection Summary	6
Client Sample Results	9
Definitions	16
QC Sample Results	17
QC Association	21
Chronicle	23
Certification Summary	25
Method Summary	26
Chain of Custody	27
Receipt Checklists	29

Case Narrative

Client: Klingner & Associates PC
Project: American Ordnance CCR Landfill

Job ID: 310-316624-1

Job ID: 310-316624-1

Eurofins Cedar Falls

Job Narrative 310-316624-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

Receipt

The samples were received on 9/26/2025 9:05 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 0.1°C.

HPLC/IC

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

Metals

Method 6020B: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of >2: Field Blank (310-316624-7). The sample(s) was preserved to the appropriate pH in the laboratory.

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.

Eurofins Cedar Falls

Sample Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-316624-1	MW-1-91	Water	09/25/25 09:40	09/26/25 09:05	Iowa
310-316624-2	MW-3-91	Water	09/25/25 10:25	09/26/25 09:05	Iowa
310-316624-3	MW-5-91	Water	09/25/25 10:15	09/26/25 09:05	Iowa
310-316624-4	MW-6-91	Water	09/25/25 10:05	09/26/25 09:05	Iowa
310-316624-5	FL-9	Water	09/25/25 09:50	09/26/25 09:05	Iowa
310-316624-6	Duplicate	Water	09/25/25 10:35	09/26/25 09:05	Iowa
310-316624-7	Field Blank	Water	09/25/25 10:45	09/26/25 09:05	Iowa

Detection Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-1-91

Lab Sample ID: 310-316624-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	12.9		5.00	2.25	mg/L	5			9056A	Total/NA
Sulfate	19.8		5.00	2.10	mg/L	5			9056A	Total/NA
Aluminum	0.200		0.0500	0.0290	mg/L	1			6020B	Total/NA
Arsenic	0.00312		0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.165		0.00200	0.000660	mg/L	1			6020B	Total/NA
Calcium	68.2		0.500	0.190	mg/L	1			6020B	Total/NA
Cobalt	0.00280		0.000500	0.000170	mg/L	1			6020B	Total/NA
Iron	4.03		0.100	0.0500	mg/L	1			6020B	Total/NA
Lead	0.000874		0.000500	0.000330	mg/L	1			6020B	Total/NA
Magnesium	21.3		0.500	0.150	mg/L	1			6020B	Total/NA
Manganese	0.464		0.0100	0.00360	mg/L	1			6020B	Total/NA
Potassium	2.63		0.500	0.170	mg/L	1			6020B	Total/NA
Sodium	11.8		1.00	0.650	mg/L	1			6020B	Total/NA
Strontium	0.171		0.00100	0.000530	mg/L	1			6020B	Total/NA
pH	7.13	HF	1.00	1.00	SU	1			9040C	Total/NA
Alkalinity as CaCO3 to pH 4.5	242		5.00	2.50	mg/L	1			SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	242		5.00	2.50	mg/L	1			SM 2320B	Total/NA

Client Sample ID: MW-3-91

Lab Sample ID: 310-316624-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	59.7		5.00	2.25	mg/L	5			9056A	Total/NA
Sulfate	554		50.0	21.0	mg/L	50			9056A	Total/NA
Aluminum	0.128		0.0500	0.0290	mg/L	1			6020B	Total/NA
Arsenic	0.000917	J	0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.206		0.00200	0.000660	mg/L	1			6020B	Total/NA
Boron	0.128		0.100	0.0820	mg/L	1			6020B	Total/NA
Cadmium	0.000215		0.000200	0.000100	mg/L	1			6020B	Total/NA
Calcium	142		0.500	0.190	mg/L	1			6020B	Total/NA
Cobalt	0.00451		0.000500	0.000170	mg/L	1			6020B	Total/NA
Iron	0.362		0.100	0.0500	mg/L	1			6020B	Total/NA
Lead	0.000630		0.000500	0.000330	mg/L	1			6020B	Total/NA
Magnesium	39.3		0.500	0.150	mg/L	1			6020B	Total/NA
Manganese	0.220		0.0100	0.00360	mg/L	1			6020B	Total/NA
Potassium	3.17		0.500	0.170	mg/L	1			6020B	Total/NA
Sodium	35.0		1.00	0.650	mg/L	1			6020B	Total/NA
Strontium	0.460		0.00100	0.000530	mg/L	1			6020B	Total/NA
pH	6.68	HF	1.00	1.00	SU	1			9040C	Total/NA
Alkalinity as CaCO3 to pH 4.5	129		5.00	2.50	mg/L	1			SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	129		5.00	2.50	mg/L	1			SM 2320B	Total/NA

Client Sample ID: MW-5-91

Lab Sample ID: 310-316624-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	10.3		5.00	2.25	mg/L	5			9056A	Total/NA
Sulfate	188		5.00	2.10	mg/L	5			9056A	Total/NA
Aluminum	0.0587		0.0500	0.0290	mg/L	1			6020B	Total/NA
Barium	0.0805		0.00200	0.000660	mg/L	1			6020B	Total/NA
Boron	0.199		0.100	0.0820	mg/L	1			6020B	Total/NA
Cadmium	0.000115	J	0.000200	0.000100	mg/L	1			6020B	Total/NA
Calcium	52.2		0.500	0.190	mg/L	1			6020B	Total/NA
Cobalt	0.000901		0.000500	0.000170	mg/L	1			6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-5-91 (Continued)

Lab Sample ID: 310-316624-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Iron	0.110		0.100	0.0500	mg/L		1		6020B	Total/NA
Lead	0.000455	J	0.000500	0.000330	mg/L		1		6020B	Total/NA
Magnesium	22.6		0.500	0.150	mg/L		1		6020B	Total/NA
Manganese	0.0405		0.0100	0.00360	mg/L		1		6020B	Total/NA
Potassium	0.242	J	0.500	0.170	mg/L		1		6020B	Total/NA
Sodium	20.9		1.00	0.650	mg/L		1		6020B	Total/NA
Strontium	0.169		0.00100	0.000530	mg/L		1		6020B	Total/NA
pH	6.87	HF	1.00	1.00	SU		1		9040C	Total/NA
Alkalinity as CaCO3 to pH 4.5	183		5.00	2.50	mg/L		1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	183		5.00	2.50	mg/L		1		SM 2320B	Total/NA

Client Sample ID: MW-6-91

Lab Sample ID: 310-316624-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	20.6		5.00	2.25	mg/L		5		9056A	Total/NA
Sulfate	282		5.00	2.10	mg/L		5		9056A	Total/NA
Aluminum	0.147		0.0500	0.0290	mg/L		1		6020B	Total/NA
Arsenic	0.000536	J	0.00200	0.000530	mg/L		1		6020B	Total/NA
Barium	0.0670		0.00200	0.000660	mg/L		1		6020B	Total/NA
Boron	0.157		0.100	0.0820	mg/L		1		6020B	Total/NA
Calcium	107		0.500	0.190	mg/L		1		6020B	Total/NA
Cobalt	0.000782		0.000500	0.000170	mg/L		1		6020B	Total/NA
Iron	0.168		0.100	0.0500	mg/L		1		6020B	Total/NA
Lead	0.000345	J	0.000500	0.000330	mg/L		1		6020B	Total/NA
Magnesium	37.5		0.500	0.150	mg/L		1		6020B	Total/NA
Manganese	0.0640		0.0100	0.00360	mg/L		1		6020B	Total/NA
Potassium	0.632		0.500	0.170	mg/L		1		6020B	Total/NA
Sodium	14.5		1.00	0.650	mg/L		1		6020B	Total/NA
Strontium	0.187		0.00100	0.000530	mg/L		1		6020B	Total/NA
pH	6.97	HF	1.00	1.00	SU		1		9040C	Total/NA
Alkalinity as CaCO3 to pH 4.5	231		5.00	2.50	mg/L		1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO3	231		5.00	2.50	mg/L		1		SM 2320B	Total/NA

Client Sample ID: FL-9

Lab Sample ID: 310-316624-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Chloride	2.60	J	5.00	2.25	mg/L		5		9056A	Total/NA
Sulfate	302		5.00	2.10	mg/L		5		9056A	Total/NA
Aluminum	0.0503		0.0500	0.0290	mg/L		1		6020B	Total/NA
Barium	0.0468		0.00200	0.000660	mg/L		1		6020B	Total/NA
Cadmium	0.000114	J	0.000200	0.000100	mg/L		1		6020B	Total/NA
Calcium	130		0.500	0.190	mg/L		1		6020B	Total/NA
Cobalt	0.000288	J	0.000500	0.000170	mg/L		1		6020B	Total/NA
Iron	0.190		0.100	0.0500	mg/L		1		6020B	Total/NA
Lead	0.000546		0.000500	0.000330	mg/L		1		6020B	Total/NA
Magnesium	48.7		0.500	0.150	mg/L		1		6020B	Total/NA
Manganese	0.0143		0.0100	0.00360	mg/L		1		6020B	Total/NA
Potassium	0.327	J	0.500	0.170	mg/L		1		6020B	Total/NA
Selenium	0.00298	J	0.00500	0.00140	mg/L		1		6020B	Total/NA
Sodium	15.0		1.00	0.650	mg/L		1		6020B	Total/NA
Strontium	0.214		0.00100	0.000530	mg/L		1		6020B	Total/NA
Zinc	0.0142	J	0.0200	0.0130	mg/L		1		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: FL-9 (Continued)

Lab Sample ID: 310-316624-5

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	7.46	HF	1.00	1.00	SU	1		9040C	Total/NA
Alkalinity as CaCO ₃ to pH 4.5	261		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO ₃	261		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Duplicate

Lab Sample ID: 310-316624-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	2.56	J	5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	300		5.00	2.10	mg/L	5		9056A	Total/NA
Aluminum	0.129		0.0500	0.0290	mg/L	1		6020B	Total/NA
Arsenic	0.000791	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0462		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000100	J	0.000200	0.000100	mg/L	1		6020B	Total/NA
Calcium	123		0.500	0.190	mg/L	1		6020B	Total/NA
Cobalt	0.000694		0.000500	0.000170	mg/L	1		6020B	Total/NA
Iron	0.496		0.100	0.0500	mg/L	1		6020B	Total/NA
Lead	0.00134	B	0.000500	0.000330	mg/L	1		6020B	Total/NA
Magnesium	49.7		0.500	0.150	mg/L	1		6020B	Total/NA
Manganese	0.0390		0.0100	0.00360	mg/L	1		6020B	Total/NA
Potassium	0.347	J	0.500	0.170	mg/L	1		6020B	Total/NA
Selenium	0.00282	J	0.00500	0.00140	mg/L	1		6020B	Total/NA
Sodium	15.4		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	0.215		0.00100	0.000530	mg/L	1		6020B	Total/NA
Zinc	0.0181	J	0.0200	0.0130	mg/L	1		6020B	Total/NA
pH	7.49	HF	1.00	1.00	SU	1		9040C	Total/NA
Alkalinity as CaCO ₃ to pH 4.5	260		5.00	2.50	mg/L	1		SM 2320B	Total/NA
Bicarbonate Alkalinity as CaCO ₃	260		5.00	2.50	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Field Blank

Lab Sample ID: 310-316624-7

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
pH	5.85	HF	1.00	1.00	SU	1		9040C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-1-91

Lab Sample ID: 310-316624-1

Date Collected: 09/25/25 09:40

Matrix: Water

Date Received: 09/26/25 09:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12.9		5.00	2.25	mg/L			09/30/25 10:21	5
Sulfate	19.8		5.00	2.10	mg/L			09/30/25 10:21	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.200		0.0500	0.0290	mg/L		10/01/25 09:00	10/08/25 18:14	1
Arsenic	0.00312		0.00200	0.000530	mg/L		10/01/25 09:00	10/08/25 18:14	1
Barium	0.165		0.00200	0.000660	mg/L		10/01/25 09:00	10/08/25 18:14	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/01/25 09:00	10/08/25 18:14	1
Boron	<0.0820		0.100	0.0820	mg/L		10/01/25 09:00	10/10/25 14:27	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/01/25 09:00	10/08/25 18:14	1
Calcium	68.2		0.500	0.190	mg/L		10/01/25 09:00	10/08/25 18:14	1
Cobalt	0.00280		0.000500	0.000170	mg/L		10/01/25 09:00	10/08/25 18:14	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/01/25 09:00	10/08/25 18:14	1
Iron	4.03		0.100	0.0500	mg/L		10/01/25 09:00	10/08/25 18:14	1
Lead	0.000874		0.000500	0.000330	mg/L		10/01/25 09:00	10/08/25 18:14	1
Magnesium	21.3		0.500	0.150	mg/L		10/01/25 09:00	10/08/25 18:14	1
Manganese	0.464		0.0100	0.00360	mg/L		10/01/25 09:00	10/08/25 18:14	1
Potassium	2.63		0.500	0.170	mg/L		10/01/25 09:00	10/08/25 18:14	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/01/25 09:00	10/08/25 18:14	1
Sodium	11.8		1.00	0.650	mg/L		10/01/25 09:00	10/08/25 18:14	1
Strontium	0.171		0.00100	0.000530	mg/L		10/01/25 09:00	10/08/25 18:14	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/01/25 09:00	10/08/25 18:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	242		5.00	2.50	mg/L			10/01/25 17:19	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	242		5.00	2.50	mg/L			10/01/25 17:19	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9040C)	7.13	HF	1.00	1.00	SU			09/26/25 12:02	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-3-91

