

2025 ANNUAL WATER QUALITY REPORT

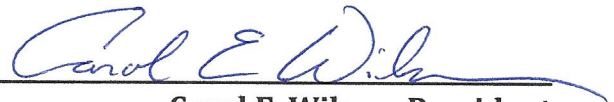
Keokuk Ferro-Sil Monofill
2542 Carbide Lane
Keokuk, Iowa
Permit No. 56-SDP-17-91P

23 December 2025

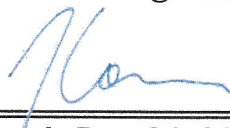
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2025 ANNUAL WATER QUALITY REPORT

Keokuk Ferro-Sil Monofill

2542 Carbide Lane

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Acronyms/Abbreviations:

AL = Action Level

CL = Control Limit (M+/-2SD)

GWQAP = Groundwater Quality Assessment Plan

HAL = Lifetime Health Advisory Level

M+/-2SD = Mean Plus/Minus Two Standard Deviations

MCL = EPA Maximum Contaminant Level

mg/L = milligrams per liter

NA = Not analyzed

NC = No Change

PGS = Protected Groundwater Source

RAMP = Remedial Action/Mitigation Plan

RL = Reporting Limit

SS = Statewide Standard

SDWR = Secondary Drinking Water Regulations

1.0 EXECUTIVE SUMMARY

This report contains information on the analytical results of sampling performed in 2025 as required by the closure permit and Closure Plan for Keokuk Ferro-Sil Monofill. The spring sampling event took place on 17 April 2025. The fall sampling event took place on 16 October 2025.

This site is a closed landfill containing industrial pollution-control waste from the production of ferrosilicon alloy at Keokuk Ferro-Sil.

The 30-year post closure period extends to 4 April 2037.

2.0 SITE BACKGROUND

2.1 Site History

This industrial monofill contains waste only from Keokuk Ferro-Sil, generated during the production of ferrosilicon alloys at the foundry, which operated at another location in Keokuk. Two sealed, submerged-arc furnaces at the foundry were charged with quartzite rock (containing silicon), coal, coke, wood chips, and steel turnings to produce the ferrosilicon alloy ingots. The waste consists of dried sludge from the furnace exhaust scrubbers and dust collected from a bag house which controlled kish-handling emissions. Keokuk Ferro-Sil ceased operation in 2001. The final transfer of waste from the plant-site to the landfill was carried out in January 2003.

Prior to construction of the landfill in 1993, this site was undeveloped woodland and grassland. The berms and liner forming the fill area were constructed of compacted clay from on-site. After the plant closed and the final waste was placed, the surface of the waste in the filled area was graded to prevent erosion. Beginning in August 2007, a compacted clay cap two feet thick was placed over the graded waste disposal area. The cap was then covered with two feet of non-compacted soil. The cap and cover soil were also site materials. This work was completed in October 2007. Vegetation was successfully re-established on the cover during 2008, as well as on the surface of the site borrow area. Since that time, multiple projects have been undertaken to repair and maintain this site, including:

Installation of drain tile along the south edge of the filled area to eliminate two rock-lined drop-down drainage channels in favor of discharge piping directly to the creek (2011-2012).

Installation of drain tile along the northwest edge of the borrow area, to eliminate a rock-lined drop-down drainage channel in favor of discharge piping directly to the creek (2011) and repairs to a severely eroded zone on the slope.

Construction of an earthen berm around the leachate collection pond to increase the holding capacity (2012).

Construction of terraces on the landfill slope above the leachate pond to repair a landslide in that area, reduce the slope to prevent future landslides, and to direct run-off away from the pond (2014).

Filling an erosion channel that had developed along the eastern side of the landfill cover and re-establishment of vegetation in the repaired area.

Repairs to the road leading from the gate to the leachate pond (2014, 2017, 2021, 2024).

Replacement of hinges on monitoring well covers and other well maintenance (2011 - 2023). Replacement of all well caps and locks (2019). Replacement of all well locks with shorter hasps to improve security (2023).

Removal of saplings and woody plants from the south slope of the filled area and other locations, including the edge of the leachate pond, where tree roots might affect the liner, cap, or cover (2016, 2022, 2024).

Spraying with herbicides to control sapling and woody plant growth at multiple locations and mowing around pond and on landfill cover (2017-2019, 2022, 2024).

Re-establishment of a pump to draw down and control the elevation of the leachate pond to less than 608 feet msl, including installation of electrical service to the site (2016-2017). Pump replacement (2019, 2024). Work in 2024 included pond draw-down to 601 ft msl to improve conditions for pump installation. The electrical connection to the pump was repaired in April 2025.

Off-site, a portion of the force main connecting the leachate pond to the City of Keokuk municipal sewer was replaced in 2024 due to soil erosion causing exposure of the piping.

High-pressure flushing of the leachate collection system piping (2015, 2018, 2021, 2024), including draw-down of the pond as needed to observe the discharge from the system. The clean-out will next be repeated in 2027.

2.2 Site Geology/Hydrology

This description of the site geology is excerpted from the Hydrogeological Investigation Plan prepared for Keokuk Ferro-Sil, Inc. by James M Montgomery Consulting Engineers, August 1989:

The site is located on the eastern edge of the Gordon Channel, a channel gouged out by the Mississippi River during the Quaternary Period. Bedrock elevation at the site is approximately 400 feet NGVD and minimum surface elevation is 600 feet. Therefore, 200 feet of unconsolidated sediments exist on site. The Gordon Channel primarily contains glacial till with minor amounts of sand and gravel. These surficial aquifers are inextensive and only produce water in quantities that can be used locally. Water table levels are probably quite deep, with over 100 foot depths to the water table being reported (Gordon, Iowa Geological Survey, 1980).

The bedrock aquifer will not be monitored due to its considerable depth while the upper surficial aquifer(s) will be monitored. The monitoring points chosen in the next chapter are estimations based on review of the aforementioned data and will be adjusted in the field after the initial wells have been drilled and data collected.

2.3 Permit History

The closure permit for this site was issued 4 April 2007. The permit has since been revised 25 January 2016, 30 November 2017, and 30 January 2018.

The permit and the revisions require that hydrologic monitoring at the site shall be conducted in accordance with the approved Hydrologic Monitoring System Plan (HMSP) dated January 1992 as submitted by James M Montgomery Consulting Engineers, the Amended HMSP dated December 16, 1993, by Tech Services Co., Inc. and Department approved on August 25, 1994 and the following:

The HMSP shall include up-gradient groundwater monitoring points MW-5, MW-7, and MW-12; and down-gradient groundwater monitoring points MW-8, MW-14, MW-15 and MW-16.

Monitoring points MW-4, MW-6, MW-9, MW-11 and MW-13 shall be retained as water level measuring points.

The permit holder shall annually collect a leachate sample from the lagoon and analyze it for the constituents listed in special provision #5d.

#5d reads: continued semiannual sampling shall take place in April and October each year for analysis of ammonia nitrogen, chloride, chemical oxygen demand, conductivity, pH, fluoride, sodium, sulfate, sulfide, and total aluminum, total barium, total boron, total iron, total lithium, and total strontium.

It should be noted that until 2009, semi-annual groundwater and surface water monitoring at the Keokuk Ferro-Sil Monofill had taken place supported by a trust set up by the company before closure. When the trust was depleted, monitoring was discontinued until the current property owner requested that the work resume, beginning in October 2013. This report updates the 2024 Annual Water Quality Report to add the data from sampling events carried out in April and October 2025.

Similarly, groundwater elevation measurement and other data-gathering undertaken to comply with the Closure Permit issued in April 2007 were also discontinued in March 2009, then resumed at the request of the current property owner in September 2013. These measurements collected during 2025 are included in this report in Table 4 - Monitoring Well Maintenance and Performance Summary.

3.0 DATA SUMMARY

3.1 Table 1 – Monitoring Program Summary

Table 1 is a summary of the wells in the hydrological monitoring system. Water levels in each well and the pond surface elevation are measured semi-annually. Groundwater samples are collected semi-annually from seven wells and the leachate pond as noted in the table. No deviations to this schedule of data collection from each monitoring well have occurred.

Additional constituents were analyzed in samples from the leachate pond taken in April and October 2025 to provide waste water quality information to the City of Keokuk Water Pollution Control Plant in support of a revised waste water discharge permit. The pH of the pond is measured monthly as well. The analytical reports including the additional constituents for the city are included in this report as Attachment D.

Additional data was also collected from Monitoring Well 16 in March, July, and August 2025 to assess the on-going water quality concern at that well. These sampling events are noted as supplemental for MW-16 in Table 1.

3.2 Table 2 - Monitoring Program Implementation Schedule

Table 2 tracks compliance with permitted sampling frequencies and required parameters to aid in scheduling. No deviation to the permit-required sampling has occurred in the sixteen sampling events since January 2018. It is planned that sampling will continue in April and October of 2026 as required by the Closure Permit.

3.3 Table 3 - Monitoring Well Maintenance and Performance Revaluation Schedule

Table 3 tracks compliance with applicable regulations. Static water levels in all wells are measured semi-annually. The leachate pond surface elevation is measured monthly. Well depths are measured annually. Permeability testing was completed in March 2021 on the seven wells in the monitoring system. This testing will be repeated as required in 2026.

To measure permeability, the static water level of each well was recorded to the nearest 0.01 inch. A known volume was bailed from the well and the water level noted again. The water level was then recorded at approximately 30 second intervals for a period of ten minutes.

Permeability (K) was calculated using the Bouwer-Rice method to analyze the collected data. Well geometry and recovery data was entered into BR Slug Version 3.0 acquired from the IDNR to calculate K for each well. The software includes several data checks to make certain that a valid result will be generated.

3.4 Table 4 - Monitoring Well Maintenance and Performance Summary

Table 4 provides a summary of the well depths, screen elevation, and monthly groundwater level measurements. Note that all well screens are submerged. Records of previous permeability testing could not be located in the site record, so this information begins with the data collected in 2021. Although some wells are slow to recover during purging, the sampling protocol described in this report is adequate to address this circumstance.

Well depths in Table 4 have been revised based on the monitoring well diagrams submitted to IDNR in 1993 and 1994. Well depths were measured in October 2025 using a weighted tape measure. No well showed significant silting based on these measurements.

In two piezometers, PZ-4 and PZ-11, obstructions were encountered during well depth measurement previously and again in October 2025. The obstruction at PZ-4 occurs at 11.5 feet below top of casing. The obstruction at PZ-11 occurs at 46 feet below top of casing. The obstructions prevent the weight from sliding freely through the casings, but can be overcome by persistently changing the angle of the tape. The narrower water level indicator probe is able to slide freely in both wells, compared to the weight used for well depth measurements. The obstructions do not prevent the collection of required data.

As supported by the static water levels measured during 2025, the hydrologic setting and groundwater flow trends are nearly unchanged from 2024. Figure 1 is a layout of the closed landfill site. Figures 2 and 3 depict groundwater contours at the spring and fall sampling events in 2025. Groundwater depths notably decreased from April to October across the site, consistent with very dry conditions experienced during the summer months.

3.5 Table 5 - Background Summary

Table 5 summarizes the background levels detected for each monitored constituent. Up-gradient wells are MW-5, MW-7 and MW-12. Some constituents have been monitored since 1996, resulting in many more data points when compared to sulfate and fluoride for which monitoring began in 2015. Sulfide was added in 2017. Control limits are calculated by summing the concentrations of each constituent at each up-gradient well, calculating the mean and adding two standard deviations. Fluoride data collected in April 2017 has been removed from the control limit calculation at the direction of IDNR in a letter dated 26 December 2019. High concentrations of fluoride in samples from all three wells during that sampling event have never been repeated in any subsequent event.

The analytical results for sulfide from October 2020 have also been removed from the control limit calculation. The reporting limit for that round of sampling was 10 mg/L instead of 1.0 mg/L and use of that data in the statistical analysis skews the control limit upward. Samples from down-gradient wells also all had elevated detection limits or elevated detected concentrations compared to all previous results.

Graphs of the constituent concentrations over time for all wells updated with data from 2025 sampling events are included in Attachment A.

3.6 Table 6 - Summary of Well Constituents with No Immediately Preceding Control Limit Exceedances

Table 6 provides a summary of background levels compared to detections during the most recent spring and fall sampling events for constituents that had not been previously or recently identified as exceeding a control limit. During 2025, one new instance of a constituent exceeding a control limit occurred at MW-15 with fluoride. The control limit is 0.85 mg/L. The concentration measured at MW-15 in April 2025 was 1.01 mg/L. The concentration was below the method detection limit in October 2025 (<0.375).

3.7 Table 7 - Summary of Ongoing and Newly Identified Control Limit Exceedances

Table 7 summarizes the ongoing control limit exceedances at each monitored well and includes concentrations in excess of the identified health-based action levels for each constituent.

There are no issues with the monitoring network such as dry, damaged, or deteriorating wells.

MW-8 at the southeast edge of the filled area has ongoing control limit exceedances of ammonia nitrogen, strontium, and sulfate. The trend for ammonia nitrogen is decreasing, while the trend for lithium and sodium is increasing. There are also ongoing exceedances of health-based standards for iron, lithium, and sodium.

MW-14 adjacent to the leachate collection pond continues to have excess ammonia nitrogen, boron, strontium, and sulfate, but all show no trend. For total iron exceeding the control limit, the trend is increasing. This well also has ongoing exceedances of the health-based standards for lithium and sodium, which show an increasing trend and no trend, respectively.

MW-15 west of the landfill has ongoing control limit exceedances of lithium (no trend) and strontium (increasing). This well also has ongoing exceedances of health-based standards for sodium (no trend) and sulfate (increasing).

MW-16 adjacent to the leachate pond has ongoing control limit exceedances of chloride, iron, lithium, sodium, strontium and sulfate. Because the concentrations represented a reversal of a steady trend of improved water quality at this well for the five years preceding 2023, supplemental samples were collected during 2024 and again during 2025 to provide additional data. Mann-Kendall analysis of the concentration trends for these constituents shows the following:

Constituent	2023 Trend	2024 Trend	2025 Trend
Chloride	Increasing	Increasing	Increasing
Iron, total	Decreasing	No trend	Increasing
Lithium, total	Decreasing	Decreasing	No trend
Sodium, total	Decreasing	Decreasing	Increasing
Strontium, total	Decreasing	Increasing	Increasing
Sulfate	Decreasing	Increasing	Increasing

With respect to MW-16, the area around the leachate pond has been observed every month when the pond elevation is measured and also evaluated by the site engineer during the required spring and fall site inspections. There has been no visible evidence that leachate has been released to the soil from the leachate pond. No wetted areas were noted on the surface of the slope between the pond and the creek that might indicate a release. The pond surface elevation has remained below the level at which seepage could occur over the top of the poly liner since the pump was, and there are no visible run-off channels from the pond in any direction. The pond elevation remains static, even when the pump has not run, as has been the case from September through November 2025.

It should also be noted that the most recent sulfate concentration measured in the sample collected in October 2025 from MW-16 was 67.5 mg/L, compared to the samples in March, April, and August that showed 1,500 mg/L, 2,210 mg/L, and 2,620 mg/L respectively. The laboratory was contacted to review the analytical data from which the October 2025 report was generated and the lab verified the reporting is correct. MW-16 last showed sulfate at this level in October 2022, during the period of improved water quality at this well.

For all wells in 2026, continued semi-annual monitoring will be carried out as required by the permit.

3.8 Table 8 - Analytical Data Summary

Table 8 shows historic analytical data for each monitored constituent at each well, beginning in 1996 for some parameters and in 2015 for total metals, sulfate, and fluoride. Collection of sulfide data began in 2017. Supplemental sampling at MW-16 during 2025 is included in this table.

3.9 Sampling Protocol

Semi-annual sampling is carried out at Keokuk Ferro-Sil Monofill and includes seven monitoring wells and the leachate pond.

Wells are purged prior to sampling. A minimum of two well volumes are purged. As a third well volume is removed, pH, temperature, and conductivity are monitored. When variability of these measurements has stabilized to less than 10 percent, samples are collected. In most cases, this stability is demonstrated before three well volumes have been purged.

No wells are bailed dry during purging. A crew of four workers are involved in the sample collection.

One worker measures the static water level and begins purging at MW-12 , then proceeds to MW-5, 7, 8, 14, 16, and 15. A second worker measures the static water level and begins purging at MW-14, then proceeds to MW-16, 15, 12, 5, 7, and 8, following behind the first crew member.

A dedicated bailer is used at each well. Purging continues at the first well until two well volumes are removed or a partial bailer-full is encountered, at which time the crew member stops bailing and proceeds to the next well. The purging will be taken up again by the second purge-crew member when that worker reaches that well. This allows the well to recover to some extent such that purging can continue.

The sampling crew members follow the purging crews, beginning at MW-12 when at least two well volumes have been purged. One member of the sampling crew continues to purge the third well volume, while the second crew member measures the pH, temperature, and conductivity from each bailer of water removed. When the variability of the measurements is less than 10 percent for all parameters, the samples are collected into the properly labeled containers for that well and placed in a cooler on ice. The sampling crew then continues on to MW-5, 7, 8, 14, 16 and 15.

This method of purging and sampling provides valid representative samples of the groundwater from each of the wells included in the monitoring program.

Static water levels at MW-4, 6, 9, 11, and 13 are also measured by the purging crew.

The pond surface elevation is surveyed against a known bench-mark by the sampling crew.

The pond sampling is carried out from the dock which extends to the pump enclosure. The depth of the pond is measured and a submersible digital pyrometer is used to measure the water temperature through each foot of depth from the bottom to the surface to determine if temperature stratification is present. If temperature strata are present, equal volumes of sample are collected from each strata. If the temperature differences are not significant, then equal volumes of sample are collected from each two feet of depth.

The pond sample is collected using a discrete-depth sampler (Van Dorn-type cylinder). The device is lowered to each pre-determined depth to collect a sample at that depth. A known volume of each collected sample is composited into a single, clean polyethylene container. When all discrete samples have been collected, the composite is transferred into properly labeled containers and placed in a cooler on ice.

3.10 Table 9 - Historic Control Limit & Action Level Exceedances

This table summarizes the historical extent of groundwater impact and provides a demonstration of sequential degradation of monitored constituents. Exceedances of both action levels and control limits are depicted. As shown, only one new exceedance has occurred at any well. In April 2025, fluoride at MW-15 was measured at 1.01 mg/L in excess of the control limit of 0.85 mg/L, but was not detected in October 2025. This is an isolated incident that has occurred only once previously, in October 2020, with fluoride not detected during the intervening sampling events.

3.11 Table 10 - Groundwater Quality Assessment Plan Trend Analysis

This table lists each well, the corresponding constituent lists and the sample frequency for each well in the monitoring program. There are currently no corrective action activities under way in the monitoring program.

A Mann-Kendall trend analysis was applied for all well/constituent pairs where control limits are currently or have recently been exceeded. Negative values of S with confidence 80% or greater were identified as decreasing concentrations. Positive values of S with confidence 80% or greater are identified as increasing. A return of zero for S or a confidence value less than 80% indicates no trend.

In 2025, the statistical trends identified using the analysis as described changed for the following well/constituent pairs:

<u>Location</u>	<u>Constituent</u>	<u>2023 Trend</u>	<u>2024 Trend</u>	<u>2025 Trend</u>
MW-8	Lithium, total	No trend	No trend	Increasing
MW-14	Lithium, total	No trend	No trend	Increasing
MW-14	Sodium, total	Decreasing	Decreasing	No trend
MW-14	Strontium, total	Increasing	Increasing	No trend
MW-15	Aluminum, total	Decreasing	Decreasing	No trend
MW-15	Strontium, total	Increasing	No trend	Increasing
MW-16	Aluminum, total	No trend	No trend	Decreasing
MW-16	Iron, total	Decreasing	No trend	Increasing
MW-16	Lithium, total	Decreasing	Decreasing	No trend
MW-16	Sodium, total	Decreasing	Decreasing	Increasing
MW-16	Strontium, total	Decreasing	Increasing	Increasing
MW-16	Sulfate	Decreasing	Increasing	Increasing

Unchanged trends of increasing concentration over time were found as follow:

Location	Constituent	2023 Trend	2024 Trend	2025 Trend
MW-8	Strontium, total	Increasing	Increasing	Increasing
MW-8	Sulfate	Increasing	Increasing	Increasing
MW-14	Iron, total	Increasing	Increasing	Increasing
MW-15	Sulfate	Increasing	Increasing	Increasing
MW-16	Chloride	Increasing	Increasing	Increasing

MW-16 was the subject of more frequent monitoring during 2024 and 2025. All of the additional data was considered in the Mann-Kendall analysis with the trend results as shown above. This well, adjacent to the leachate pond, was flagged because, following installation of a pump in 2017 to control the leachate level, there was a swift and marked improvement in the water quality at MW-16. This improvement was documented from April 2018 until April 2023, at which time the concentrations of most monitored constituents returned to the levels reported prior to 2018.

To further assess the current trend at MW-16, Mann-Kendall analysis was carried out for all constituents exceeding a control limit, while eliminating the data from April 2018 through October 2022. When carried out in this manner, the results show that even though the water quality improvements seen during that period have reversed, the conditions at the well are more stable than might otherwise appear, as demonstrated below. This approach is not used to suggest that the deterioration in water quality at this well is not notable, only that in the shorter term, increases are not significant for most monitored constituents compared to the water quality prior to 2018.

Location	Constituent	2025 Trend (all data)	2025 Trend (limited data set)
MW-16	Chloride	Increasing	Decreasing
MW-16	Iron, total	Increasing	Increasing
MW-16	Lithium, total	No trend	Decreasing
MW-16	Sodium, total	Increasing	No trend
MW-16	Strontium, total	Increasing	Increasing
MW-16	Sulfate	Increasing	No trend

3.12 Table 11 - Leachate Management Summary

This table summarizes the data used to evaluate leachate control system performance. As shown, the leachate pond elevation has been stable and the storage volume was adequate. The electrical connection to the pump was found to be faulty in April 2025, but was quickly repaired.

Pump hours are monitored and used to determine the volume of leachate pumped from the pond to the municipal sanitary sewer as allowed by a permit issued by the City of Keokuk.

High-pressure jetting of the leachate collection system, as required by the closure permit will be scheduled during 2027.

No further repairs or proposed changes to the leachate management system have been identified at this time.

3.13 Gas Monitoring

The waste disposed at this site does not generate any methane or other gas.

4.0 Recommendations

As described in this report, the groundwater at each of the four sampling points included in the monitoring plan has a few monitored constituents exceeding a control limit and/or health-based standard. MW-16 has been the subject of additional scrutiny in the monitoring program because improvements in water quality at this well between 2018 and 2022 have reversed.

MW-16 is located near the southwest corner of the leachate collection pond. Because no electric power was available at this site, for a period of years, the pond level could not be controlled by automatic pumping. Instead a pump and generator were frequently brought to the site and used to prevent the pond from overflowing. An earthen berm was installed around the pond in 2012 to provide additional freeboard. In 2016, power was restored to the site and a pump system directing leachate to the municipal sewer system was installed in 2017.

Between the monitoring events of October 2017 and April 2018, the concentrations of the seven constituents exceeding control limits were seen to drop precipitously and remain well below the control limits for the next five years. In April 2023, the concentrations of six of these same seven constituents showed marked increases and by October 2023 had returned to the levels measured in October 2017. The concentrations have stabilized at those levels since then except for COD which has remained low.

The five-year improvement seen at MW-16 from 2018 until 2023 was presumed to be related to the introduction of a pump to control the leachate level in the pond. Although the addition of the soil berm in 2012 had eliminated direct overflow of leachate from the pond, it is possible that seepage was occurring through the interface between the berm and the poly liner around the pond edge until the pump was installed in 2017. The current automatic pump system maintains the pond level 4-5 feet below this interface, eliminating potential seepage.

During 2024, it was necessary to completely draw down the leachate pond to replace the pump. This draw-down was seen as an opportunity for investigating the known water

quality issues at MW-16. Monthly inspection of the area around the pond has not identified any issue with the integrity of the pond liner. If an undiscovered release pathway from the pond is directly affecting the water quality at MW-16, having removed the leachate for a period of several months would be expected to result in a trend of decreasing constituent concentrations over time. Once the pump was restored and the pond level was allowed to recover, then it would be expected that a trend of increasing constituent concentrations would be evident if integrity of the pond is an issue. The additional data collected from this well during 2024 and 2025 did not identify either trend. Either sufficient time has not elapsed for the expected trends to occur, or an undiscovered release pathway from the pond is not the direct source of poor water quality at MW-16. One exception to this is the concentration of sulfate at MW-16, which dropped from 2,620 mg/L in August 2025 to 67.5 mg/L in October 2025.