Lab Sample ID: 310-316624-2

Date Collected: 09/25/25 10:25

Matrix: Water

Date Received: 09/26/25 09:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	59.7		5.00	2.25	mg/L			09/30/25 10:35	5
Sulfate	554		50.0	21.0	mg/L			09/30/25 11:29	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.128		0.0500	0.0290	mg/L		10/01/25 09:00	10/08/25 18:17	1
Arsenic	0.000917	J	0.00200	0.000530	mg/L		10/01/25 09:00	10/08/25 18:17	1
Barium	0.206		0.00200	0.000660	mg/L		10/01/25 09:00	10/08/25 18:17	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/01/25 09:00	10/08/25 18:17	1
Boron	0.128		0.100	0.0820	mg/L		10/01/25 09:00	10/10/25 14:30	1
Cadmium	0.000215		0.000200	0.000100	mg/L		10/01/25 09:00	10/08/25 18:17	1
Calcium	142		0.500	0.190	mg/L		10/01/25 09:00	10/08/25 18:17	1
Cobalt	0.00451		0.000500	0.000170	mg/L		10/01/25 09:00	10/08/25 18:17	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/01/25 09:00	10/08/25 18:17	1
Iron	0.362		0.100	0.0500	mg/L		10/01/25 09:00	10/08/25 18:17	1
Lead	0.000630		0.000500	0.000330	mg/L		10/01/25 09:00	10/08/25 18:17	1
Magnesium	39.3		0.500	0.150	mg/L		10/01/25 09:00	10/08/25 18:17	1
Manganese	0.220		0.0100	0.00360	mg/L		10/01/25 09:00	10/08/25 18:17	1
Potassium	3.17		0.500	0.170	mg/L		10/01/25 09:00	10/08/25 18:17	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/01/25 09:00	10/08/25 18:17	1
Sodium	35.0		1.00	0.650	mg/L		10/01/25 09:00	10/08/25 18:17	1
Strontium	0.460		0.00100	0.000530	mg/L		10/01/25 09:00	10/08/25 18:17	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/01/25 09:00	10/08/25 18:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	129		5.00	2.50	mg/L			10/01/25 17:28	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	129		5.00	2.50	mg/L			10/01/25 17:28	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9040C)	6.68	HF	1.00	1.00	SU			09/26/25 12:01	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-5-91

Lab Sample ID: 310-316624-3

Date Collected: 09/25/25 10:15

Matrix: Water

Date Received: 09/26/25 09:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	10.3		5.00	2.25	mg/L			09/30/25 10:49	5
Sulfate	188		5.00	2.10	mg/L			09/30/25 10:49	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.0587		0.0500	0.0290	mg/L		10/01/25 09:00	10/08/25 18:20	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/01/25 09:00	10/08/25 18:20	1
Barium	0.0805		0.00200	0.000660	mg/L		10/01/25 09:00	10/08/25 18:20	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/01/25 09:00	10/08/25 18:20	1
Boron	0.199		0.100	0.0820	mg/L		10/01/25 09:00	10/10/25 14:32	1
Cadmium	0.000115	J	0.000200	0.000100	mg/L		10/01/25 09:00	10/08/25 18:20	1
Calcium	52.2		0.500	0.190	mg/L		10/01/25 09:00	10/08/25 18:20	1
Cobalt	0.000901		0.000500	0.000170	mg/L		10/01/25 09:00	10/08/25 18:20	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/01/25 09:00	10/08/25 18:20	1
Iron	0.110		0.100	0.0500	mg/L		10/01/25 09:00	10/08/25 18:20	1
Lead	0.000455	J	0.000500	0.000330	mg/L		10/01/25 09:00	10/08/25 18:20	1
Magnesium	22.6		0.500	0.150	mg/L		10/01/25 09:00	10/08/25 18:20	1
Manganese	0.0405		0.0100	0.00360	mg/L		10/01/25 09:00	10/08/25 18:20	1
Potassium	0.242	J	0.500	0.170	mg/L		10/01/25 09:00	10/08/25 18:20	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/01/25 09:00	10/08/25 18:20	1
Sodium	20.9		1.00	0.650	mg/L		10/01/25 09:00	10/08/25 18:20	1
Strontium	0.169		0.00100	0.000530	mg/L		10/01/25 09:00	10/08/25 18:20	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/01/25 09:00	10/08/25 18:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	183		5.00	2.50	mg/L			10/01/25 17:36	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	183		5.00	2.50	mg/L			10/01/25 17:36	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9040C)	6.87	HF	1.00	1.00	SU			09/26/25 12:03	1

Client Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-6-91

Lab Sample ID: 310-316624-4

Date Collected: 09/25/25 10:05

Matrix: Water

Date Received: 09/26/25 09:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	20.6		5.00	2.25	mg/L			09/30/25 11:02	5
Sulfate	282		5.00	2.10	mg/L			09/30/25 11:02	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.147		0.0500	0.0290	mg/L		10/01/25 09:00	10/08/25 18:23	1
Arsenic	0.000536	J	0.00200	0.000530	mg/L		10/01/25 09:00	10/08/25 18:23	1
Barium	0.0670		0.00200	0.000660	mg/L		10/01/25 09:00	10/08/25 18:23	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/01/25 09:00	10/08/25 18:23	1
Boron	0.157		0.100	0.0820	mg/L		10/01/25 09:00	10/10/25 14:35	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/01/25 09:00	10/08/25 18:23	1
Calcium	107		0.500	0.190	mg/L		10/01/25 09:00	10/08/25 18:23	1
Cobalt	0.000782		0.000500	0.000170	mg/L		10/01/25 09:00	10/08/25 18:23	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/01/25 09:00	10/08/25 18:23	1
Iron	0.168		0.100	0.0500	mg/L		10/01/25 09:00	10/08/25 18:23	1
Lead	0.000345	J	0.000500	0.000330	mg/L		10/01/25 09:00	10/08/25 18:23	1
Magnesium	37.5		0.500	0.150	mg/L		10/01/25 09:00	10/08/25 18:23	1
Manganese	0.0640		0.0100	0.00360	mg/L		10/01/25 09:00	10/08/25 18:23	1
Potassium	0.632		0.500	0.170	mg/L		10/01/25 09:00	10/08/25 18:23	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/01/25 09:00	10/08/25 18:23	1
Sodium	14.5		1.00	0.650	mg/L		10/01/25 09:00	10/08/25 18:23	1
Strontium	0.187		0.00100	0.000530	mg/L		10/01/25 09:00	10/08/25 18:23	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/01/25 09:00	10/08/25 18:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	231		5.00	2.50	mg/L			10/01/25 17:45	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	231		5.00	2.50	mg/L			10/01/25 17:45	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9040C)	6.97	HF	1.00	1.00	SU			09/26/25 11:59	1

Client Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: FL-9

Lab Sample ID: 310-316624-5

Date Collected: 09/25/25 09:50

Matrix: Water

Date Received: 09/26/25 09:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.60	J	5.00	2.25	mg/L			09/30/25 11:16	5
Sulfate	302		5.00	2.10	mg/L			09/30/25 11:16	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.0503		0.0500	0.0290	mg/L		10/01/25 09:00	10/08/25 18:31	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/01/25 09:00	10/08/25 18:31	1
Barium	0.0468		0.00200	0.000660	mg/L		10/01/25 09:00	10/08/25 18:31	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/01/25 09:00	10/08/25 18:31	1
Boron	<0.0820		0.100	0.0820	mg/L		10/01/25 09:00	10/10/25 14:38	1
Cadmium	0.000114	J	0.000200	0.000100	mg/L		10/01/25 09:00	10/08/25 18:31	1
Calcium	130		0.500	0.190	mg/L		10/01/25 09:00	10/08/25 18:31	1
Cobalt	0.000288	J	0.000500	0.000170	mg/L		10/01/25 09:00	10/08/25 18:31	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/01/25 09:00	10/08/25 18:31	1
Iron	0.190		0.100	0.0500	mg/L		10/01/25 09:00	10/08/25 18:31	1
Lead	0.000546		0.000500	0.000330	mg/L		10/01/25 09:00	10/08/25 18:31	1
Magnesium	48.7		0.500	0.150	mg/L		10/01/25 09:00	10/08/25 18:31	1
Manganese	0.0143		0.0100	0.00360	mg/L		10/01/25 09:00	10/08/25 18:31	1
Potassium	0.327	J	0.500	0.170	mg/L		10/01/25 09:00	10/08/25 18:31	1
Selenium	0.00298	J	0.00500	0.00140	mg/L		10/01/25 09:00	10/08/25 18:31	1
Sodium	15.0		1.00	0.650	mg/L		10/01/25 09:00	10/08/25 18:31	1
Strontium	0.214		0.00100	0.000530	mg/L		10/01/25 09:00	10/08/25 18:31	1
Zinc	0.0142	J	0.0200	0.0130	mg/L		10/01/25 09:00	10/08/25 18:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	261		5.00	2.50	mg/L			10/01/25 17:54	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	261		5.00	2.50	mg/L			10/01/25 17:54	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9040C)	7.46	HF	1.00	1.00	SU			09/26/25 12:00	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: Duplicate

Lab Sample ID: 310-316624-6

Date Collected: 09/25/25 10:35

Matrix: Water

Date Received: 09/26/25 09:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2.56	J	5.00	2.25	mg/L			09/30/25 12:37	5
Sulfate	300		5.00	2.10	mg/L			09/30/25 12:37	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.129		0.0500	0.0290	mg/L		10/02/25 09:00	10/07/25 17:35	1
Arsenic	0.000791	J	0.00200	0.000530	mg/L		10/02/25 09:00	10/07/25 17:35	1
Barium	0.0462		0.00200	0.000660	mg/L		10/02/25 09:00	10/07/25 17:35	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/02/25 09:00	10/07/25 17:35	1
Boron	<0.0820		0.100	0.0820	mg/L		10/02/25 09:00	10/07/25 17:35	1
Cadmium	0.000100	J	0.000200	0.000100	mg/L		10/02/25 09:00	10/07/25 17:35	1
Calcium	123		0.500	0.190	mg/L		10/02/25 09:00	10/07/25 17:35	1
Cobalt	0.000694		0.000500	0.000170	mg/L		10/02/25 09:00	10/07/25 17:35	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/02/25 09:00	10/07/25 17:35	1
Iron	0.496		0.100	0.0500	mg/L		10/02/25 09:00	10/07/25 17:35	1
Lead	0.00134	B	0.000500	0.000330	mg/L		10/02/25 09:00	10/07/25 17:35	1
Magnesium	49.7		0.500	0.150	mg/L		10/02/25 09:00	10/07/25 17:35	1
Manganese	0.0390		0.0100	0.00360	mg/L		10/02/25 09:00	10/07/25 17:35	1
Potassium	0.347	J	0.500	0.170	mg/L		10/02/25 09:00	10/07/25 17:35	1
Selenium	0.00282	J	0.00500	0.00140	mg/L		10/02/25 09:00	10/07/25 17:35	1
Sodium	15.4		1.00	0.650	mg/L		10/02/25 09:00	10/07/25 17:35	1
Strontium	0.215		0.00100	0.000530	mg/L		10/02/25 09:00	10/07/25 17:35	1
Zinc	0.0181	J	0.0200	0.0130	mg/L		10/02/25 09:00	10/07/25 17:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	260		5.00	2.50	mg/L			10/01/25 18:10	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	260		5.00	2.50	mg/L			10/01/25 18:10	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9040C)	7.49	HF	1.00	1.00	SU			09/26/25 11:58	1

Eurofins Cedar Falls

Client Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: Field Blank

Lab Sample ID: 310-316624-7

Date Collected: 09/25/25 10:45

Matrix: Water

Date Received: 09/26/25 09:05

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.450		1.00	0.450	mg/L			09/30/25 12:51	1
Sulfate	<0.420		1.00	0.420	mg/L			09/30/25 12:51	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		10/02/25 09:00	10/07/25 17:38	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/02/25 09:00	10/07/25 17:38	1
Barium	<0.000660		0.00200	0.000660	mg/L		10/02/25 09:00	10/07/25 17:38	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/02/25 09:00	10/07/25 17:38	1
Boron	<0.0820		0.100	0.0820	mg/L		10/02/25 09:00	10/07/25 17:38	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/02/25 09:00	10/07/25 17:38	1
Calcium	<0.190		0.500	0.190	mg/L		10/02/25 09:00	10/07/25 17:38	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		10/02/25 09:00	10/07/25 17:38	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/02/25 09:00	10/07/25 17:38	1
Iron	<0.0500		0.100	0.0500	mg/L		10/02/25 09:00	10/07/25 17:38	1
Lead	<0.000330		0.000500	0.000330	mg/L		10/02/25 09:00	10/07/25 17:38	1
Magnesium	<0.150		0.500	0.150	mg/L		10/02/25 09:00	10/07/25 17:38	1
Manganese	<0.00360		0.0100	0.00360	mg/L		10/02/25 09:00	10/07/25 17:38	1
Potassium	<0.170		0.500	0.170	mg/L		10/02/25 09:00	10/07/25 17:38	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/02/25 09:00	10/07/25 17:38	1
Sodium	<0.650		1.00	0.650	mg/L		10/02/25 09:00	10/07/25 17:38	1
Strontium	<0.000530		0.00100	0.000530	mg/L		10/02/25 09:00	10/07/25 17:38	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/02/25 09:00	10/07/25 17:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Alkalinity as CaCO3 to pH 4.5 (SM 2320B)	<2.50		5.00	2.50	mg/L			10/01/25 20:03	1
Bicarbonate Alkalinity as CaCO3 (SM 2320B)	<2.50		5.00	2.50	mg/L			10/01/25 20:03	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9040C)	5.85	HF	1.00	1.00	SU			09/26/25 12:04	1

Definitions/Glossary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Qualifiers

HPLC/IC

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.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

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

QC Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-468403/3

Matrix: Water

Analysis Batch: 468403

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.450		1.00	0.450	mg/L			09/29/25 11:13	1
Sulfate	<0.420		1.00	0.420	mg/L			09/29/25 11:13	1

Lab Sample ID: LCS 310-468403/4

Matrix: Water

Analysis Batch: 468403

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	9.840		mg/L		98	90 - 110
Sulfate	10.0	10.37		mg/L		104	90 - 110

Lab Sample ID: MB 310-468559/3

Matrix: Water

Analysis Batch: 468559

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.450		1.00	0.450	mg/L			09/30/25 12:10	1
Sulfate	<0.420		1.00	0.420	mg/L			09/30/25 12:10	1

Lab Sample ID: LCS 310-468559/4

Matrix: Water

Analysis Batch: 468559

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	10.10		mg/L		101	90 - 110
Sulfate	10.0	10.51		mg/L		105	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-468442/1-A

Matrix: Water

Analysis Batch: 469410

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 468442

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		10/01/25 09:00	10/08/25 17:06	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/01/25 09:00	10/08/25 17:06	1
Barium	<0.000660		0.00200	0.000660	mg/L		10/01/25 09:00	10/08/25 17:06	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/01/25 09:00	10/08/25 17:06	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/01/25 09:00	10/08/25 17:06	1
Calcium	<0.190		0.500	0.190	mg/L		10/01/25 09:00	10/08/25 17:06	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		10/01/25 09:00	10/08/25 17:06	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/01/25 09:00	10/08/25 17:06	1
Iron	<0.0500		0.100	0.0500	mg/L		10/01/25 09:00	10/08/25 17:06	1
Lead	<0.000330		0.000500	0.000330	mg/L		10/01/25 09:00	10/08/25 17:06	1
Magnesium	<0.150		0.500	0.150	mg/L		10/01/25 09:00	10/08/25 17:06	1
Manganese	<0.00360		0.0100	0.00360	mg/L		10/01/25 09:00	10/08/25 17:06	1
Potassium	<0.170		0.500	0.170	mg/L		10/01/25 09:00	10/08/25 17:06	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/01/25 09:00	10/08/25 17:06	1
Sodium	<0.650		1.00	0.650	mg/L		10/01/25 09:00	10/08/25 17:06	1
Strontium	<0.000530		0.00100	0.000530	mg/L		10/01/25 09:00	10/08/25 17:06	1

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QC Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

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

Lab Sample ID: MB 310-468442/1-A

Matrix: Water

Analysis Batch: 469410

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 468442

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Zinc	<0.0130		0.0200	0.0130	mg/L		10/01/25 09:00	10/08/25 17:06	1

Lab Sample ID: MB 310-468442/1-A

Matrix: Water

Analysis Batch: 469722

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 468442

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.0820		0.100	0.0820	mg/L		10/01/25 09:00	10/10/25 14:02	1

Lab Sample ID: LCS 310-468442/2-A

Matrix: Water

Analysis Batch: 469410

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 468442

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.1940		mg/L		97	80 - 120
Arsenic	0.200	0.2054		mg/L		103	80 - 120
Barium	0.100	0.09813		mg/L		98	80 - 120
Beryllium	0.100	0.1005		mg/L		100	80 - 120
Cadmium	0.100	0.1039		mg/L		104	80 - 120
Calcium	2.00	2.235		mg/L		112	80 - 120
Cobalt	0.100	0.09810		mg/L		98	80 - 120
Copper	0.200	0.2181		mg/L		109	80 - 120
Iron	0.200	0.2145		mg/L		107	80 - 120
Lead	0.200	0.2114		mg/L		106	80 - 120
Magnesium	2.00	2.016		mg/L		101	80 - 120
Manganese	0.100	0.09652		mg/L		97	80 - 120
Potassium	2.00	1.851		mg/L		93	80 - 120
Selenium	0.400	0.3928		mg/L		98	80 - 120
Sodium	2.00	2.073		mg/L		104	80 - 120
Strontium	0.200	0.1860		mg/L		93	80 - 120
Zinc	0.200	0.1918		mg/L		96	80 - 120

Lab Sample ID: LCS 310-468442/2-A

Matrix: Water

Analysis Batch: 469722

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 468442

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.2133		mg/L		107	80 - 120

Lab Sample ID: MB 310-468585/1-A

Matrix: Water

Analysis Batch: 469261

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 468585

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		10/02/25 09:00	10/07/25 16:28	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/02/25 09:00	10/07/25 16:28	1
Barium	<0.000660		0.00200	0.000660	mg/L		10/02/25 09:00	10/07/25 16:28	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/02/25 09:00	10/07/25 16:28	1
Boron	<0.0820		0.100	0.0820	mg/L		10/02/25 09:00	10/07/25 16:28	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/02/25 09:00	10/07/25 16:28	1

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QC Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

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

Lab Sample ID: MB 310-468585/1-A

Matrix: Water

Analysis Batch: 469261

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 468585

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.190		0.500	0.190	mg/L		10/02/25 09:00	10/07/25 16:28	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		10/02/25 09:00	10/07/25 16:28	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/02/25 09:00	10/07/25 16:28	1
Iron	<0.0500		0.100	0.0500	mg/L		10/02/25 09:00	10/07/25 16:28	1
Lead	0.0003460	J	0.000500	0.000330	mg/L		10/02/25 09:00	10/07/25 16:28	1
Magnesium	<0.150		0.500	0.150	mg/L		10/02/25 09:00	10/07/25 16:28	1
Manganese	<0.00360		0.0100	0.00360	mg/L		10/02/25 09:00	10/07/25 16:28	1
Potassium	<0.170		0.500	0.170	mg/L		10/02/25 09:00	10/07/25 16:28	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/02/25 09:00	10/07/25 16:28	1
Sodium	<0.650		1.00	0.650	mg/L		10/02/25 09:00	10/07/25 16:28	1
Strontium	<0.000530		0.00100	0.000530	mg/L		10/02/25 09:00	10/07/25 16:28	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/02/25 09:00	10/07/25 16:28	1

Lab Sample ID: LCS 310-468585/2-A

Matrix: Water

Analysis Batch: 469261

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 468585

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2282		mg/L		114	80 - 120
Arsenic	0.200	0.2223		mg/L		111	80 - 120
Barium	0.100	0.1086		mg/L		109	80 - 120
Beryllium	0.100	0.1077		mg/L		108	80 - 120
Boron	0.200	0.2251		mg/L		113	80 - 120
Cadmium	0.100	0.1087		mg/L		109	80 - 120
Calcium	2.00	1.932		mg/L		97	80 - 120
Cobalt	0.100	0.1133		mg/L		113	80 - 120
Copper	0.200	0.2202		mg/L		110	80 - 120
Iron	0.200	0.2380		mg/L		119	80 - 120
Lead	0.200	0.2144		mg/L		107	80 - 120
Magnesium	2.00	2.278		mg/L		114	80 - 120
Manganese	0.100	0.1097		mg/L		110	80 - 120
Potassium	2.00	2.227		mg/L		111	80 - 120
Selenium	0.400	0.4259		mg/L		106	80 - 120
Sodium	2.00	2.260		mg/L		113	80 - 120
Strontium	0.200	0.2170		mg/L		109	80 - 120
Zinc	0.200	0.2044		mg/L		102	80 - 120

Method: 9040C - pH

Lab Sample ID: LCS 310-468068/1

Matrix: Water

Analysis Batch: 468068

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	7.010		SU		100	98 - 102

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QC Sample Results

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Method: 9040C - pH (Continued)

Lab Sample ID: LCS 310-468068/25

Matrix: Water

Analysis Batch: 468068

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
pH	7.00	6.910		SU		99	98 - 102

Method: SM 2320B - Alkalinity

Lab Sample ID: LCS 310-468658/47

Matrix: Water

Analysis Batch: 468658

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity as CaCO3 to pH 4.5	1000	938.0		mg/L		94	85 - 115

Lab Sample ID: LCS 310-468658/48

Matrix: Water

Analysis Batch: 468658

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Alkalinity as CaCO3 to pH 4.5	1000	946.7		mg/L		95	85 - 115

QC Association Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

HPLC/IC

Analysis Batch: 468403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-1	MW-1-91	Total/NA	Water	9056A	
310-316624-2	MW-3-91	Total/NA	Water	9056A	
310-316624-2	MW-3-91	Total/NA	Water	9056A	
310-316624-3	MW-5-91	Total/NA	Water	9056A	
310-316624-4	MW-6-91	Total/NA	Water	9056A	
310-316624-5	FL-9	Total/NA	Water	9056A	
MB 310-468403/3	Method Blank	Total/NA	Water	9056A	
LCS 310-468403/4	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 468559

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-6	Duplicate	Total/NA	Water	9056A	
310-316624-7	Field Blank	Total/NA	Water	9056A	
MB 310-468559/3	Method Blank	Total/NA	Water	9056A	
LCS 310-468559/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 468442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-1	MW-1-91	Total/NA	Water	3005A	
310-316624-2	MW-3-91	Total/NA	Water	3005A	
310-316624-3	MW-5-91	Total/NA	Water	3005A	
310-316624-4	MW-6-91	Total/NA	Water	3005A	
310-316624-5	FL-9	Total/NA	Water	3005A	
MB 310-468442/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-468442/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 468585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-6	Duplicate	Total/NA	Water	3005A	
310-316624-7	Field Blank	Total/NA	Water	3005A	
MB 310-468585/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-468585/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 469261

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-6	Duplicate	Total/NA	Water	6020B	468585
310-316624-7	Field Blank	Total/NA	Water	6020B	468585
MB 310-468585/1-A	Method Blank	Total/NA	Water	6020B	468585
LCS 310-468585/2-A	Lab Control Sample	Total/NA	Water	6020B	468585

Analysis Batch: 469410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-1	MW-1-91	Total/NA	Water	6020B	468442
310-316624-2	MW-3-91	Total/NA	Water	6020B	468442
310-316624-3	MW-5-91	Total/NA	Water	6020B	468442
310-316624-4	MW-6-91	Total/NA	Water	6020B	468442
310-316624-5	FL-9	Total/NA	Water	6020B	468442
MB 310-468442/1-A	Method Blank	Total/NA	Water	6020B	468442
LCS 310-468442/2-A	Lab Control Sample	Total/NA	Water	6020B	468442

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QC Association Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Metals

Analysis Batch: 469722

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-1	MW-1-91	Total/NA	Water	6020B	468442
310-316624-2	MW-3-91	Total/NA	Water	6020B	468442
310-316624-3	MW-5-91	Total/NA	Water	6020B	468442
310-316624-4	MW-6-91	Total/NA	Water	6020B	468442
310-316624-5	FL-9	Total/NA	Water	6020B	468442
MB 310-468442/1-A	Method Blank	Total/NA	Water	6020B	468442
LCS 310-468442/2-A	Lab Control Sample	Total/NA	Water	6020B	468442

General Chemistry

Analysis Batch: 468068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-1	MW-1-91	Total/NA	Water	9040C	
310-316624-2	MW-3-91	Total/NA	Water	9040C	
310-316624-3	MW-5-91	Total/NA	Water	9040C	
310-316624-4	MW-6-91	Total/NA	Water	9040C	
310-316624-5	FL-9	Total/NA	Water	9040C	
310-316624-6	Duplicate	Total/NA	Water	9040C	
310-316624-7	Field Blank	Total/NA	Water	9040C	
LCS 310-468068/1	Lab Control Sample	Total/NA	Water	9040C	
LCS 310-468068/25	Lab Control Sample	Total/NA	Water	9040C	

Analysis Batch: 468658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-316624-1	MW-1-91	Total/NA	Water	SM 2320B	
310-316624-2	MW-3-91	Total/NA	Water	SM 2320B	
310-316624-3	MW-5-91	Total/NA	Water	SM 2320B	
310-316624-4	MW-6-91	Total/NA	Water	SM 2320B	
310-316624-5	FL-9	Total/NA	Water	SM 2320B	
310-316624-6	Duplicate	Total/NA	Water	SM 2320B	
310-316624-7	Field Blank	Total/NA	Water	SM 2320B	
LCS 310-468658/47	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 310-468658/48	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-1-91

Lab Sample ID: 310-316624-1

Date Collected: 09/25/25 09:40

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	468403	QTZ5	EET CF	09/30/25 10:21
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469722	NFT2	EET CF	10/10/25 14:27
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469410	NFT2	EET CF	10/08/25 18:14
Total/NA	Analysis	9040C		1	468068	W9YR	EET CF	09/26/25 12:02
Total/NA	Analysis	SM 2320B		1	468658	WZC8	EET CF	10/01/25 17:19

Client Sample ID: MW-3-91

Lab Sample ID: 310-316624-2

Date Collected: 09/25/25 10:25

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	468403	QTZ5	EET CF	09/30/25 10:35
Total/NA	Analysis	9056A		50	468403	QTZ5	EET CF	09/30/25 11:29
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469722	NFT2	EET CF	10/10/25 14:30
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469410	NFT2	EET CF	10/08/25 18:17
Total/NA	Analysis	9040C		1	468068	W9YR	EET CF	09/26/25 12:01
Total/NA	Analysis	SM 2320B		1	468658	WZC8	EET CF	10/01/25 17:28

Client Sample ID: MW-5-91

Lab Sample ID: 310-316624-3

Date Collected: 09/25/25 10:15

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	468403	QTZ5	EET CF	09/30/25 10:49
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469722	NFT2	EET CF	10/10/25 14:32
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469410	NFT2	EET CF	10/08/25 18:20
Total/NA	Analysis	9040C		1	468068	W9YR	EET CF	09/26/25 12:03
Total/NA	Analysis	SM 2320B		1	468658	WZC8	EET CF	10/01/25 17:36