At this time, semi-annual monitoring remains sufficient to characterize ground water quality at this closed industrial monofill. The analytical results from the scheduled monitoring event in April 2026 will be immediately reviewed to determine if further decreases in concentrations of constituents have occurred at MW-16.

Table 1 Monitoring Program Summary 2025 Annual Water Quality Report Keokuk Ferro-Sil Monofill Permit No. 56-SDP-17-91P

Monitoring Well	Formation	Current Monitoring Program	Change for next sampling event	Current Control Limit Exceedances	Total # of Samples in each monitoring program since January 1, 2018		
					Routine	Supplemental	Remedial Action
MW-4	Glacial Till	Semi-annual water level	NC		0	0	0
MW-5	Glacial Till - Silty Clayey Sand	Upgradient - Routine semi-annual sampling & water level	NC	Total iron, Sodium	16	0	0
MW-6	Glacial Till - Silty Clayey Sand	Semi-annual water level	NC		0	0	0
MW-7	Glacial Till - Silty Clayey Sand	Upgradient - Routine semi-annual sampling & water level	NC	Ammonia nitrogen, Total aluminum	16	0	0
MW-8	Glacial Till - Clayey Sandy Silt	Downgradient - Routine semi-annual sampling & water level	NC	Ammonia nitrogen, Total Strontium, Sulfate	16	0	0
MW-9	Glacial Till - Clayey Sandy Silt	Semi-annual water level	NC		0	0	0
MW-11	Glacial Till - Silty Clay/Clayey Silt	Semi-annual water level	NC		0	0	0
MW-12	Glacial Till - Clayey Silt	Upgradient - Routine semi-annual sampling & water level	NC		16	0	0
MW-13	Glacial Till - Clayey Silt	Semi-annual water level	NC		0	0	0
MW-14	Glacial Till - Silty Clay/Clayey Sand	Downgradient - Routine semi-annual sampling & water level	NC	Ammonia nitrogen, Total iron, Total strontium, Sulfate	16	0	0
MW-15	Glacial Till - Silty Clay/Clayey Sand	Downgradient - Routine semi-annual sampling & water level	NC	Total lithium, Total strontium	16	0	0
MW-16	Glacial Till - Silty Clay/Clayey Sand	Downgradient - Routine semi-annual sampling & water level	NC	Chloride, Total iron, Total lithium, Total sodium, Total strontium	16	6	0
Other monitoring points							
Leachate Pond	Glacial Till - Silty Clay/Clayey Sand	Annual routine sampling; Monthly surface elevat	NC	NA	9	10	0
NC = No Change							

Table 3
Monitoring Well Maintenance and Performance Revaluation Schedule
2025 Annual Water Quality Report
Keokuk Ferro-Sil Monofill
Permit No. 56-SDP-17-91P

Compliance with:	Monitoring Calendar Years							
	2020	2021	2022	2023	2024	2025	2026	2027
567 IAC 114.21(2)"a" high and low water levels (add required frequency)	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Scheduled	Scheduled
567 IAC 114.21(2)"b" changes in the hydrologic setting and flow paths	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Semi-Annual - Completed	Scheduled	Scheduled
567 IAC 114.21(2)"c" well depths	Not Completed	Annual - Completed	Annual - Completed	Annual - Completed	Annual - Completed	Annual - Completed	Scheduled	Scheduled
567 IAC 114.21(2)"d" in-situ permeability tests	Not Completed	Completed -Every 5 Years					Scheduled	

Table 4
Monitoring Well Maintenance and Performance Summary
2025 Annual Water Quality Report
Keokuk Ferro-Sil Monofill
Permit No. 56-SDP-17-91P
(includes all wells, underdrains etc.)

The original data
could not be located

Well	Top of Casing, ft msl	Top of Screen, ft msl	Total Depth, ft				Maximum Depth Discrepancy (ft)	Baseline Permeability (cm/s/date)	Current Permeability	
					4/17/2025	10/16/2025			3/29/2021	% Change
MW-5	617.06	547.46	79.6	Groundwater Level (ft)	2.99	7.45	-0.1	2.07E-05	2.07E-05	0%
				Groundwater Elevation (Ft MSL)	614.07	609.61				
				Measured Well Depth (ft)	79.5					
				Submerged screen	Y	Y				
MW-7	651.39	585.54	75.85	Groundwater Level (ft)	41.17	42.58	-0.05	2.95E-06	2.95E-06	0%
				Groundwater Elevation (Ft MSL)	610.22	608.81				
				Measured Well Depth (ft)	75.8					
				Submerged screen	Y	Y				
MW-8	606.49	556.23	60.26	Groundwater Level (ft)	15.64	18.37	0.04	1.61E-06	1.61E-06	0%
				Groundwater Elevation (Ft MSL)	590.85	588.12				
				Measured Well Depth (ft)	60.3					
				Submerged screen	Y	Y				
MW-12*	655.97	585.28	80.69	Groundwater Level (ft)	19.05	21.24	0.01	2.59E-06	2.59E-06	0%
				Groundwater Elevation (Ft MSL)	636.92	634.73				
				Measured Well Depth (ft)	80.7					
				Submerged screen	Y	Y				
MW-14	608.11	555.8	62.31	Groundwater Level (ft)	31.47	33.08	-0.11	1.96E-05	1.96E-05	0%
				Groundwater Elevation (Ft MSL)	576.64	575.03				
				Measured Well Depth (ft)	62.2					
				Submerged screen	Y	Y				
MW-15	623.85	571.1	62.75	Groundwater Level (ft)	8.92	14.97	-0.35	4.47E-05	4.47E-05	0%
				Groundwater Elevation (Ft MSL)	614.93	608.88				
				Measured Well Depth (ft)	62.4					
				Submerged screen	Y	Y				
MW-16	608.64	556.2	62.44	Groundwater Level (ft)	31.19	33.14	-0.74	7.64E-05	7.64E-05	0%
				Groundwater Elevation (Ft MSL)	577.45	575.5				
				Measured Well Depth (ft)	61.7					
				Submerged screen	Y	Y				
MW-4 PZ	634.62	554.04	90.6	Groundwater Level (ft)	39	44.63	-0.2			
				Groundwater Elevation (Ft MSL)	595.62	589.99				
				Measured Well Depth (ft)	90.4					
				Submerged screen	Y	Y				
MW-6 PZ*	616.51	527.31	99.2	Groundwater Level (ft)	37.63	40.11	0.6			
				Groundwater Elevation (Ft MSL)	578.88	576.4				
				Measured Well Depth (ft)	99.8					
				Submerged screen	Y	Y				
MW-9 PZ	606.46	575.88	40.58	Groundwater Level (ft)	16.14	19.57	0.02			
				Groundwater Elevation (Ft MSL)	590.32	586.89				
				Measured Well Depth (ft)	40.6					
				Submerged screen	Y	Y				
MW-11 PZ	648.76	585.3	73.46	Groundwater Level (ft)	46.24	48.42	0.54			
				Groundwater Elevation (Ft MSL)	602.52	600.34				
				Measured Well Depth (ft)	74					
				Submerged screen	Y	Y				
MW-13 PZ	656.52	622.5	42.8	Groundwater Level (ft)	18.74	21.08	0			
				Groundwater Elevation (Ft MSL)	637.78	635.44				
				Measured Well Depth (ft)	42.8					
				Submerged screen	Y	Y				

*Repairs to hinges on well covers in 2011 required removal of short portions from the tops of the casings at MW-6 and MW-12.

Table 5
Background Summary
2025 Annual Water Quality Report
Keokuk Ferro-Sil Monofill
Permit No. 56-SDP-17-91P

Interwell Background/Control Limit (MW-5, MW-7 and MW-12)

Constituent	Units	Samples	Detections	Background level	Statistical Test	Action Level	Source
Chloride	mg/L	141	141	160.21	M+/-2SD	250	SDWR
Fluoride	mg/L	57	30	0.85	M+/-2SD	4	MCL
COD	mg/L	141	91	29.3	M+/-2SD	None	None
Ammonia nitrogen	mg/L	141	40	0.94	M+/-2SD	10	MCL ¹
Aluminum, total	mg/L	61	7	0.068	M+/-2SD	0.05	SDWR
Barium, total	mg/L	61	61	0.13	M+/-2SD	2	MCL
Boron, total	mg/L	61	27	0.25	M+/-2SD	6	SS/HAL ²
Iron, total	mg/L	60	35	0.71	M+/-2SD	0.3	SDWR
Lithium, total	mg/L	62	60	0.15	M+/-2SD	0.014	SS ³
Sodium, total	mg/L	62	62	175.3	M+/-2SD	20	HAL
Strontium, total	mg/L	62	62	1.50	M+/-2SD	4	SS/HAL ²
Sulfate	mg/L	62	62	710.8	M+/-2SD	250	SDWR
Sulfide	mg/L	51	5	2.28	M+/-2SD	None	None

¹ The MCL is for nitrate as nitrogen.

² Statewide standard - protected groundwater source. (Same as the Lifetime Health Advisory Level - HAL for this constituent.)

³ Statewide standard - protected groundwater source.

Table 6
Summary of Well/Constituents Pairs with *No Immediately Preceding Control Limit Exceedances*
2025 Annual Water Quality Report
Keokuk Ferro-Sil Monofill
Permit No. 56-SDP-17-91P

Well	Constituent	Units	Most recent result		Control Limit
			Apr-25	Oct-25	
MW-8					
MW-14					
MW-15	Fluoride	mg/L	1.01	<0.375	0.85
MW-16					

Table 7
Summary of Ongoing and Newly Identified Control Limit Exceedances
2025 Annual Water Quality Report
Keokuk Ferro-Sil Monofill
Permit No. 56-SDP-17-91P

Well	Constituent	Units	Apr-25	Oct-25	Control Limit	Action Level/ Statewide Standard	
MW-8	Ammonia nitrogen	mg/L	2.31	3.72	0.94	10	MCL (nitrate as N)
	Iron, total	mg/L	0.408	<0.200	0.71	0.3	SWDR
	Lithium, total	mg/L	0.0159	0.0412	0.15	0.014	SS
	Sodium, total	mg/L	107	104	175.3	20	HAL
	Strontium, total	mg/L	2.13	2.42	1.5	4	HAL/SS
	Sulfate	mg/L	949	892	710.8	250	SDWR
MW-14	Ammonia nitrogen	mg/L	3.83	3.7	0.94	10	MCL (nitrate as N)
	Boron, total	mg/L	0.283	<0.328	0.25	6	HAL/SS
	Iron, total	mg/L	4.2	1.38	0.71	0.3	SWDR
	Lithium, total	mg/L	0.0168	0.0159	0.15	0.014	SS
	Sodium, total	mg/L	107	102	175.3	20	HAL
	Strontium, total	mg/L	2.6	2.75	1.5	4	HAL/SS
	Sulfate	mg/L	1370	1410	710.8	250	SDWR
MW-15	Fluoride	mg/L	1.01	<0.375	0.85	0.014	SS
	Lithium, total	mg/L	0.201	0.224	0.15	0.014	SS
	Sodium, total	mg/L	90.7	95.3	175.3	20	HAL
	Strontium, total	mg/L	1.51	1.9	1.5	4	HAL/SS
	Sulfate	mg/L	698	683	710.8	250	SDWR
MW-16	Chloride	mg/L	204	191	160.2	250	SDWR
	Iron, total	mg/L	2.55	4.31	0.71	0.3	SWDR
	Lithium, total	mg/L	0.3	0.283	0.15	0.014	SS
	Sodium, total	mg/L	233	254	175.3	20	HAL
	Strontium, total	mg/L	3.42	3.48	1.5	4	HAL/SS
	Sulfate	mg/L	2210	67.5	710.8	250	SDWR

Table 8
Analytical Data Summary
2025 Annual Water Quality Report
Keokuk Ferro-Sil Monofill
Permit No. 56-SDP-17-91P