Client Sample ID: MW-6-91

Lab Sample ID: 310-316624-4

Date Collected: 09/25/25 10:05

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	468403	QTZ5	EET CF	09/30/25 11:02
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469722	NFT2	EET CF	10/10/25 14:35

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Lab Chronicle

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Client Sample ID: MW-6-91

Lab Sample ID: 310-316624-4

Date Collected: 09/25/25 10:05

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469410	NFT2	EET CF	10/08/25 18:23
Total/NA	Analysis	9040C		1	468068	W9YR	EET CF	09/26/25 11:59
Total/NA	Analysis	SM 2320B		1	468658	WZC8	EET CF	10/01/25 17:45

Client Sample ID: FL-9

Lab Sample ID: 310-316624-5

Date Collected: 09/25/25 09:50

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	468403	QTZ5	EET CF	09/30/25 11:16
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469722	NFT2	EET CF	10/10/25 14:38
Total/NA	Prep	3005A			468442	QTZ5	EET CF	10/01/25 09:00
Total/NA	Analysis	6020B		1	469410	NFT2	EET CF	10/08/25 18:31
Total/NA	Analysis	9040C		1	468068	W9YR	EET CF	09/26/25 12:00
Total/NA	Analysis	SM 2320B		1	468658	WZC8	EET CF	10/01/25 17:54

Client Sample ID: Duplicate

Lab Sample ID: 310-316624-6

Date Collected: 09/25/25 10:35

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	468559	QTZ5	EET CF	09/30/25 12:37
Total/NA	Prep	3005A			468585	QTZ5	EET CF	10/02/25 09:00
Total/NA	Analysis	6020B		1	469261	NFT2	EET CF	10/07/25 17:35
Total/NA	Analysis	9040C		1	468068	W9YR	EET CF	09/26/25 11:58
Total/NA	Analysis	SM 2320B		1	468658	WZC8	EET CF	10/01/25 18:10

Client Sample ID: Field Blank

Lab Sample ID: 310-316624-7

Date Collected: 09/25/25 10:45

Matrix: Water

Date Received: 09/26/25 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	468559	QTZ5	EET CF	09/30/25 12:51
Total/NA	Prep	3005A			468585	QTZ5	EET CF	10/02/25 09:00
Total/NA	Analysis	6020B		1	469261	NFT2	EET CF	10/07/25 17:38
Total/NA	Analysis	9040C		1	468068	W9YR	EET CF	09/26/25 12:04
Total/NA	Analysis	SM 2320B		1	468658	WZC8	EET CF	10/01/25 20:03

Laboratory References:

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

Eurofins Cedar Falls

Accreditation/Certification Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

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

1
2
3
4
5
6
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9
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11
12
13
14

Method Summary

Client: Klingner & Associates PC
Project/Site: American Ordnance CCR Landfill

Job ID: 310-316624-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
9040C	pH	SW846	EET CF
SM 2320B	Alkalinity	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

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.

Laboratory References:

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

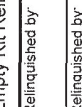


Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client <u>Wagner & Associates</u>			
City/State:	<u>Burlington</u>	STATE <u>IA</u>	Project.
Receipt Information			
Date/Time Received:	DATE <u>09/26/25</u>	TIME <u>0905</u>	Received By: <u>ES</u>
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 # _____ of _____			
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 <u>AA</u>		Correction Factor (°C). <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.1</u>		Corrected Temp (°C): <u>0.1</u>	
• Sample Container Temperature			
Container(s) used.	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
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			

Chain of Custody Record

eurofins

Client Information Client Contact: Jessica Stroutman Coca & Skyler Troutman Company: Klingner & Associates Address: 610 N 4th Street, Suite 100 City: Burlington State Zip: IA, 52601 Phone: 319 752 3603 Email: jcoca@Klingner.com / stroutman@Klingner.com Project Name: American Ordnance CCR Landfill Site:		Sampler: Skyler Troutman Lab PM: Hayes, Shawn M Phone: 319 671 2574 E-Mail: Shawn.Hayes@Eurofinset.com		Carrier Tracking No(s): COC No: Page: Page 1 of 1 Job #:	
Due Date Requested: TAT Requested (days): Standard TAT PO #: WQ #: SSOW#:		Analysis Requested Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:			
Matrix (Viewwater, Solid, On-water, A-Air) Sample Type (C=Comp, G=grab) Sample Time Sample Date Preservation Code		Perform MS/MSD (Yes or No) ☒ N ☐ D 2320B Alk, Bicarbonate, 9040C pH, 9056A Chloride and Sulfate 6020A Select Metals			
Sample Identification MW-1-91 MW-3-91 MW-5-91 MW-6-91 FL-9 Duplicate Field Blank		Total Number of containers: ☒ X Special Instructions Metals include: Al, As, Ba, Be, B, Cd, Ca, Co, Cu, Fe, Pb, Mg, Mn, K, Se, Na, Sr, Zn			
Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested I II III IV Other (specify)					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months Special Instructions/QC Requirements:					
Empty Kit Relinquished by:  Relinquished by:  Relinquished by:		Method of Shipment: Date/Time: 9-25-25 / 1630 Date/Time: Date/Time:			
Custody Seals Intact: ☐ Yes ☐ No Custody Seal No		Cooler Temperature(s) °C and Other Remarks: ES Date/Time: 09/26/25 Company: EET			

Login Sample Receipt Checklist

Client: Klingner & Associates PC

Job Number: 310-316624-1

Login Number: 316624

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Homolar, Dana J

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix B

Field Sampling Forms



Groundwater Sampling Field Sheet

Disposal Site Name: AO CCR Landfill Permit No.: 29-SDP-3-82P

Well/Piezometer: FL-9 Weather: Clear, 77F

Date: 8/28/2025; 9/25/2025 Sampler Name: Skyler Troutman

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): 13.19

Casing Diameter (in): 4 Casing Material: _____

Top of Casing Elevation (ft. MSL): 714.11 Ground Surface Elevation (ft. MSL): 712.4

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	5.83		8.39
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☒ Yes ☐ No

	Start	End
Purge Date/Time	8/28: 1055	8/28: 1120

Well Conditions Commentary: OK

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): Hydrasleeve

Equipment Name & Description: Purging completed with Geopump Peristaltic Pump; Sampling completed with Hydrasleeve.

Pump Types (check one)

☐ Submersible ☒ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify): _____

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: Disposal of tubing (for purging) and Hydrasleeve (for sampling)

Field Analysis

Final Reading

Date/Time	9/25/2025						
Depth to Water (ft)	8.39						
Volume Purged ()							
Temp (°F)	60.7						
Sp. Cond (umhos/cm)	792						
pH	7.36						
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: ~3.1 Liter

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments: 8/28/25 - Well cleaned, agitated, and purged. Hydrasleeve set. 9/25/25 - Retrieved Hydrasleeve, field measurements.



Groundwater Sampling Field Sheet

Disposal Site Name: AO CCR Landfill Permit No.: 29-SDP-3-82P

Well/Piezometer: MW-1-91 Weather: Clear, 77F

Date: 8/28/2025; 9/25/2025 Sampler Name: Skyler Troutman

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): 6.6

Casing Diameter (in): 4 Casing Material: _____

Top of Casing Elevation (ft. MSL): 716.15 Ground Surface Elevation (ft. MSL): 714.55

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	6.29		7.23
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☒ Yes ☐ No

	Start	End
Purge Date/Time	8/28: 1000	8/28: 1020

Well Conditions Commentary: OK

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): Hydrasleeve

Equipment Name & Description: Purging completed with Geopump Peristaltic Pump; Sampling completed with Hydrasleeve.

Pump Types (check one)

☐ Submersible ☒ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☒ Other (specify): Geopump Peristaltic Pump

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: Disposal of tubing (for purging) and Hydrasleeve (for sampling)

Field Analysis

							Final Reading
Date/Time	9/25/2025						
Depth to Water (ft)	7.23						
Volume Purged ()							
Temp (°F)	64.0						
Sp. Cond (umhos/cm)	481						
pH	6.79						
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: ~3.1 Liter

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments: 8/28/25 - Well cleaned, agitated, and purged. Hydrasleeve set. 9/25/25 - Retrieved Hydrasleeve, field measurements.



Groundwater Sampling Field Sheet

Disposal Site Name: AO CCR Landfill Permit No.: 29-SDP-3-82P

Well/Piezometer: MW-3-91 Weather: Clear, 77F

Date: 8/28/2025; 9/25/2025 Sampler Name: Skyler Troutman

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): 6.51

Casing Diameter (in): 4 Casing Material: _____

Top of Casing Elevation (ft. MSL): 716.04 Ground Surface Elevation (ft. MSL): 714.36

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	8.42		9.03
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☒ No

	Start	End
Purge Date/Time	8/28: 1235	8/28: 1305

Well Conditions Commentary: OK

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): Hydrasleeve

Equipment Name & Description: Purging completed with Geopump Peristaltic Pump; Sampling completed with Hydrasleeve.

Pump Types (check one)

☐ Submersible ☒ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☒ Other (specify): Geopump Peristaltic Pump

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: Disposal of tubing (for purging) and Hydrasleeve (for sampling)

Field Analysis

							Final Reading
Date/Time	9/25/2025						
Depth to Water (ft)	9.03						
Volume Purged ()							
Temp (°F)	61.0						
Sp. Cond (umhos/cm)	667						
pH	7.00						
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: ~3.1 Liter

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments: 8/28/25 - Well cleaned, agitated, and purged. Hydrasleeve set. 9/25/25 - Retrieved Hydrasleeve, field measurements.



Groundwater Sampling Field Sheet

Disposal Site Name: AO CCR Landfill Permit No.: 29-SDP-3-82P

Well/Piezometer: MW-5-91 Weather: Clear, 77F

Date: 8/28/2025; 9/25/2025 Sampler Name: Skyler Troutman

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): 7.64

Casing Diameter (in): 4 Casing Material: _____

Top of Casing Elevation (ft. MSL): 714.45 Ground Surface Elevation (ft. MSL): 716.89

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	9.11		9.72
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☒ No

	Start	End
Purge Date/Time	8/28: 1155	8/28: 1225

Well Conditions Commentary: OK

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): Hydrasleeve

Equipment Name & Description: Purging completed with Geopump Peristaltic Pump; Sampling completed with Hydrasleeve.

Pump Types (check one)

☐ Submersible ☒ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☒ Other (specify): Geopump Peristaltic Pump

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: Disposal of tubing (for purging) and Hydrasleeve (for sampling)

Field Analysis

							Final Reading
Date/Time	9/25/2025						
Depth to Water (ft)	9.72						
Volume Purged ()							
Temp (°F)	61.2						
Sp. Cond (umhos/cm)	427						
pH	7.15						
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: ~3.1 Liter

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments: 8/28/25 - Well cleaned, agitated, and purged. Hydrasleeve set. 9/25/25 - Retrieved Hydrasleeve, field measurements.



Groundwater Sampling Field Sheet

Disposal Site Name: AO CCR Landfill Permit No.: 29-SDP-3-82P

Well/Piezometer: MW-6-91 Weather: Clear, 77F

Date: 8/28/2025; 9/25/2025 Sampler Name: Skyler Troutman

Monitoring Well Details

Construction Data

Borehole Diameter (in): _____ Depth to Top of Screen (ft): 6.67

Casing Diameter (in): 4 Casing Material: _____

Top of Casing Elevation (ft. MSL): 711.55 Ground Surface Elevation (ft. MSL): 710.08

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	5.84		7.00
Water Elevation (ft. MSL):			

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☒ Yes ☐ No

	Start	End
Purge Date/Time	8/28: 1125	8/28: 1147

Well Conditions Commentary: OK

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): Hydrasleeve

Equipment Name & Description: Purging completed with Geopump Peristaltic Pump; Sampling completed with Hydrasleeve.

Pump Types (check one)

☐ Submersible ☒ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☒ Other (specify): Geopump Peristaltic Pump

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: Disposal of tubing (for purging) and Hydrasleeve (for sampling)

Field Analysis

							Final Reading
Date/Time	9/25/2025						
Depth to Water (ft)	7.00						
Volume Purged ()							
Temp (°F)	61.0						
Sp. Cond (umhos/cm)	624						
pH	7.35						
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: _____ Flow Rate: _____ Volume Removed: _____ Volume Sampled: ~3.1 Liter

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments: 8/28/25 - Well cleaned, agitated, and purged. Hydrasleeve set. 9/25/25 - Retrieved Hydrasleeve, field measurements.