Constituent (CAS #)	Sample Date	Units	MW-5 Upgradient	MW-7 Upgradient	MW-8 DwnGrad	MW-12 Upgradient	MW-14 DwnGrad	MW-15 DwnGrad	MW-16 DwnGrad	Pond DwnGrad
Chemical Oxygen Demand No health-based standard	10 Apr 1996	mg/L	9.7	5	11	<5.0	7.8	19	21	
	11 Oct 1996	mg/L	5.4	<5.0	12	<5.0	32	26	21	
	18 Apr 1997	mg/L	<5.0	<5.0	<5.0	<5.0	14	27	11	
	13 Oct 1997	mg/L	<5.0	5.4	14	<5.0	<5.0	43	19	
	14 Apr 1998	mg/L	18	18	180	2	550	620	98	
	26 Aug 1998	mg/L	33	15	160	6	430	500	160	
	24 Apr 1999	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	47	7.8	
	15 Oct 1999	mg/L	<5.0	<5.0	5.4	<5.0	19	na	22	
	29 Apr 2000	mg/L	9.8	<5.0	<5.0	<5.0	28	72	19	
	14 Oct 2000	mg/L	<5.0	<5.0	<5.0	<5.0	23	47	6	
	21 Apr 2001	mg/L	7.1	<5.0	<5.0	<5.0	26	66	19	
	30 Sept 2003	mg/L	<5.0	5.1	<5.0	<5.0	<5.0	28	14	
	29 Mar 2004	mg/L	17	17	11	24	17	34	26	
	29 Sep 2004	mg/L	24	18	18	9.3	28	15	40	
	24 Mar 2005	mg/L	33	32	8.3	<5.0	58	54	16	
	27 Sep 2005	mg/L	13	28	24	51	28	49	30	
	25 Apr 2006	mg/L	10.1	10.2	47	39.9	42.9	30.8	51.9	
	17 Oct 2006	mg/L	7.9	6.5	19.4	7.6	65.1	71.5	24.6	
	30 Apr 2007	mg/L	<5.0	<5.0	17	<5.0	12.9	21.4	19.4	408
	30 Oct 2007	mg/L	18.2	<5.00	<5.00	<5.00	<5.00	32.8	10.5	
	14 Apr 2008	mg/L	13	10	36	13.4	26.6	48.5	31.5	
	29 Oct 2008	mg/L	24.4	15.4	13.3	10.3	69.8	27.1	45.5	
	28 Oct 2013	mg/L	7	14.4	7.3	5.7	25.7	58.9	160	
	30 Mar 2014	mg/L	5.9	12.8	7.3	11.4	6.6	27.6	18.6	
	29 Oct 2014	mg/L	9.3	9	<5.0	<5.00	12.5	24.7	19.6	
	28 Apr 2015	mg/L	10.2	21.4	10.6	10.2	<5.0	27.4	47.7	
	22 Oct 2015	mg/L	9.87	6.87	8.2	<5.00	8.2	19.2	21.9	
	20 Apr 2016	mg/L	12.6	<5.00	7.27	<5.0	7.27	14.9	21.1	
	6 Oct 2016	mg/L	15.1	8.76	16.8	8.76	15.1	26.5	14.4	
	20 Apr 2017	mg/L	15.5	11.8	19.5	9.78	41.3	22.5	30.6	19.2
	5 Oct 2017	mg/L	35.4	47.3	37.1	<5.0	12.5	67.7	47.3	
	26 Apr 2018	mg/L	5.03	5.03	9.9	<5.0	8.93	17.4	10.6	37.2
	18 Oct 2018	mg/L	8.4	27.3	17.7	7.07	16.4	19.4	22.3	22
	25 Apr 2019	mg/L	<5.0	36.5	12.2	<5.0	41.6	24.3	21.6	35.5
	17 Oct 2019	mg/L	<5.0	18.7	<5.00	<5.0	5.24	16.3	9.5	40.1
	23 Apr 2020	mg/L	8.46	21.4	8.81	<5.0	10.6	22.4	13.4	35
	15 Oct 2020	mg/L	12.8	<5.00	10.5	5.57	12.2	22.4	20.1	41.5
	22 Apr 2021	mg/L	13.6	17.4	9.52	<4.80	13.6	17.4	15	29
	28 Oct 2021	mg/L	11.6	10.5	11.9	9.42	9.78	26.9	26.2	38
	28 Apr 2022	mg/L	8.81	<4.80	<4.80	<4.80	7.69	27.5	14.8	31.6
	13 Oct 2022	mg/L	8.61	9.58	<4.80	<4.80	7.31	32	10.9	30.1
	20 Apr 2023	mg/L	7.72	17.8	16.5	11.8	18.8	25.9	19.5	33.7
	19 Oct 2023	mg/L	8.44	<4.80	7.07	<4.80	11.9	20.4	20.4	45.8
	28 Mar 2024	mg/L								40.9
	25 Apr 2024	mg/L	7.65	11.9	9.28	7.98	9.28	19.7	17.1	28.5
	29 Aug 2024	mg/L								28.5
	26 Sep 2024	mg/L								42
	17 Oct 2024	mg/L	11.4	6.03	14.1	<9.60	9.83	23.1	20.3	35
	17 Apr 2025	mg/L	7.14	25.9	10.8	6.15	12.10	21.7	18.9	43.3
	16 Oct 2025	mg/L	<4.60	28.8	<4.60	<4.60	<4.60	14.9	7.94	25.5

Table 8
Analytical Data Summary
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Constituent (CAS #)	Sample Date	Units	MW-5 Upgradient	MW-7 Upgradient	MW-8 DwnGrad	MW-12 Upgradient	MW-14 DwnGrad	MW-15 DwnGrad	MW-16 DwnGrad	Pond DwnGrad
Ammonia Nitrogen MCL = 10 (nitrate as N)	10 Apr 1996	mg/L	<0.20	1.4	4.2	0.29	3.2	1.3	1.3	
	11 Oct 1996	mg/L	<0.20	0.78	4.5	<0.20	3.9	2	1.1	
	18 Apr 1997	mg/L	<0.20	0.57	3.9	<0.20	3.6	1.8	1.4	
	13 Oct 1997	mg/L	<0.20	0.76	4.2	<0.20	3.2	1.7	0.92	
	14 Apr 1998	mg/L	0.2	0.9	4.6	0.2	4.6	0.8	1.1	
	26 Aug 1998	mg/L	0.2	0.8	4.4	0.1	4.4	0.9	0.6	
	24 Apr 1999	mg/L	<0.20	0.86	4.5	<0.20	5	0.63	0.54	
	15 Oct 1999	mg/L	0.25	0.38	4.4	<0.20	4.3		0.21	
	29 Apr 2000	mg/L	0.23	0.91	4.11	<0.20	4.16	0.62	0.49	
	14 Oct 2000	mg/L	<0.20	0.53	4.48	<0.20	3.9	0.47	0.44	
	21 Apr 2001	mg/L	<0.20	0.5	3.42	<0.20	4.09	0.64	0.37	
	30 Sept 2003	mg/L	<0.20	<0.20	1.69	<0.20	1.96	<0.20	<0.20	
	29 Mar 2004	mg/L	<0.20	<0.20	<0.20	<0.20	0.92	<0.20	<0.20	
	29 Sep 2004	mg/L	1.4	<0.20	<0.20	<0.20	1.97	<0.20	1.29	
	24 Mar 2005	mg/L	<0.20	<0.20	<0.20	<0.20	2.06	<0.20	<0.20	
	27 Sep 2005	mg/L	<0.20	<0.20	<0.20	<0.20	2.53	<0.20	<0.20	
	25 Apr 2006	mg/L	<0.20	<0.20	2.11	<0.20	3.72	<0.20	0.357	
	17 Oct 2006	mg/L	<0.20	<0.20	1.21	<0.20	2.68	<0.20	0.361	
	30 Apr 2007	mg/L	<0.20	<0.20	0.514	<0.20	3	<0.20	<0.200	16.4
	30 Oct 2007	mg/L	0.397	<0.200	1.75	<0.200	2.96	<0.200	<0.200	
	14 Apr 2008	mg/L	<0.200	<0.200	3.27	<0.200	3.56	<0.200	0.527	
	29 Oct 2008	mg/L	<0.200	<0.200	3.16	<0.200	2.41	<0.200	6.05	
	28 Oct 2013	mg/L	<0.200	<0.200	1.1	<0.200	23.3	12.6	28.9	
	30 Mar 2014	mg/L	<0.200	<0.200	1.45	<0.200	4.02	11.7	0.492	
	29 Oct 2014	mg/L	<0.200	<0.200	4.38	<0.200	4.13	4.71	<0.200	
	28 Apr 2015	mg/L	<0.460	1.04	3.86	<0.500	3.95	<0.490	<0.510	
	22 Oct 2015	mg/L	<0.200	1.23	4.89	<0.200	1.85	<0.200	<0.200	
	20 Apr 2016	mg/L	<0.200	1.18	0.587	<0.200	3.96	<0.200	<0.200	<0.200
	6 Oct 2016	mg/L	<0.200	0.746	3.25	<0.200	4.47	<0.200	<0.200	
	20 Apr 2017	mg/L	<0.200	0.704	0.37	<0.200	3.84	<0.200	<0.200	<0.500
	5 Oct 2017	mg/L	<0.200	<0.200	1.62	<0.200	3.83	<0.200	0.532	
	26 Apr 2018	mg/L	<0.200	1.13	<0.200	<0.200	3.97	<0.200	<0.200	<0.500
	18 Oct 2018	mg/L	<0.200	0.615	1.05	<0.200	3.12	<0.200	<0.200	<0.200
	25 Apr 2019	mg/L	<0.200	<0.200	<0.200	<0.200	3.13	<0.200	<0.200	<0.200
	17 Oct 2019	mg/L	<0.200	<0.200	1.77	<0.200	3.72	<0.200	<0.200	<0.200
	23 Apr 2020	mg/L	<0.200	0.2	<0.200	<0.200	3.12	<0.200	<0.200	<0.200
	15 Oct 2020	mg/L	<0.200	<0.200	<0.200	<0.200	3.25	<0.200	<0.200	0.632
	22 Apr 2021	mg/L	<0.0690	0.544	2.77	<0.0690	3.87	<0.0690	<0.0690	<0.0690
	28 Oct 2021	mg/L	<0.0690	0.439	2.03	<0.0690	3.25	<0.0690	<0.0690	0.28
	28 Apr 2022	mg/L	<0.100	1.26	2.61	<0.100	4.17	<0.100	<0.100	<0.100
	13 Oct 2022	mg/L	<0.100	0.628	1.93	<0.100	2.21	<0.100	<0.100	0.253
	20 Apr 2023	mg/L	<0.220	0.657	<0.220	<0.220	3.53	<0.220	0.542	<0.220
	19 Oct 2023	mg/L	<0.100	0.373	3.08	<0.100	3.97	<0.100	0.295	<0.100
	25 Apr 2024	mg/L	0.128	0.783	1.66	<0.100	4.53	<0.100	0.692	0.304
	17 Oct 2024	mg/L	<0.100	1.01	3.15	<0.100	3.71	<0.100	0.435	<0.210
	17 Apr 2025	mg/L	<0.210	0.57	2.31	<0.210	3.83	<0.210	0.456	<0.100
	16 Oct 2025	mg/L	<0.120	1.36	3.72	<0.120	3.7	<0.120	0.624	<0.620

Table 8
Analytical Data Summary
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Constituent (CAS #)	Sample Date	Units	MW-5 Upgradient	MW-7 Upgradient	MW-8 DwnGrad	MW-12 Upgradient	MW-14 DwnGrad	MW-15 DwnGrad	MW-16 DwnGrad	Pond DwnGrad
Aluminum, total SDWR = 0.05	20 Jul 2015	mg/L								1.38
	28 Apr 2015	mg/L	0.109			0.0528	0.119	0.184	0.148	
	20 Apr 2016	mg/L	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	0.152
	6 Oct 2016	mg/L	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050	
	20 Apr 2017	mg/L	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	0.0684	0.128
	5 Oct 2017	mg/L	<0.050	<0.05	<0.050	<0.050	<0.050	<0.050	0.0674	
	26 Apr 2018	mg/L	<0.050	<0.05	<0.050	<0.05	<0.0500	<0.050	<0.050	0.0543
	18 Oct 2018	mg/L	<0.050	<0.05	<0.150	<0.050	<0.150	<0.050	0.171	0.139
	25 Apr 2019	mg/L	<0.050	<0.05	<0.050	<0.05	<0.050	0.142	0.0515	0.678
	17 Oct 2019	mg/L	<0.050	<0.05	<0.200	<0.05	<0.200	<0.200	0.0661	0.34
	23 Apr 2020	mg/L	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.050	0.475
	15 Oct 2020	mg/L	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	0.104	0.4
	22 Apr 2021	mg/L	<0.0150	<0.0150	0.0285	<0.0150	0.0261	<0.0150	0.0588	0.0453
	28 Oct 2021	mg/L	<0.0170	<0.0170	<0.0170	<0.0170	<0.0170	<0.0170	0.0681	0.77
	28 Apr 2022	mg/L	<0.0170	<0.0170	<0.0680	<0.0170	<0.0680	<0.0680	<0.0170	0.154
	13 Oct 2022	mg/L	<0.0170	0.0323	<0.0170	0.029	<0.0170	<0.0170	<0.0170	0.122
	20 Apr 2023	mg/L	<0.0170	0.0384	<0.0170	0.069	0.0403	0.221	0.0302	0.0618
	19 Oct 2023	mg/L	<0.0680	<0.0170	<0.0170	<0.0170	0.0239	0.018	0.0202	0.664
	25 Apr 2024	mg/L	<0.0210	<0.0210	<0.0210	<0.0210	<0.0210	<0.0210	<0.0210	0.06
	17 Oct 2024	mg/L	<0.0210	<0.0210	<0.0210	<0.0210	<0.0210	<0.0210	0.0351	0.0322
	17 Apr 2025	mg/L	<0.0290	<0.0290	<0.0290	<0.0290	<0.0290	0.0364	0.0532	<0.0290
	16 Oct 2025	mg/L	<0.116	0.133	<0.116	<0.0290	<0.116	<0.116	<0.116	<0.0290
Barium, total MCL = 2	30 Apr 2007	mg/L								0.522
	20 Jul 2015	mg/L								0.28
	28 Apr 2015	mg/L	0.0296			0.0212	0.0334	0.0374	0.0156	
	20 Apr 2016	mg/L	0.0154	0.102	0.078	0.0189	0.0302	0.0321	0.0139	0.194
	6 Oct 2016	mg/L	0.0141	0.0954	0.081	0.0201	0.0279	0.0324	0.0132	
	20 Apr 2017	mg/L	0.0168	0.109	0.0655	0.0211	0.0299	0.0297	0.0167	0.0643
	5 Oct 2017	mg/L	0.0147	0.109	0.0712	0.0214	0.0283	0.0271	0.0209	
	26 Apr 2018	mg/L	0.0149	0.0828	0.0581	0.024	0.0344	0.0256	0.0644	0.0883
	18 Oct 2018	mg/L	0.0121	0.124	0.0645	0.023	0.0247	0.0257	0.0667	0.109
	25 Apr 2019	mg/L	0.0104	0.0444	0.0386	0.0192	0.0221	0.0244	0.0783	0.105
	17 Oct 2019	mg/L	0.0112	0.0806	0.0538	0.0188	0.025	0.0285	0.149	0.13
	23 Apr 2020	mg/L	0.0136	0.111	0.0382	0.0211	0.0263	0.0278	0.086	0.118
	15 Oct 2020	mg/L	0.00921	0.122	0.0412	0.0206	0.0249	0.0272	0.0795	0.247
	22 Apr 2021	mg/L	0.0136	0.0959	0.0617	0.0256	0.0308	0.0302	0.0848	0.15
	28 Oct 2021	mg/L	0.0106	0.124	0.0545	0.0287	0.0241	0.0255	0.0968	0.205
	28 Apr 2022	mg/L	0.0114	0.0995	0.0488	0.027	0.0245	0.0214	0.0767	0.112
	13 Oct 2022	mg/L	0.0119	0.12	0.0513	0.0331	0.0266	0.0275	0.085	0.242
	20 Apr 2023	mg/L	0.0121	0.109	0.0412	0.036	0.0259	0.0297	0.0373	0.136
	19 Oct 2023	mg/L	0.0121	0.0422	0.054	0.0371	0.0268	0.026	0.0162	0.285
	25 Apr 2024	mg/L	0.0121	0.111	0.0396	0.0367	0.0262	0.0236	0.015	0.138
	17 Oct 2024	mg/L	0.0137	0.112	0.0529	0.0368	0.0244	0.0264	0.014	0.107
	17 Apr 2025	mg/L	0.0143	0.107	0.0458	0.0336	0.0257	0.0198	0.0137	0.0197
	16 Oct 2025	mg/L	0.0152	0.103	0.0485	0.0328	0.0276	<0.0261	0.014	0.0649
Boron, total HAL = 6	20 Jul 2015	mg/L								<0.250
	28 Apr 2015	mg/L	<0.050			0.0739	0.254	<0.050	0.0578	
	20 Apr 2016	mg/L	<0.200	0.247	0.218	<0.200	0.301	<0.200	<0.200	
	6 Oct 2016	mg/L	<0.200	0.217	<0.200	<0.200	0.227	<0.200	<0.200	
	20 Apr 2017	mg/L	<0.200	0.209	0.208	<0.200	0.257	<0.200	<0.200	<0.200
	5 Oct 2017	mg/L	<0.200	0.228	<0.400	<0.200	<0.400	<0.200	<0.400	
	26 Apr 2018	mg/L	<0.200	0.235	0.226	<0.200	0.276	<0.200	<0.200	0.278
	18 Oct 2018	mg/L	<0.200	0.239	<0.600	<0.200	<0.600	<0.200	<0.200	<0.200
	25 Apr 2019	mg/L	<0.200	<0.200	<0.200	<0.200	0.211	<0.200	<0.200	0.281
	17 Oct 2019	mg/L	<0.200	<0.200	<0.800	<0.200	<0.800	<0.800	<0.200	0.288
	23 Apr 2020	mg/L	<0.100	0.172	0.208	<0.100	0.295	<0.100	<0.100	0.247
	15 Oct 2020	mg/L	<0.100	0.174	0.196	<0.100	0.272	<0.100	<0.100	0.256
	22 Apr 2021	mg/L	<0.0580	0.187	0.197	0.075	0.278	<0.0580	<0.0580	0.206
	28 Oct 2021	mg/L	0.0892	0.236	0.236	0.127	0.301	0.0791	0.118	0.361
	28 Apr 2022	mg/L	<0.0580	0.222	0.184	0.0861	0.248	<0.0580	<0.0580	0.215
	13 Oct 2022	mg/L	<0.0580	0.198	0.171	0.0963	0.237	<0.0580	<0.0580	0.307
	20 Apr 2023	mg/L	<0.0760	0.21	0.186	0.104	0.266	<0.0760	<0.0760	0.25
	19 Oct 2023	mg/L	<0.304	0.0955	0.2	0.0901	0.28	<0.0760	0.0789	0.374
	25 Apr 2024	mg/L	<0.0760	0.177	0.165	<0.0760	0.252	<0.0760	<0.0760	0.192
	17 Oct 2024	mg/L	<0.0760	0.201	0.171	<0.0760	0.266	<0.0760	<0.0760	0.311
	17 Apr 2025	mg/L	<0.0820	0.268	0.213	0.0998	0.283	0.107	0.176	0.23
	16 Oct 2025	mg/L	<0.328	0.235	<0.328	<0.0820	<0.328	<0.328	<0.328	0.341

Table 8
Analytical Data Summary
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Keokuk Ferro-Sil Monofill
Permit No. 56-SDP-17-91P

Constituent (CAS #)	Sample Date	Units	MW-5 Upgradient	MW-7 Upgradient	MW-8 DwnGrad	MW-12 Upgradient	MW-14 DwnGrad	MW-15 DwnGrad	MW-16 DwnGrad	Pond DwnGrad
Iron, total SDWR = 0.3	30 Apr 2007	mg/L								2.33
	20 Apr 2016	mg/L	<0.100	0.142	<0.100	<0.100	0.962	0.346	0.226	0.664
	6 Oct 2016	mg/L	<0.100	<0.100	0.222	<0.100	1.54	1.91	1.02	
	20 Apr 2017	mg/L	0.449	<0.100	<0.100	<0.100	1.09	0.259	0.999	0.643
	5 Oct 2017	mg/L	0.218	0.265	0.14	<0.100	1.53	1.01	4.86	
	26 Apr 2018	mg/L	<0.100	0.405	0.197	<0.100	2	0.138	0.453	0.409
	18 Oct 2018	mg/L	0.273	0.214	0.482	<0.100	1.16	0.115	1.93	0.527
	25 Apr 2019	mg/L	<0.100	0.118	0.704	<0.100	3.41	0.231	0.716	1.79
	17 Oct 2019	mg/L	<0.100	0.228	<0.400	<0.100	2.35	<0.400	0.218	0.62
	23 Apr 2020	mg/L	<0.100	0.353	0.212	<0.100	1.91	<0.100	0.508	1.04
	15 Oct 2020	mg/L	<0.100	0.276	0.304	<0.100	2.04	0.119	0.205	0.661
	22 Apr 2021	mg/L	<0.0360	0.534	0.229	<0.0360	2.58	0.0692	0.111	0.296
	28 Oct 2021	mg/L	0.0703	0.911	0.0527	<0.0360	1.26	0.0589	0.126	1.04
	28 Apr 2022	mg/L	0.019	0.389	0.0924	<0.0360	2.19	0.0854	<0.0360	0.437
	13 Oct 2022	mg/L	0.0924	0.45	0.168	0.0737	1.72	0.227	0.0534	0.244
	20 Apr 2023	mg/L	0.375	0.299	0.154	0.173	3.03	0.992	0.204	0.425
	19 Oct 2023	mg/L	0.179	0.507	0.151	<0.0360	2.14	0.167	0.664	0.661
	28 Mar 2024	mg/L							1.75	0.397
	25 Apr 2024	mg/L	0.179	0.503	0.257	0.0488	2.32	0.101	1.35	0.421
	29 Aug 2024	mg/L							2.81	0.321
	26 Sep 2024	mg/L							2.33	0.483
	17 Oct 2024	mg/L	0.866	0.600	0.337	0.0526	1.77	0.126	0.949	0.111
	20 Mar 2025	mg/L							1.84	
	17 Apr 2025	mg/L	0.744	0.725	0.408	0.0979	4.2	0.133	2.55	0.143
	30-Jul-2025	mg/L							2.23	
	21-Aug-2025	mg/L							2.45	
	16 Oct 2025	mg/L	0.729	0.632	<0.200	<0.0500	1.38	<0.200	4.31	0.0969
Lithium, total SS = 0.014 (PGS)	20 Jul 2015	mg/L								0.183
	28 Apr 2015	mg/L	0.112			<0.050	<0.0500	0.212	0.317	
	20 Apr 2016	mg/L	0.0977	0.0574	<0.050	0.052	<0.050	0.211	0.327	
	6 Oct 2016	mg/L	0.0925	0.0698	<0.050	<0.050	<0.050	0.21	0.29	
	20 Apr 2017	mg/L	0.0924	0.0928	0.0139	0.0434	0.0135	0.187	0.272	0.328
	5 Oct 2017	mg/L	0.121	0.108	<0.020	0.0555	<0.020	0.256	0.343	
	26 Apr 2018	mg/L	0.0936	0.0482	0.0149	0.0474	0.0164	0.204	0.0603	0.391
	18 Oct 2018	mg/L	0.0977	0.116	<0.030	0.0527	<0.030	0.237	0.0684	0.232
	25 Apr 2019	mg/L	0.0792	0.202	0.0132	0.0489	0.0126	0.193	0.0521	0.258
	17 Oct 2019	mg/L	0.101	0.146	<0.400	0.0498	<0.040	0.219	0.0652	0.332
	23 Apr 2020	mg/L	0.107	0.156	0.0155	0.0474	0.0142	0.235	0.0477	0.316
	15 Oct 2020	mg/L	0.1	0.16	0.0169	0.0517	0.0153	0.236	0.047	0.382
	22 Apr 2021	mg/L	0.112	0.126	0.0164	0.0533	0.0173	0.252	0.0389	0.277
	28 Oct 2021	mg/L	0.1	0.107	0.0142	0.0504	0.0152	0.22	0.0451	0.388
	28 Apr 2022	mg/L	0.105	0.0646	0.0142	0.047	0.0116	0.211	0.0377	0.282
	13 Oct 2022	mg/L	0.103	0.0718	0.0144	0.0443	0.0148	0.205	0.0369	0.374
	20 Apr 2023	mg/L	0.0992	0.0894	0.0159	0.0474	0.0157	0.218	0.199	0.313
	19 Oct 2023	mg/L	0.108	0.0331	0.0181	0.0524	0.0185	0.228	0.328	0.424
	28 Mar 2024	mg/L							0.24	0.274
	25 Apr 2024	mg/L	0.109	0.104	0.0177	0.0541	0.0184	0.233	0.311	0.305
	29 Aug 2024	mg/L							0.281	0.353
	26 Sep 2024	mg/L							0.269	0.364
	17 Oct 2024	mg/L	0.115	0.0827	0.0176	0.0568	0.0193	0.251	0.315	0.41
	20 Mar 2025	mg/L							0.255	
	17 Apr 2025	mg/L	0.119	0.075	0.0159	0.0552	0.0168	0.201	0.3	0.292
	30-Jul-2025	mg/L							0.296	
	21-Aug-2025	mg/L							0.278	
	16 Oct 2025	mg/L	0.116	0.057	0.0412	0.0512	0.0159	0.224	0.283	0.356