Appendix C

Water Level Data

Well ID	Coordinates		TOC Elevation	9/6/2022		9/5/2023		9/3/2024		8/28/2025	
	East	North		Depth to GW	GW Elevation	Depth to GW	GW Elevation	Depth to GW	GW Elevation	Depth to GW	GW Elevation
MW7-13	2261979.1	301374.2	719.69	11.4	708.3	10.07	709.6	6.8	712.9	8.38	711.3
FL-1	2261809.535	300870.993	713.676	7.66	706.0	6.73	706.9	5.03	708.6	5.25	708.4
FL-2	2261753.659	300623.155	713.19	7	706.2	6.29	706.9	4.67	708.5	5.04	708.2
FL3	2261578.971	300516.272	716.07	9.88	706.2	9.51	706.6	8.16	707.9	8.6	707.5
FL-4	2261389.67	300428.189	712.46	7.89	704.6	7.5	705.0	5.94	706.5	6.57	705.9
FL-6	2261367.085	301108.863	717.04	9.21	707.8	8.57	708.5	5.9	711.1	6.9	710.1
FL-7	-	-	715.97	NM	NM	7.51	708.5	4.7	711.3	5.69	710.3
FL-8	2261058.168	300964.661	718.54	15.12	703.4	14.77	703.8	9.5	709.0	11.76	706.8
FL-10	2261176.865	300321.519	712.71	10.9	701.8	10.9	701.8	6.55	706.2	8.51	704.2
MW8-13	2261272.8	301385.9	718.77	9.75	709.0	9.43	709.3	5.86	712.9	7.22	711.6
MW9-13	2261450.4	300277.8	713.04	9.86	703.2	10.09	703.0	8.55	704.5	9.47	703.6
P5A-13	2262323.3	300120.9	709.6	11.8	697.8	NM*	NM*	NM*	NM*	NM*	NM*
FL-9	2261093.883	300605.403	714.11	10.15	704.0	9.64	704.5	4.4	709.7	5.83	708.3
MW3-91	2261636.497	300565.419	716.04	9.8	706.2	9.5	706.5	8.05	708.0	8.42	707.6
MW5-91	2261484.503	300488.133	716.894	10.47	706.4	10.03	706.9	8.7	708.2	9.11	707.8
MW6-91	2261321.045	300391.912	711.551	8.71	702.8	7.49	704.1	5.3	706.3	5.84	705.7
MW1-91	2261315.461	301172.239	716.15	7.05	709.1	8.3	707.9	6.09	710.1	6.29	709.9

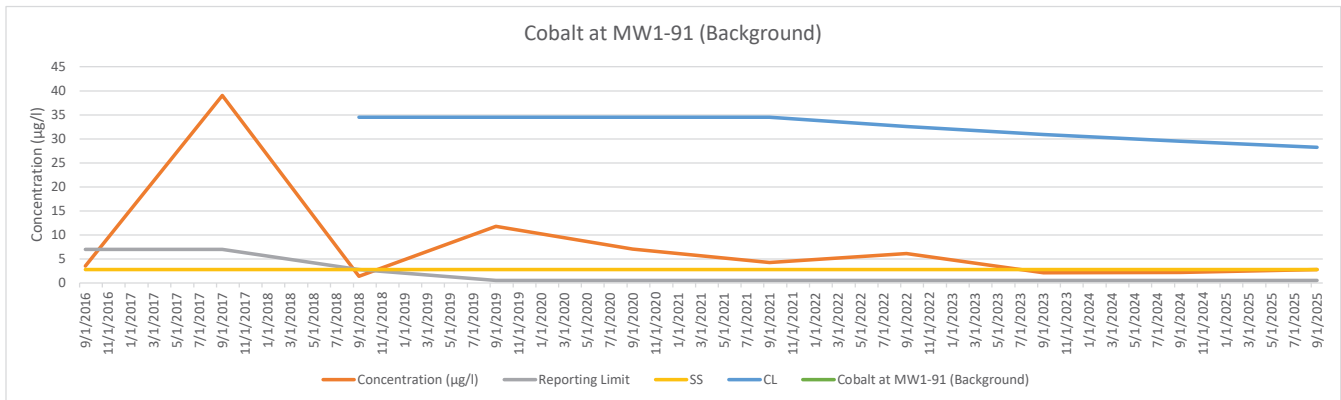
*P5A-13 was unable to be measured due to a broken casing.

Appendix D

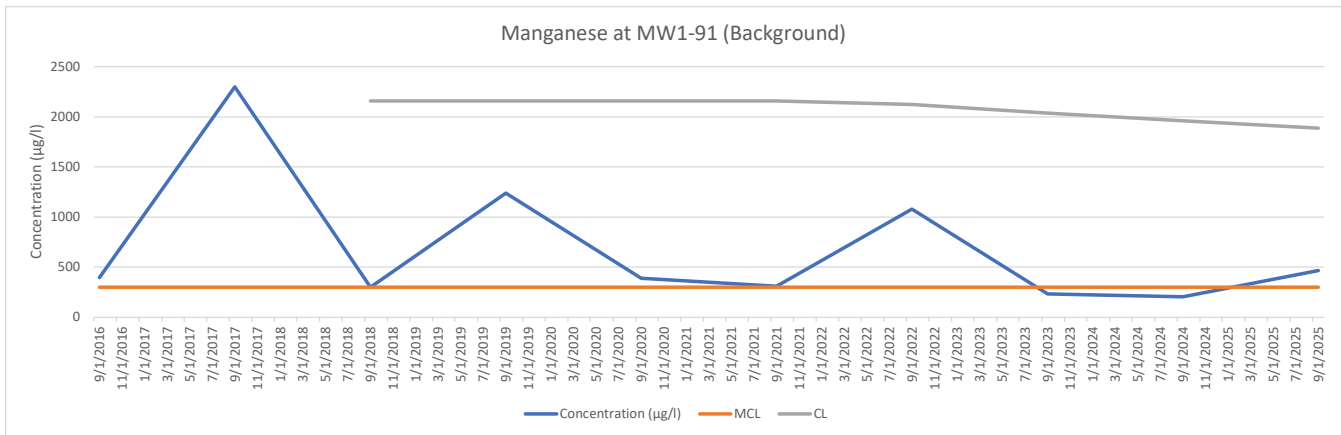
Graphs

Graphs
 *Data below RL plotted as 1/2 of RL

Cobalt at MW1-91 (Background)												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	3.5	39	1.4	11.8	7.07	4.24	6.14	2.13	2.14	2.8		
Reporting Limit	7	7	2.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
SS	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8		
CL			34.5	34.5	34.5	34.5	32.6	30.9	29.5	28.26		

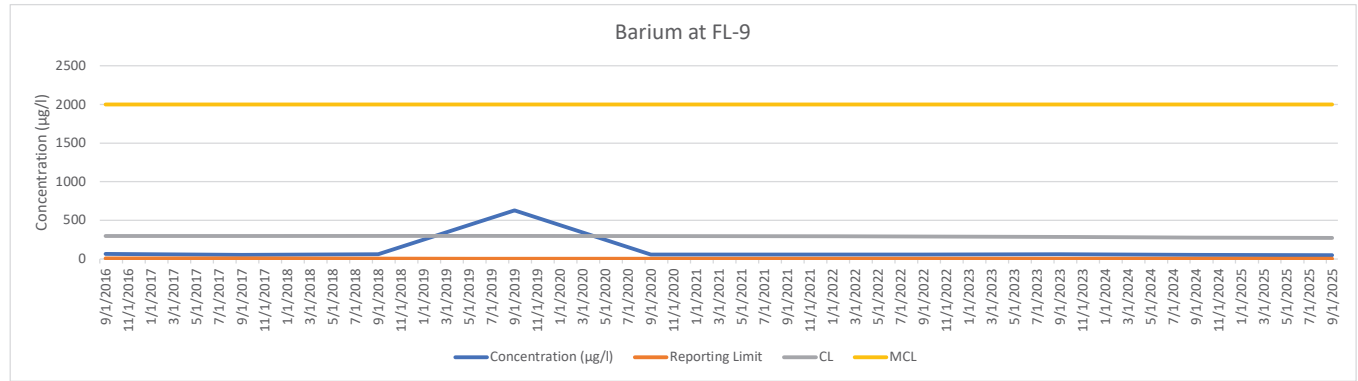


Manganese at MW1-91 (Background)												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	395	2300	299	1240	389	309	1080	233	204	464		
MCL	300	300	300	300	300	300	300	300	300	300		
CL			2159	2159	2159	2159	2125	2037	1958.3	1885.69		

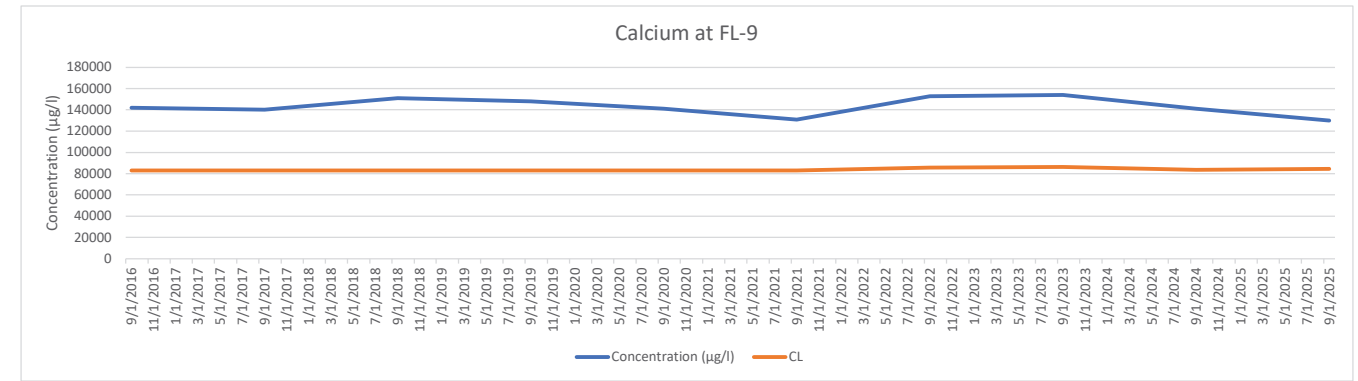


Graphs
*Data below RL plotted as 1/2 of RL

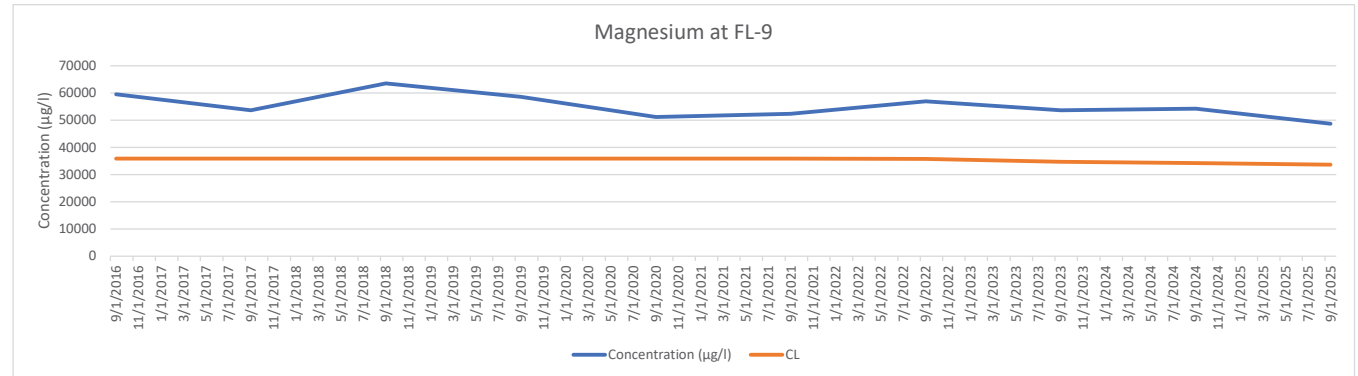
Barium at FL-9												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	63.4	53.6	61.2	628	58.7	54.4	58.8	60.5	51.3	46.8		
Reporting Limit	7	7	2.8	0.5	0.5	0.5	2	2	2	2		
CL	294.8	294.8	294.8	294.8	294.8	294.8	289.3	282.82663	275.4	270.26437		
MCL	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000		



Calcium at FL-9												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	142000	140000	151000	148000	141000	131000	153000	154000	141000	130000		
CL	82971	82971	82971	82971	82971	82971	85540	86237	83638	84652.243		

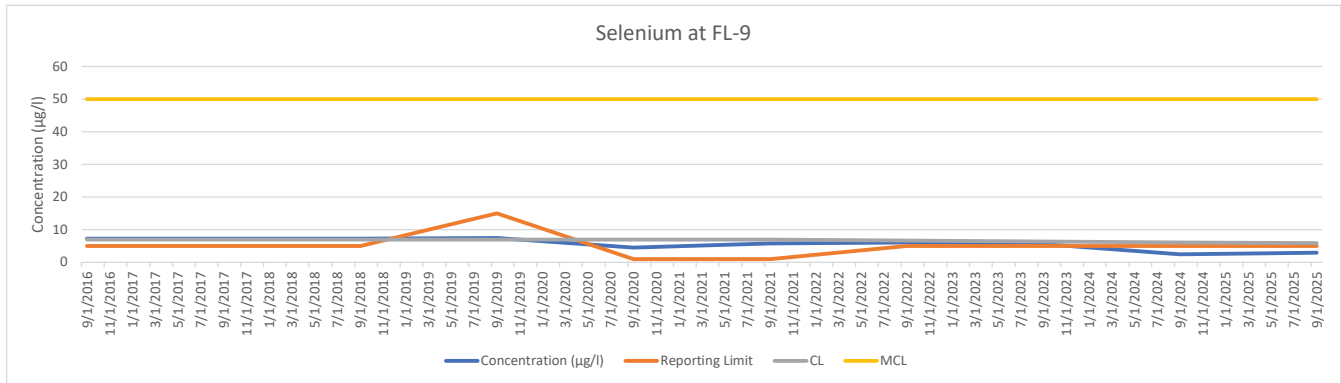


Magnesium at FL-9												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	59500	53600	63600	58600	51200	52400	56900	53600	54300	48700		
CL	35852	35852	35852	35852	35852	35852	35796	34763	34186	33656.747		