Table 8
Analytical Data Summary
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Constituent (CAS #)	Sample Date	Units	MW-5 Upgradient	MW-7 Upgradient	MW-8 DwnGrad	MW-12 Upgradient	MW-14 DwnGrad	MW-15 DwnGrad	MW-16 DwnGrad	Pond DwnGrad
Sodium, total HAL = 20	20 Jul 2015	mg/L								66.1
	28 Apr 2015	mg/L	152			60.3	108	95.1	251	
	20 Apr 2016	mg/L	144	77.9	108	62.5	104	92	244	75.2
	6 Oct 2016	mg/L	149	80.3	113	60	103	92.5	233	
	20 Apr 2017	mg/L	156	72.4	110	59.7	107	91.4	225	102
	5 Oct 2017	mg/L	146	72.8	106	60.8	102	95.7	227	
	26 Apr 2018	mg/L	148	66.3	116	65.3	128	98.6	62.6	117
	18 Oct 2018	mg/L	131	79	106	59.4	102	91.2	45.4	53.5
	25 Apr 2019	mg/L	118	127	98.5	58.8	94.6	83.8	72	66.7
	17 Oct 2019	mg/L	153	111	107	52.7	101	89.9	59.5	84.5
	23 Apr 2020	mg/L	161	103	118	61.2	111	106	63.9	90.7
	15 Oct 2020	mg/L	146	95.9	105	57.8	102	96.7	23.7	107
	22 Apr 2021	mg/L	152	98.1	110	61.1	110	100	44.7	71
	28 Oct 2021	mg/L	140	76.2	100	58.3	93.5	88.8	38.4	102
	28 Apr 2022	mg/L	154	82.2	108	61.9	105	95.8	50.1	81.7
	13 Oct 2022	mg/L	149	72.5	101	57.6	97.9	90.1	47.3	107
	20 Apr 2023	mg/L	133	65.2	99.2	55	96.1	89.2	149	75.7
	19 Oct 2023	mg/L	154	34.9	117	66.2	113	105	239	131
	28 Mar 2024	mg/L							176	86.5
	25 Apr 2024	mg/L	146	74.3	108	64.6	108	97.8	234	84.4
	29 Aug 2024	mg/L							230	77.7
	26 Sep 2024	mg/L							223	91.8
	17 Oct 2024	mg/L	154	79.7	112	64.5	109	103	235	107
	20 Mar 2025	mg/L							197	
	17 Apr 2025	mg/L	161	73.8	107	64.1	107	90.7	233	86.6
	30-Jul-2025	mg/L							233	
	21-Aug-2025	mg/L							243	
	16 Oct 2025	mg/L	178	87.5	104	59.4	102	95.3	254	94.1
Strontium, total SS/HAL = 4	20 Jul 2015	mg/L								0.713
	28 Apr 2015	mg/L	1.43			0.442	2.51	1.73	3.1	
	20 Apr 2016	mg/L	1.27	0.837	2.19	0.431	2.54	1.78	3.02	
	6 Oct 2016	mg/L	1.24	0.804	2.35	0.436	2.83	1.53	3.09	
	20 Apr 2017	mg/L	1.42	0.906	2.24	0.478	2.63	1.78	2.92	1.83
	5 Oct 2017	mg/L	1.27	0.951	2.1	0.514	2.39	1.75	2.83	
	26 Apr 2018	mg/L	1.33	0.761	2.09	0.542	2.91	1.6	0.507	1.52
	18 Oct 2018	mg/L	1.13	1.02	2.21	0.491	2.44	1.61	0.459	0.962
	25 Apr 2019	mg/L	1.03	0.626	2.42	0.504	2.77	1.56	0.654	1.07
	17 Oct 2019	mg/L	1.19	0.745	2.14	0.474	2.4	1.53	0.664	0.856
	23 Apr 2020	mg/L	1.36	0.879	2.24	0.53	2.69	1.71	0.605	1.03
	15 Oct 2020	mg/L	1.17	0.882	2.11	0.506	2.55	1.61	0.363	1.13
	22 Apr 2021	mg/L	1.24	0.859	2.29	0.562	2.75	1.79	0.504	0.917
	28 Oct 2021	mg/L	1.19	0.933	2.22	0.58	2.37	1.6	0.542	1.04
	28 Apr 2022	mg/L	1.36	1.06	2.62	0.655	2.93	1.86	0.615	0.951
	13 Oct 2022	mg/L	1.12	0.934	2.85	0.579	3.15	1.61	0.532	1.1
	20 Apr 2023	mg/L	1.13	0.981	2.34	0.64	2.6	1.75	2.5	0.926
	19 Oct 2023	mg/L	1.24	0.462	2.85	0.725	3.11	2.12	3.98	1.31
	28 Mar 2024	mg/L							2.77	0.886
	25 Apr 2024	mg/L	1.10	1.01	2.24	0.638	2.37	1.73	3.18	0.884
	29 Aug 2024	mg/L							3.36	1.21
	26 Sep 2024	mg/L							3.38	1.36
	17 Oct 2024	mg/L	1.14	1.03	2.28	0.67	2.41	1.79	3.35	1.59
	20 Mar 2025	mg/L							3.6	
	17 Apr 2025	mg/L	1.16	0.9	2.13	0.604	2.6	1.51	3.42	0.896
	30-Jul-2025	mg/L							3.29	
	21-Aug-2025	mg/L							3.22	
	16 Oct 2025	mg/L	1.35	0.979	2.42	0.594	2.75	1.9	3.48	0.925

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Constituent (CAS #)	Sample Date	Units	MW-5 Upgradient	MW-7 Upgradient	MW-8 DwnGrad	MW-12 Upgradient	MW-14 DwnGrad	MW-15 DwnGrad	MW-16 DwnGrad	Pond DwnGrad
Sulfate SDWR = 250	20 Jul 2015	mg/L								64.6
	28 Apr 2015	mg/L	855			250	1390	603	2000	
	20 Apr 2016	mg/L	695	350	850	240	1260	571	1840	
	6 Oct 2016	mg/L	680	354	864	248	1460	620	2090	
	20 Apr 2017	mg/L	679	384	864	283	1250	647	2020	559
	5 Oct 2017	mg/L	688	370	887	237	1440	631	1990	
	26 Apr 2018	mg/L	663	366	864	240	1420	626	84.4	313
	18 Oct 2018	mg/L	620	354	875	256	1390	586	62.2	278
	25 Apr 2019	mg/L	601	274	869	243	1400	604	89.8	187
	17 Oct 2019	mg/L	618	317	838	243	515	557	54	120
	23 Apr 2020	mg/L	618	280	855	248	1400	597	52.6	142
	15 Oct 2020	mg/L	607	295	894	258	1380	605	18.3	193
	22 Apr 2021	mg/L	525	326	822	235	1320	540	27.6	129
	28 Oct 2021	mg/L	591	317	923	267	1360	649	63.1	129
	28 Apr 2022	mg/L	623	354	996	270	1520	773	50.3	106
	13 Oct 2022	mg/L	488	308	908	257	1370	659	47.4	154
	20 Apr 2023	mg/L	483	315	830	267	1290	605	1310	131
	19 Oct 2023	mg/L	538	312	955	305	1460	693	2120	188
	28 Mar 2024	mg/L							1870	
	25 Apr 2024	mg/L	465	287	914	279	1380	699	2100	114
	29 Aug 2024	mg/L								185
	26 Sep 2024	mg/L							2210	268
	17 Oct 2024	mg/L	462	323	833	276	1260	652	2020	241
	20 Mar 2025	mg/L							1500	
	17 Apr 2025	mg/L	495	298	949	291	1370	698	2210	136
	21-Aug-2025	mg/L							2620	
	16 Oct 2025	mg/L	460	337	892	283	1410	683	67.5	67.3
Sulfide No health-based standard	20 Apr 2017	mg/L	<1.0	<1.0	<1.00	<1.00	<1.00	<1.00	<1.0	<1.00
	5 Oct 2017	mg/L	<1.0	<1.0	<1.0	<1.0	5.2	2.5	1.98	
	26 Apr 2018	mg/L	<1.0	<1.0	6.11	<1.0	1.01	2.59	5.39	<1.00
	18 Oct 2018	mg/L	<1.0	4.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00
	25 Apr 2019	mg/L	<1.0	<1.0	<1.0	<1.0	1.27	<1.0	<1.0	<1.0
	17 Oct 2019	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	23 Apr 2020	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	15 Oct 2020	mg/L	<10.0	17.1	11.3	<10.0	<10.0	11.5	10.4	11.9
	22 Apr 2021	mg/L	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231
	28 Oct 2021	mg/L	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231
	28 Apr 2022	mg/L	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231
	13 Oct 2022	mg/L	4.62	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231
	20 Apr 2023	mg/L	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231
	19 Oct 2023	mg/L	<1.41	<1.41	<1.41	<1.41	<1.41	<1.41	<1.41	<1.41
	25 Apr 2024	mg/L	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231	<0.231
	17 Oct 2024	mg/L	0.432	<0.231	<0.231	<0.231	<0.231	0.288	<0.231	0.384
	17 Apr 2025	mg/L	1.16	0.9	2.13	0.604	2.6	1.51	3.42	0.896
	16 Oct 2025	mg/L	1.35	0.979	2.42	0.594	2.75	1.9	3.48	0.925

Table 9 Historic Control Limit & Action Level Exceedances
2025 Annual Water Quality Report
Keokuk Ferrosil Monofill - Permit No. 56-SDP-17-91P

[illegible]

Table 10
Groundwater Quality Assessment Plan Trend Analysis
2025 Annual Water Quality Report
Keokuk Ferrosil Monofill
Permit No. 56-SDP-17-91P

Well	Current SSL	Trend by Mann-Kandall Analysis			Currently exceeds CL?	Monitoring Frequency
		Trend	S	Confidence		
MW-8	Ammonia nitrogen	Decreasing	-258	99.10%	Yes	Semi-Annual
	Iron, total	No trend	18	71.02%	No	
	Lithium, total	Increasing	116	99.90%	No	
	Strontium, total	Increasing	51	94.80%	Yes	
	Sulfate	Increasing	47	93.30%	Yes	
MW-14	Ammonia nitrogen	No trend	2	50.40%	Yes	Semi-Annual
	Boron, total	No trend	16	67.60%	No	
	Iron, total	Increasing	60	97.2%	Yes	
	Lithium, total	Increasing	122	99.9%	No	
	Sodium, total	No trend	-10	60.8%	No	
	Strontium, total	No trend	15	66.40%	Yes	
	Sulfate	No trend	-14	65.30%	Yes	
MW-15	Aluminum, total	No trend	10	63.40%	No	Semi-Annual
	Iron, total	Decreasing	-55	96.04%	No	
	Lithium, total	No trend	25	76.60%	Yes	
	Sodium, total	No trend	16	67.50%	No	
	Strontium, total	Increasing	37	86.3%	Yes	
	Sulfate	Increasing	85	99.40%	No	
MW-16	Aluminum, total	Decreasing	-42	89.90%	No	Semi-Annual + Supplemental
	Chloride	Increasing	153	90.50%	Yes	
	Iron, total	Increasing	87	97.10%	Yes	
	Lithium, total	No trend	7	55.00%	Yes	
	Sodium, total	Increasing	64	90.60%	Yes	
	Strontium, total	Increasing	119	99.30%	Yes	
	Sulfate	Increasing	40	81.90%	No	

Table 11
Leachate Management Summary
2025 Leachate Control System Performance Evaluation Report
Keokuk Ferrosil Monofill
Permit No. 56-SDP-17-91P

Month	Pond Surface Elevation, ft msl	Pump Hours	Elapsed Run Time, Minutes	Discharge to Keokuk POTW, gal (64 GPM)
January-February		4800:18:00	0	0
March	605.26	4800:40:00	502	32,128
April	604.75	4819:05:00	883	56,512
May	603.74	4857:21:00	2,038	130,432
June	603.99	4860:01:00	160	10,240
July	604.04	4881:26:00	1,285	82,240
August	603.8	4892:15:00	649	41,536
September	603.74	4892:15:00	0	0
October	603.8	4892:15:00	0	0
November	604.07	4892:15:00	0	0
2025 Annual Total				353,088

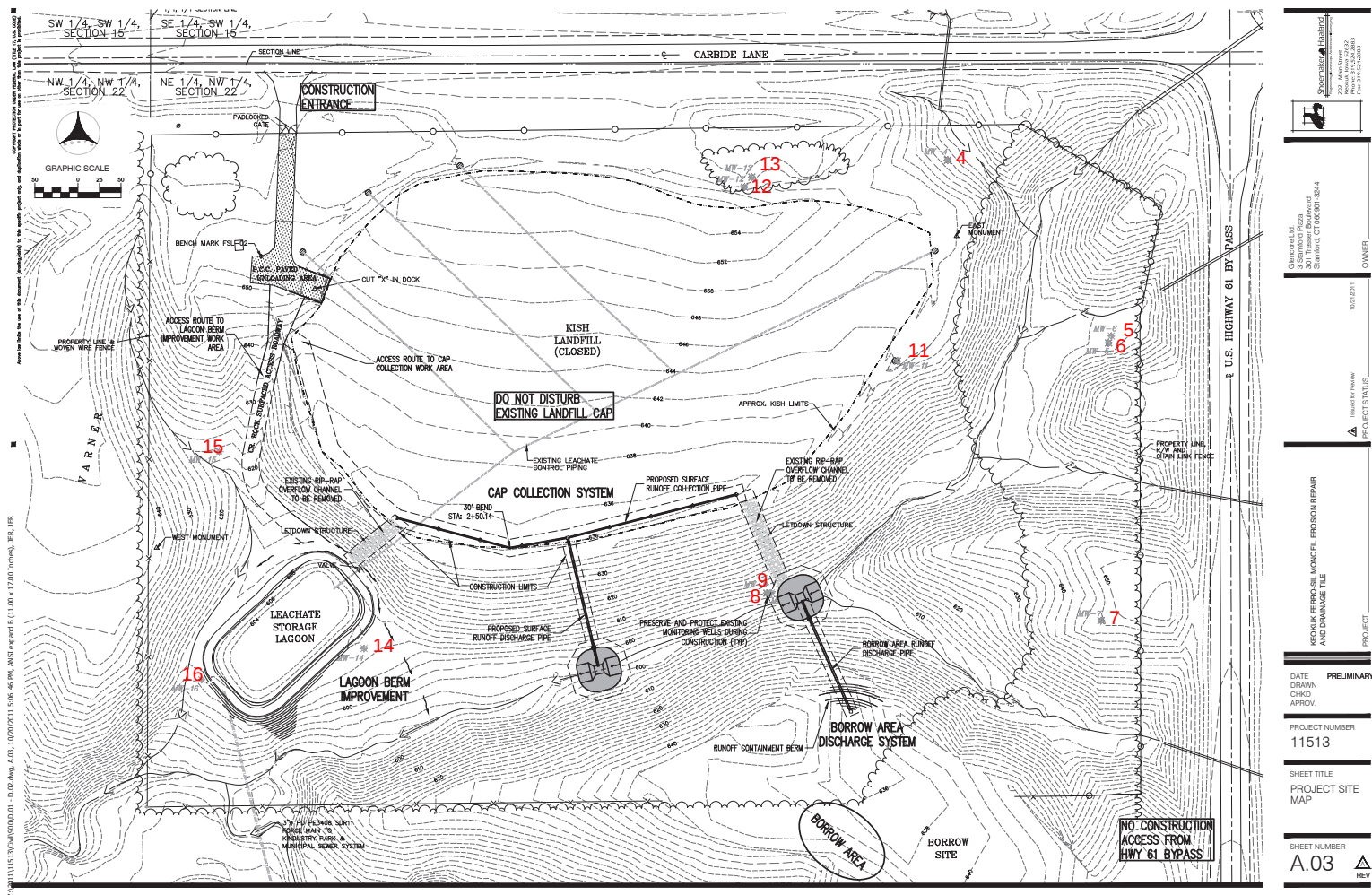
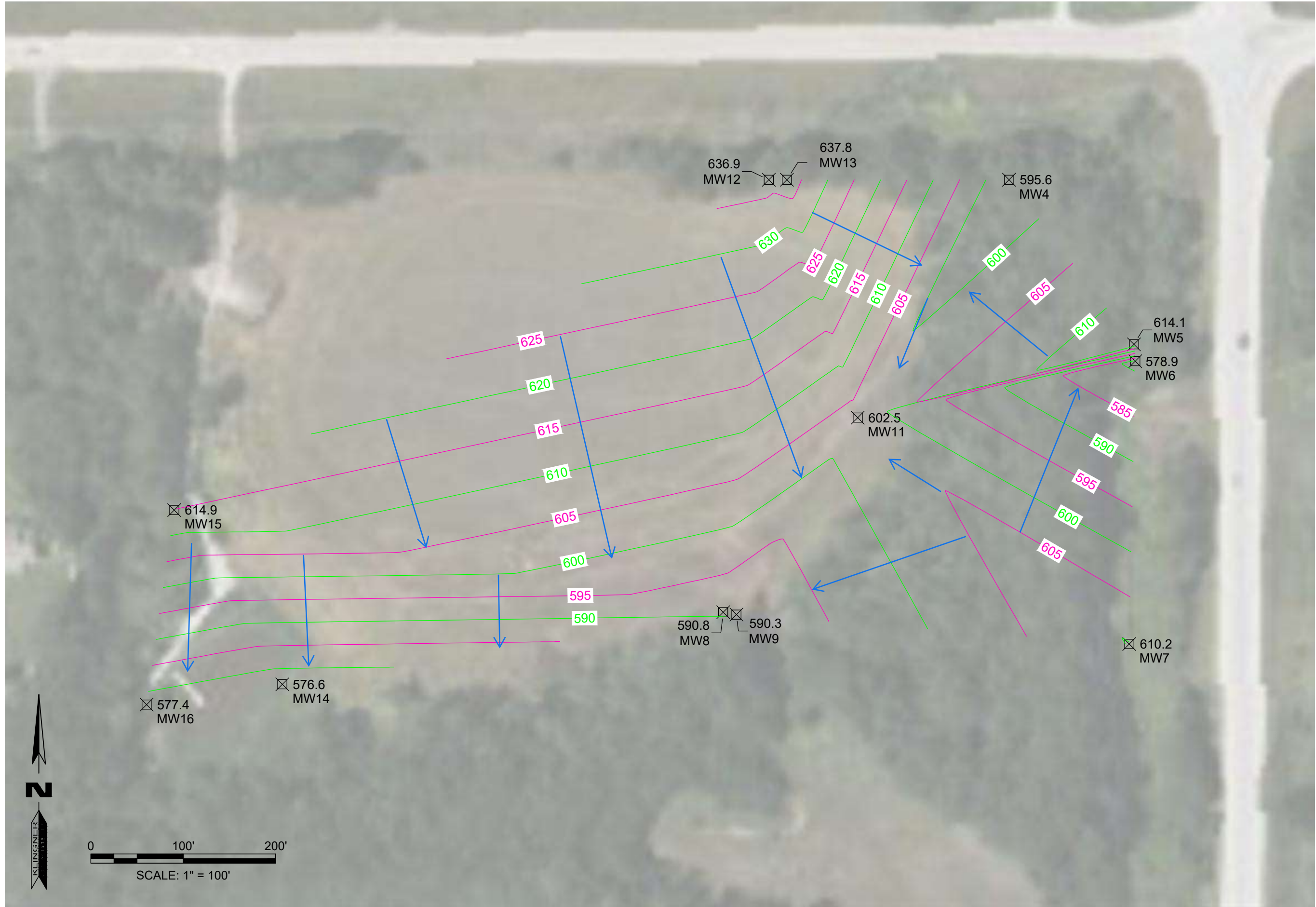


Figure 1 - Keokuk Ferro-Sil Landfill Layout
Monitoring wells are numbered 5,7,8,12,14,15 & 16
Piezometers 4, 6, 9, 11, 13
Water levels at all points and the pond are measured monthly



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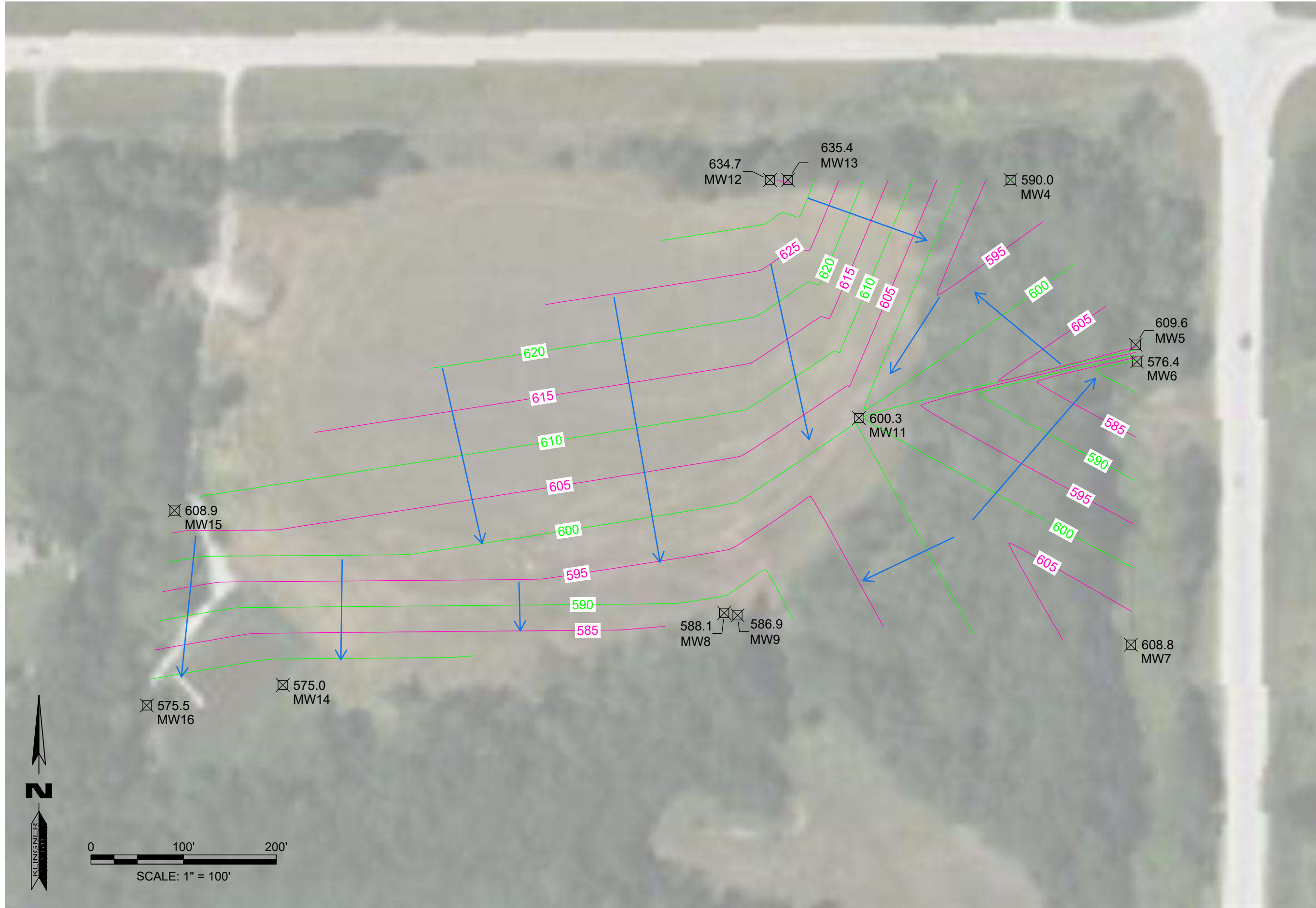
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NO.	DESCRIPTION	DATE	APP.
1			

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PERMIT NO. 56-SDP-17-91P
GLENCORE, LTD
301 TRESSER BLVD
STAMFORD, CT 06901