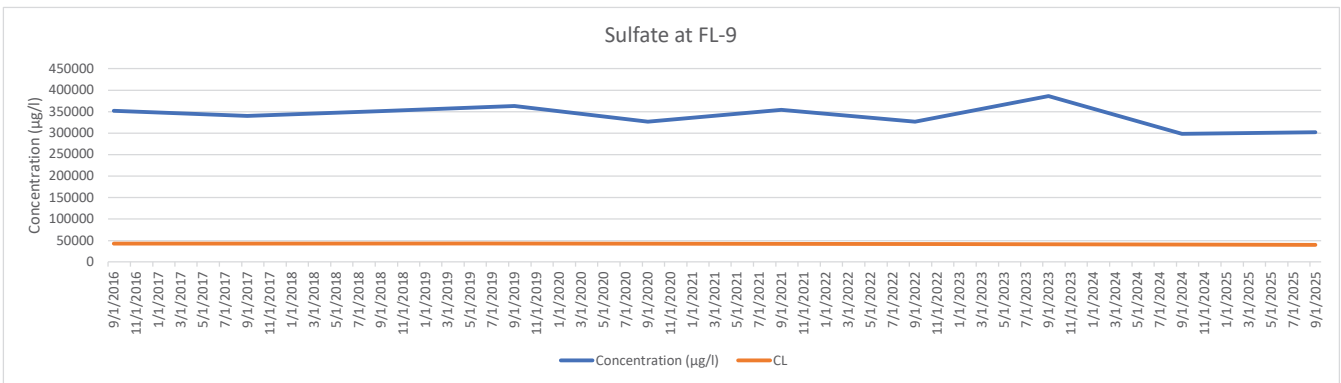


Graphs
*Data below RL plotted as 1/2 of RL

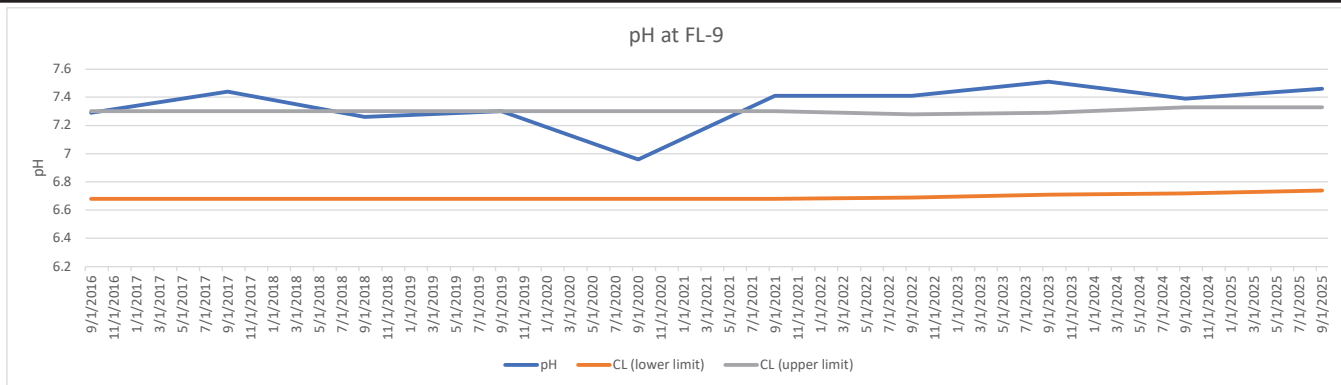
Selenium at FL-9												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	7.2	7.2	7.26	7.5	4.5	5.75	6.08	5.58	2.49	2.98		
Reporting Limit	5	5	5	15	1	0.96	5	5	5	5		
CL	7	7	7	7	7	7	6.7	6.4	6.1	5.873906		
MCL	50	50	50	50	50	50	50	50	50	50		



Sulfate at FL-9												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	352000	340000	351000	363000	327000	354000	327000	386000	298000	302000		
CL	43014	43014	43014	43014	43014	43014	41367	41025	40634	39640.173		

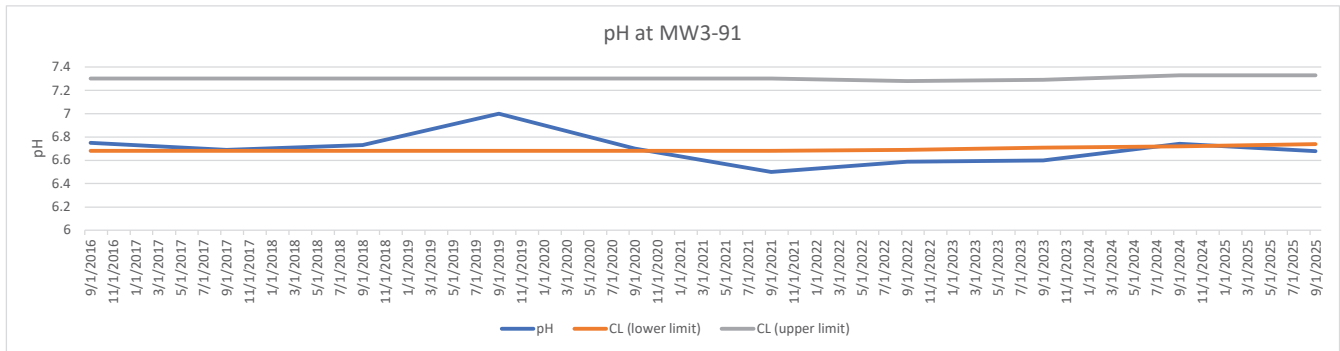


pH at FL-9												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
pH	7.29	7.44	7.26	7.3	6.96	7.41	7.41	7.51	7.39	7.46		
CL (lower limit)	6.68	6.68	6.68	6.68	6.68	6.68	6.69	6.71	6.72	6.74		
CL (upper limit)	7.3	7.3	7.3	7.3	7.3	7.3	7.28	7.29	7.33	7.33		

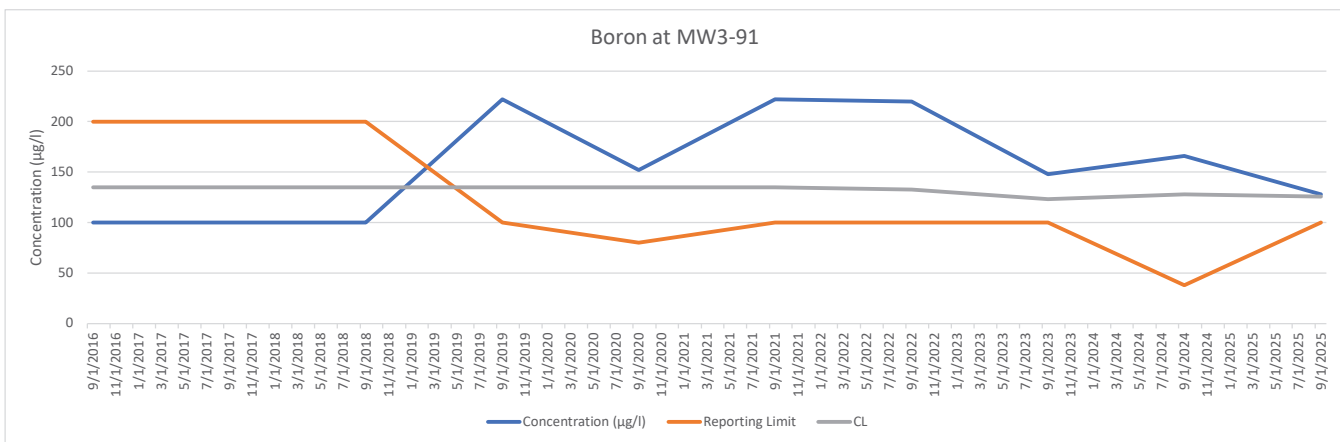


Graphs
 *Data below RL plotted as 1/2 of RL

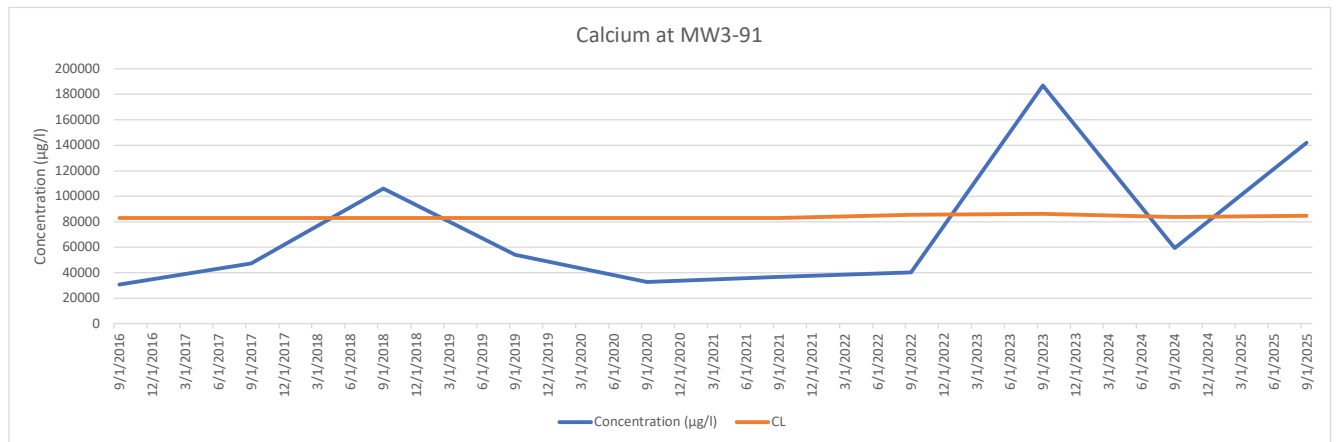
pH at MW3-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
pH	6.75	6.69	6.73	7	6.7	6.5	6.59	6.6	6.74	6.68		
CL (lower limit)	6.68	6.68	6.68	6.68	6.68	6.68	6.69	6.71	6.72	6.74		
CL (upper limit)	7.3	7.3	7.3	7.3	7.3	7.3	7.28	7.29	7.33	7.33		



Boron at MW3-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	100	100	100	222	152	222	220	148	166	128		
Reporting Limit	200	200	200	100	80	100	100	100	38	100		
CL	134.9	134.9	134.9	134.9	134.9	134.9	132.7	123.2	128.02	125.63257		

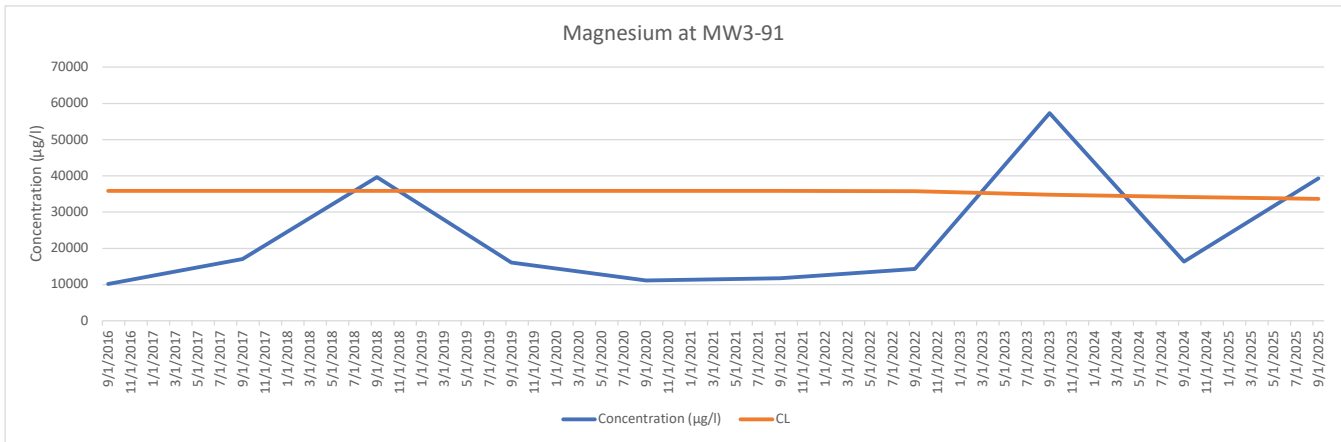


Calcium at MW3-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	30800	47300	106000	54000	32700	36700	40300	187000	59300	142000		
CL	82971	82971	82971	82971	82971	82971	85540	86237	83637.95	84652.243		

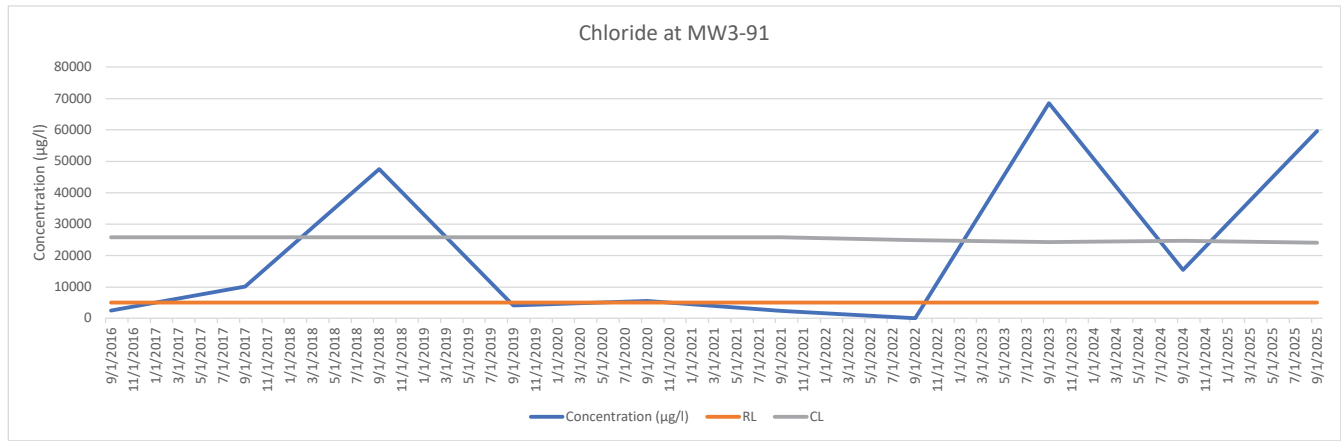


Graphs
 *Data below RL plotted as 1/2 of RL

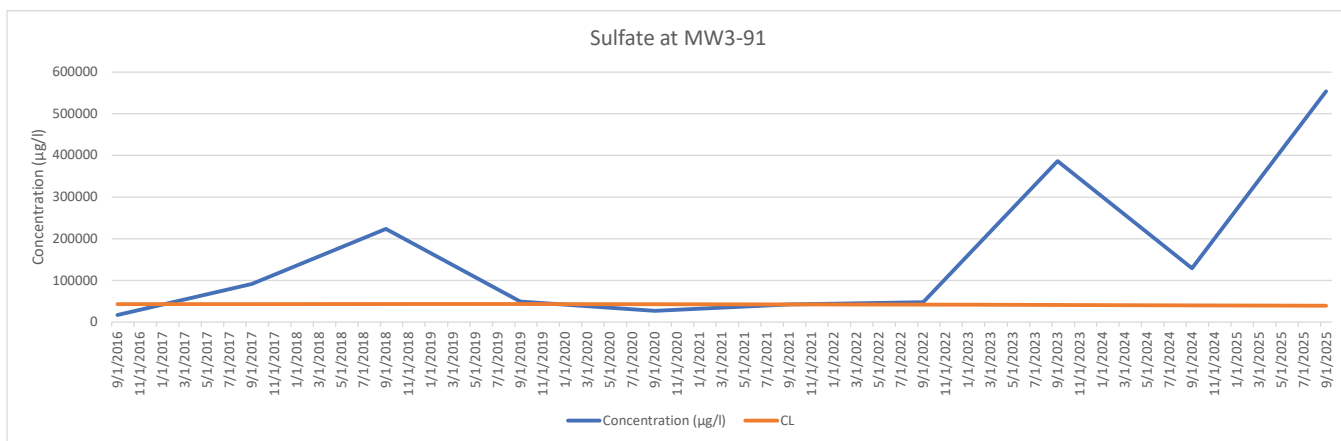
Magnesium at MW3-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	10200	17000	39700	16100	11100	11700	14300	57300	16300	39300		
CL	35852	35852	35852	35852	35852	35852	35796	34763	34186.21	33656.747		



Chloride at MW3-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	2500	10200	47500	4200	5540	2380	1.0125	68500	15400	59700		
RL	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000		
CL	25845	25845	25845	25845	25845	25845	24979	24331	24692.3	24124.959		

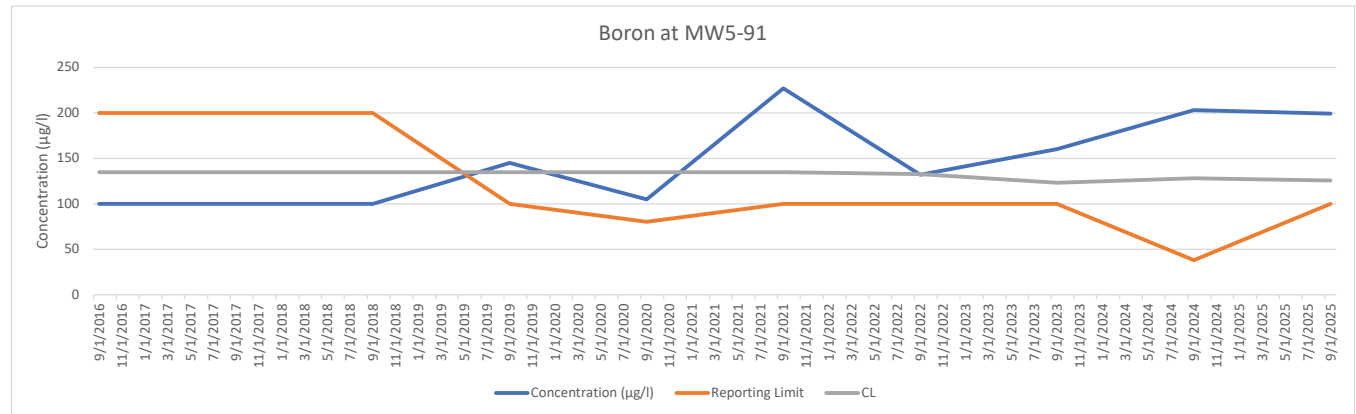


Sulfate at MW3-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	17400	92000	224000	49100	26800	42500	47500	386000	129000	554000		
CL	43014	43014	43014	43014	43014	43014	41367	41025	40634	39640.173		

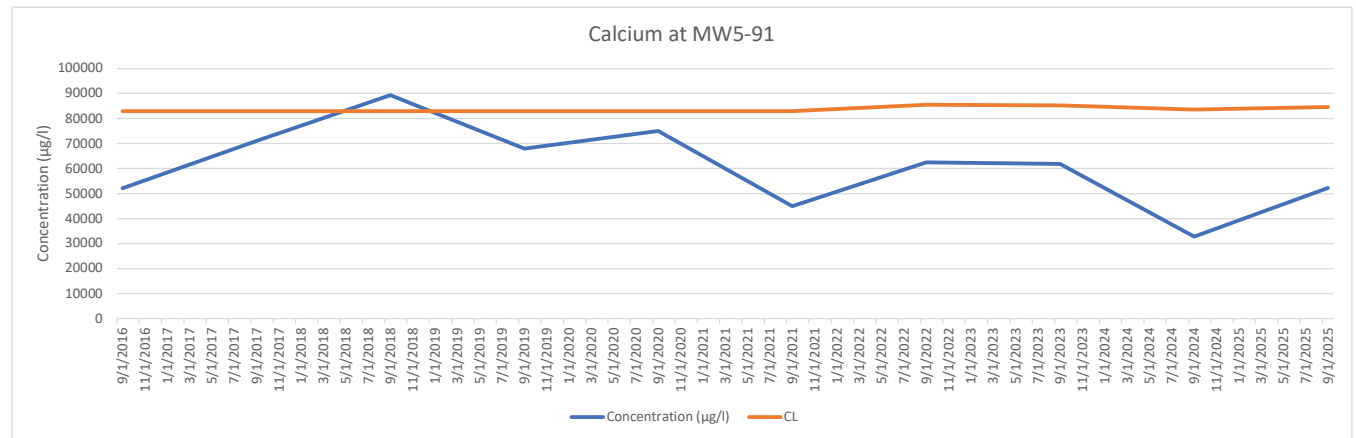


Graphs
 *Data below RL plotted as 1/2 of RL

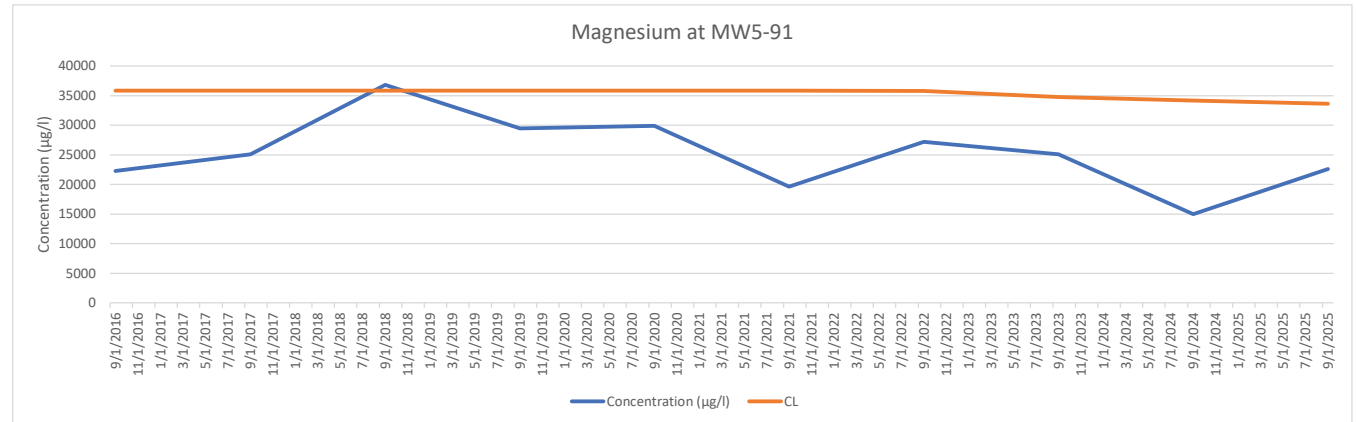
Boron at MW5-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	100	100	100	145	105	227	132	160	203	199		
Reporting Limit	200	200	200	100	80	100	100	100	38	100		
CL	134.9	134.9	134.9	134.9	134.9	134.9	132.7	123.2	128.02	125.63257		



Calcium at MW5-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/2/2024	9/25/2025		
Concentration (µg/l)	52000	71100	89300	68000	75000	45000	62500	61900	32800	52200		
CL	82971	82971	82971	82971	82971	82971	85540	85237	83638	84652.243		

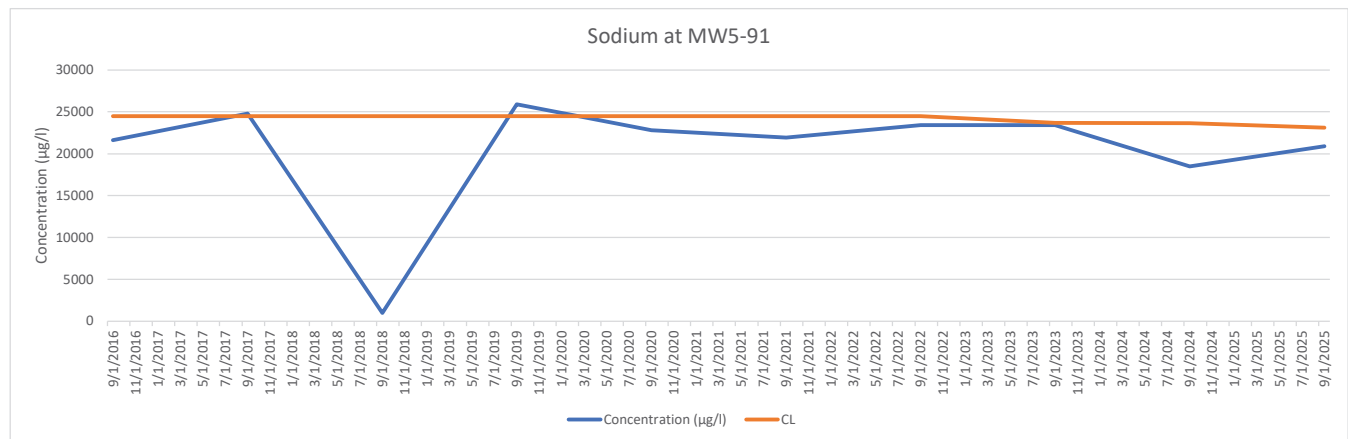


Magnesium at MW5-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	22300	25100	36800	29500	29900	19600	27200	25100	15000	22600		
CL	35852	35852	35852	35852	35852	35852	35796	34763	34186.2	33656.747		

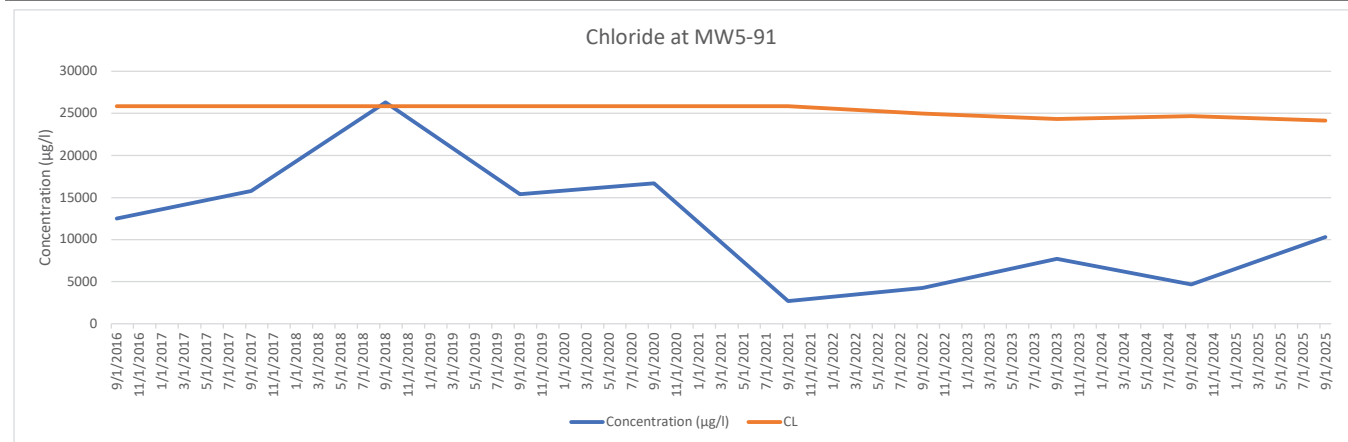


Graphs
 *Data below RL plotted as 1/2 of RL

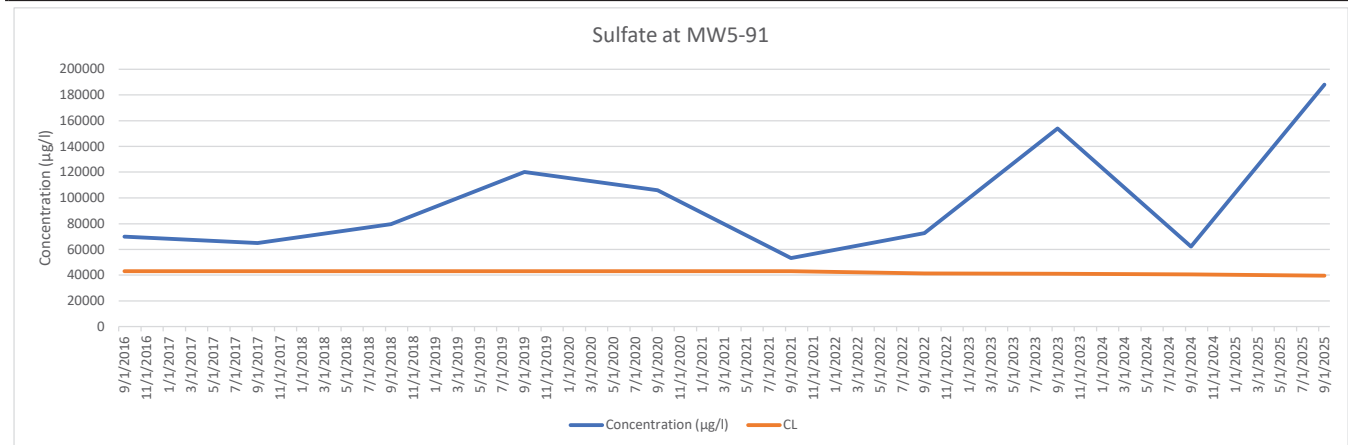
Sodium at MW5-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	21600	24800	1000	25900	22800	21900	23400	23400	18500	20900		
CL	24486	24486	24486	24486	24486	24486	24479	23679	23652.82	23092.443		



Chloride at MW5-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	12500	15800	26300	15400	16700	2690	4250	7700	4660	10300		
CL	25845	25845	25845	25845	25845	25845	24979	24331	24692.29	24124.959		

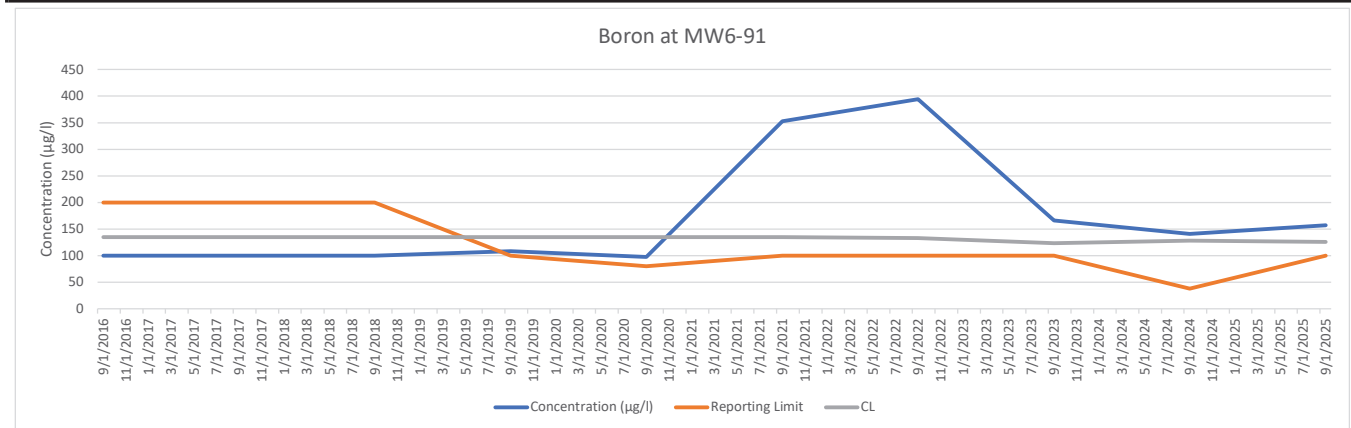


Sulfate at MW5-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	69800	64900	79500	120000	106000	53400	72800	154000	62200	188000		
CL	43014	43014	43014	43014	43014	43014	41367	41025	40634.12	39640.173		

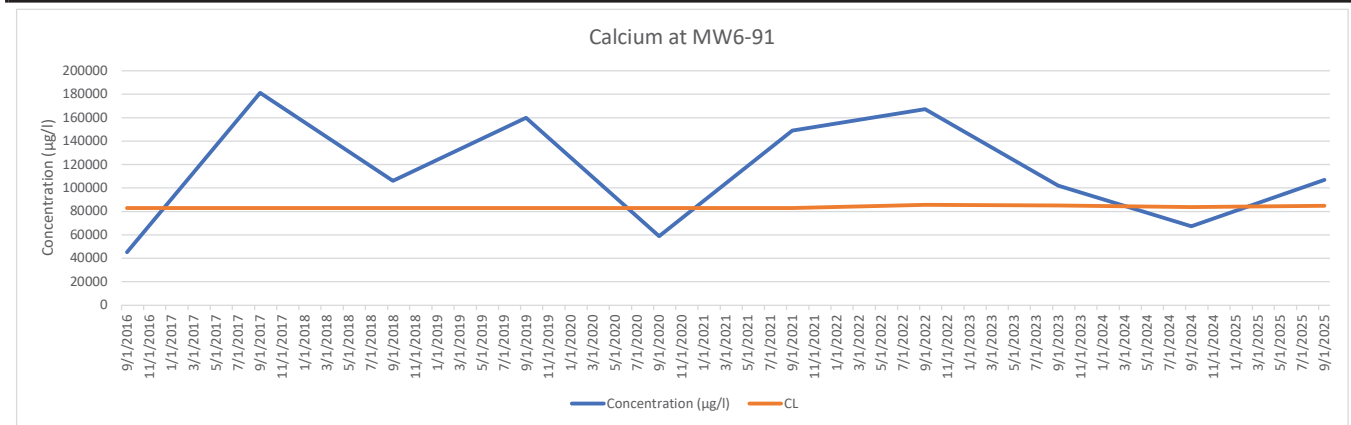


Graphs
 *Data below RL plotted as 1/2 of RL

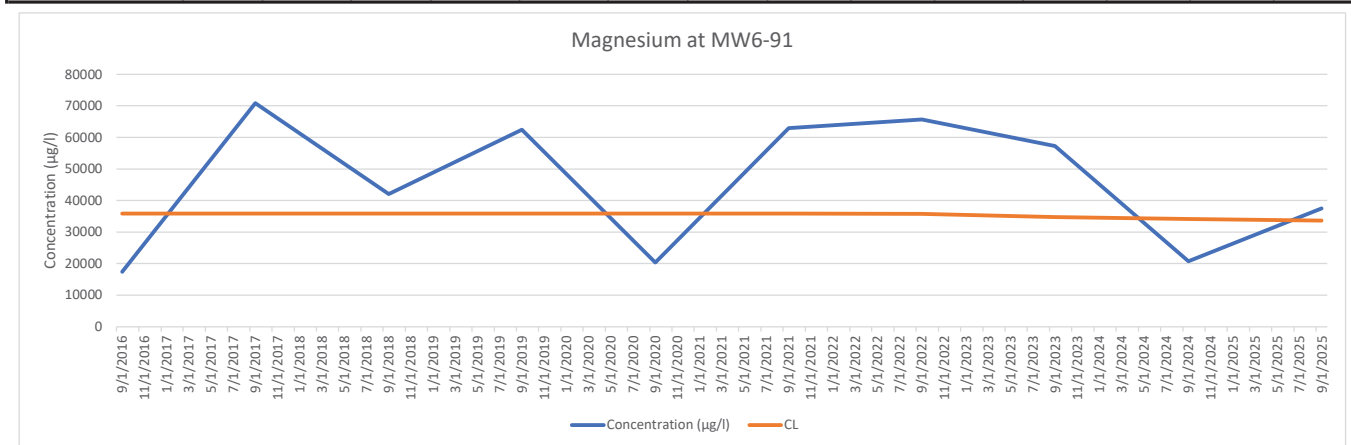
Boron at MW6-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	100	100	100	108	97.6	353	394	166	141	157		
Reporting Limit	200	200	200	100	80	100	100	100	38	100		
CL	134.9	134.9	134.9	134.9	134.9	134.9	132.7	123.2	128.02	125.63257		



Calcium at MW6-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	45200	181000	106000	160000	59000	149000	167000	102000	67400	107000		
CL	82971	82971	82971	82971	82971	82971	85540	85237	83638	84652.243		

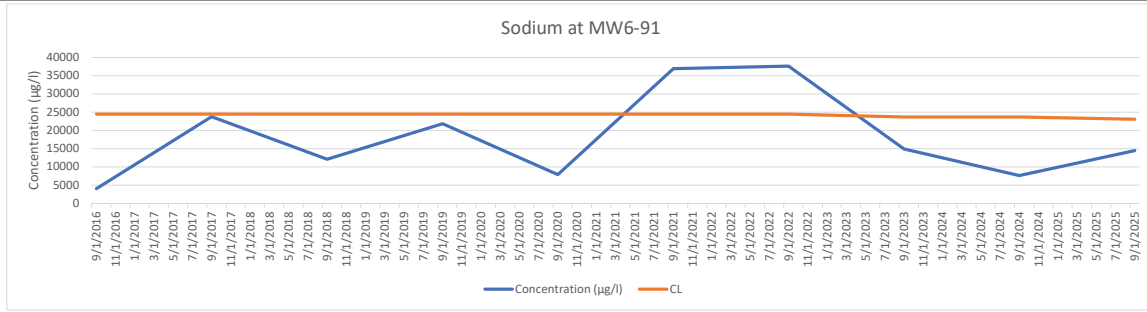


Magnesium at MW6-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	17400	70900	42100	62400	20400	63000	65700	57300	20800	37500		
CL	35852	35852	35852	35852	35852	35852	35796	34763	34186	33656.747		

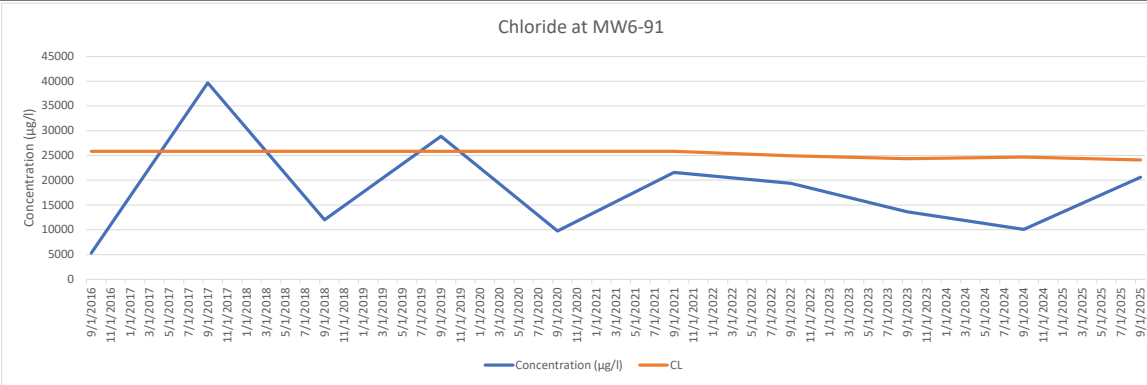


Graphs
*Data below RL plotted as 1/2 of RL

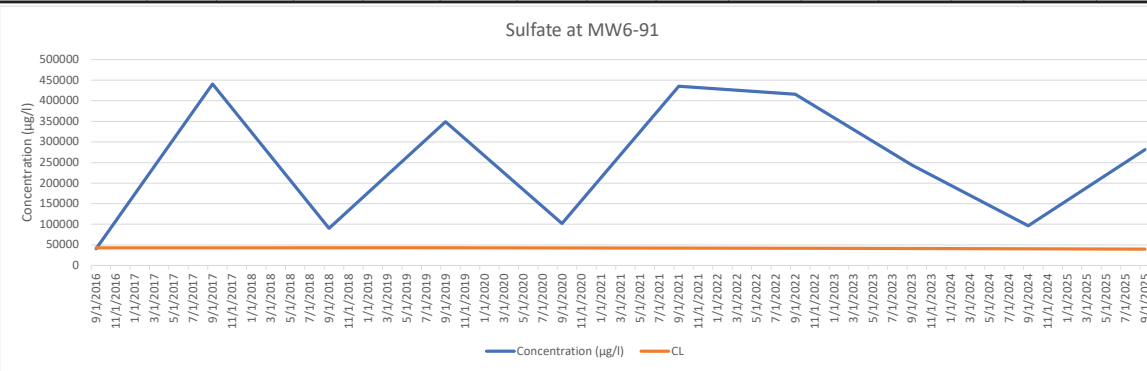
Sodium at MW6-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	4080	23800	12100	21800	7950	36900	37600	14900	7640	14500		
CL	24486	24486	24486	24486	24486	24486	24479	23679	23652.82	23092.443		



Chloride at MW6-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	5290	39700	12000	28900	9790	21600	19400	13600	10100	20600		
CL	25845	25845	25845	25845	25845	25845	24949	24331	24692	24124.959		



Sulfate at MW6-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	40900	441000	90600	349000	102000	435000	416000	244000	97000	282000		
CL	43014	43014	43014	43014	43014	43014	41367	41025	40634	39640.173		



Aluminum at MW6-91												
	9/8/2016	9/13/2017	9/5/2018	9/17/2019	9/15/2020	9/7/2021	9/6/2022	9/5/2023	9/3/2024	9/25/2025		
Concentration (µg/l)	158	262	2090	233	73.8	154	132	34.6	21	147		
CL	1023	1023	1023	1023	1023	1023	1018.9	984.5	953	918.56099		