Non-Reduced Sheet Size: 11" x 17"	
DESIGNED	DRAWN JAC
FIELD CHEM-ECO	FIELD BOOK
CHECKED	CHECK DATE

SHEET TITLE
GROUNDWATER
CONTOURS
SPRING
2025
PROJECT NO.
21-2007
DRAWING ISSUED DATE:
12/22/2025
SHEET

GW-25-S



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REVISION HISTORY			
NO.	DESCRIPTION	DATE	APPR.
1			

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PERMIT NO. 56-SDP-17-91P
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301 TRESSER BLVD
STAMFORD, CT 06901

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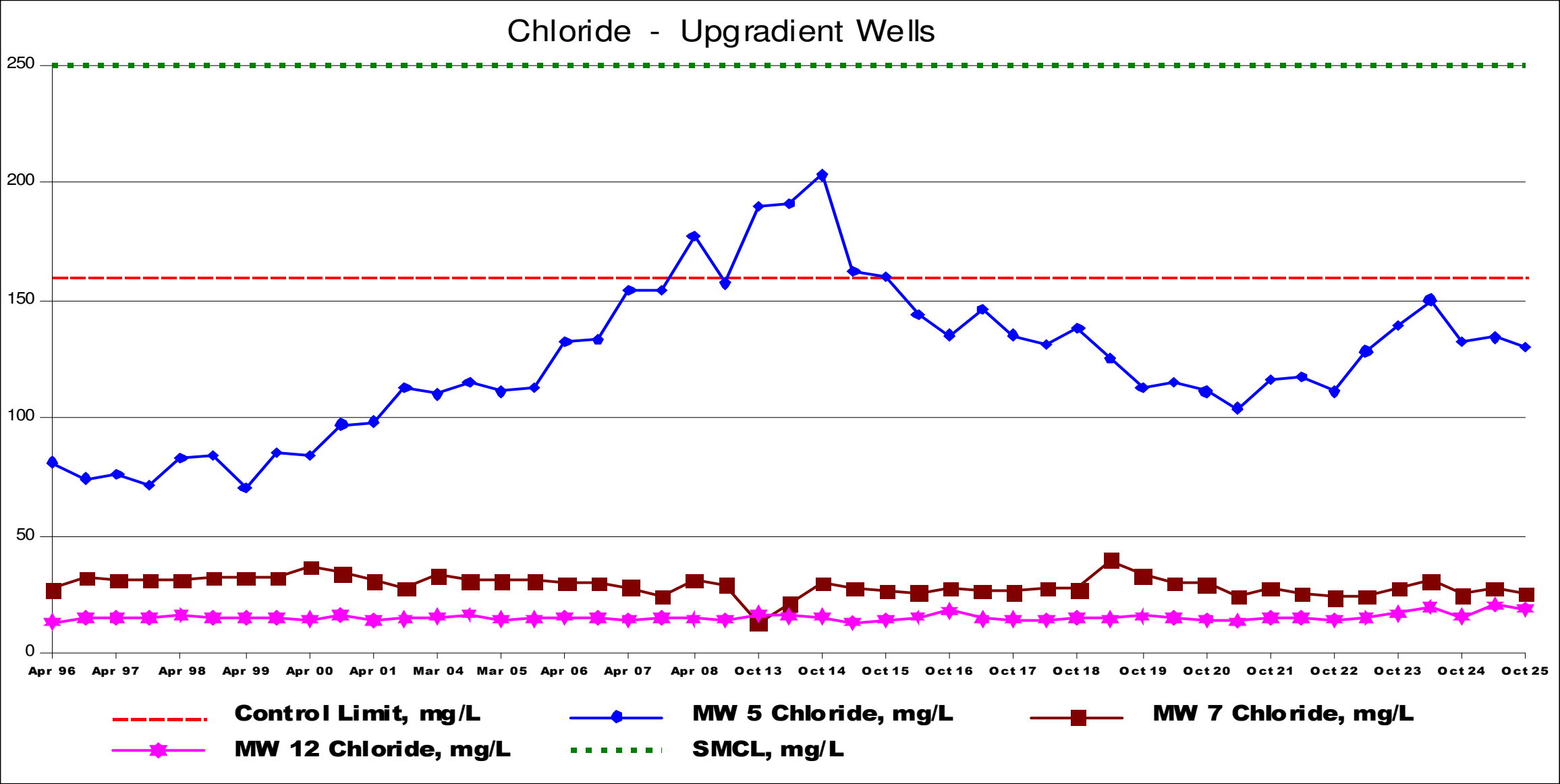
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CONTOURS
FALL
2025
PROJECT NO.
21-2007
DRAWING ISSUED DATE:
12/22/2025
SHEET

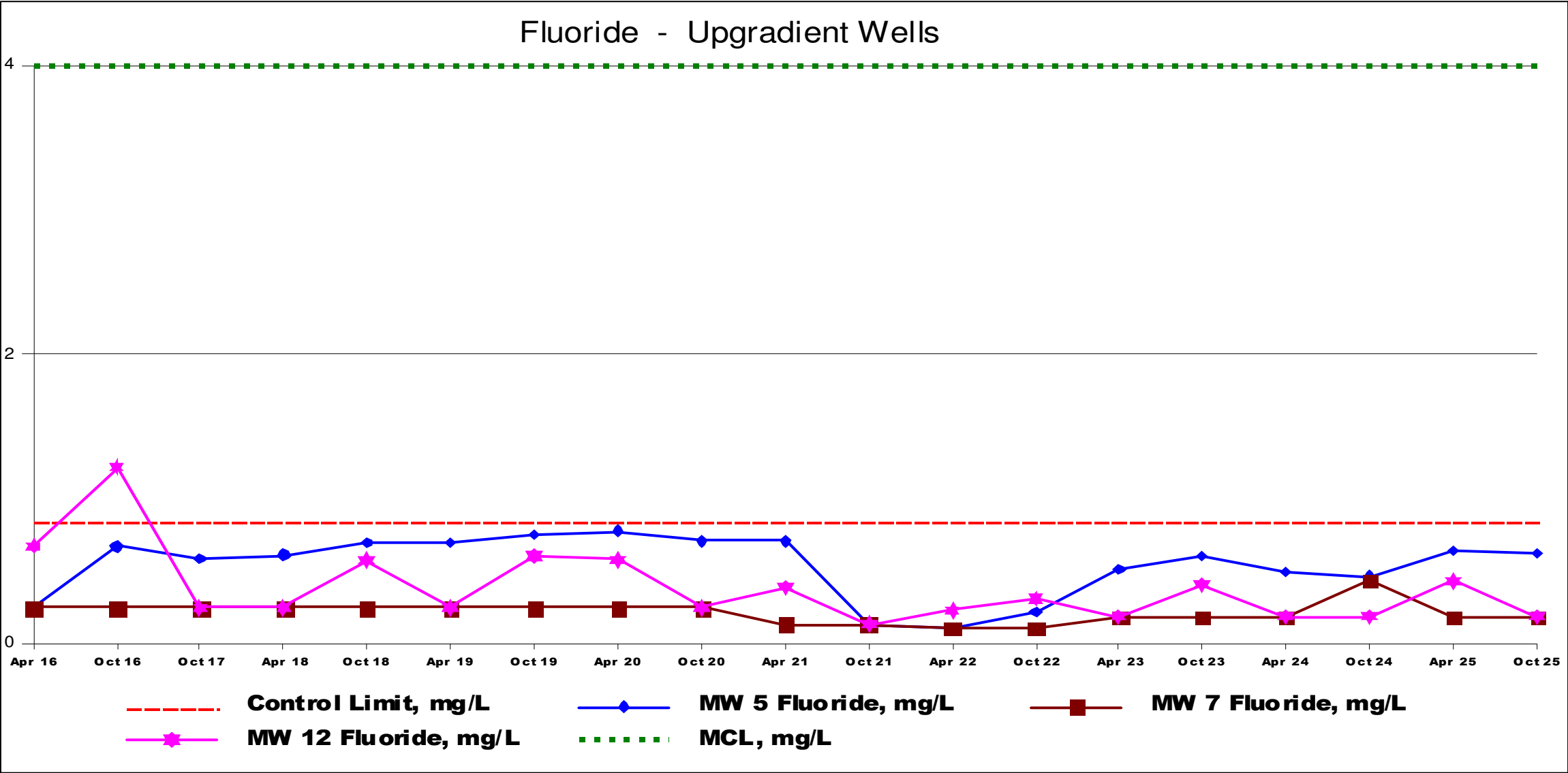
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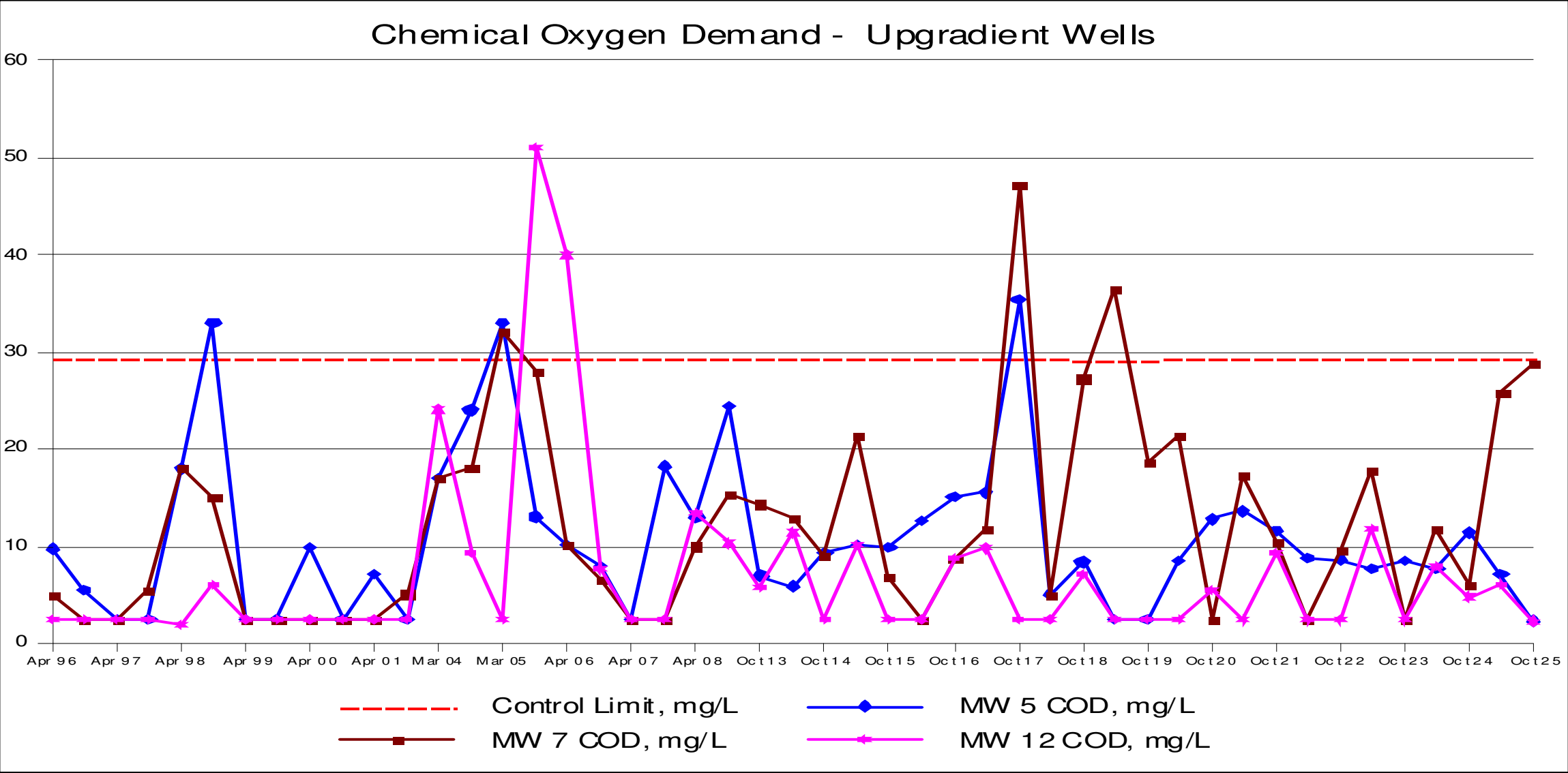
**Keokuk Ferro-Sil Monofill
2542 Carbide Lane
Keokuk, Iowa
Permit No. 56-SDP-17-91P**

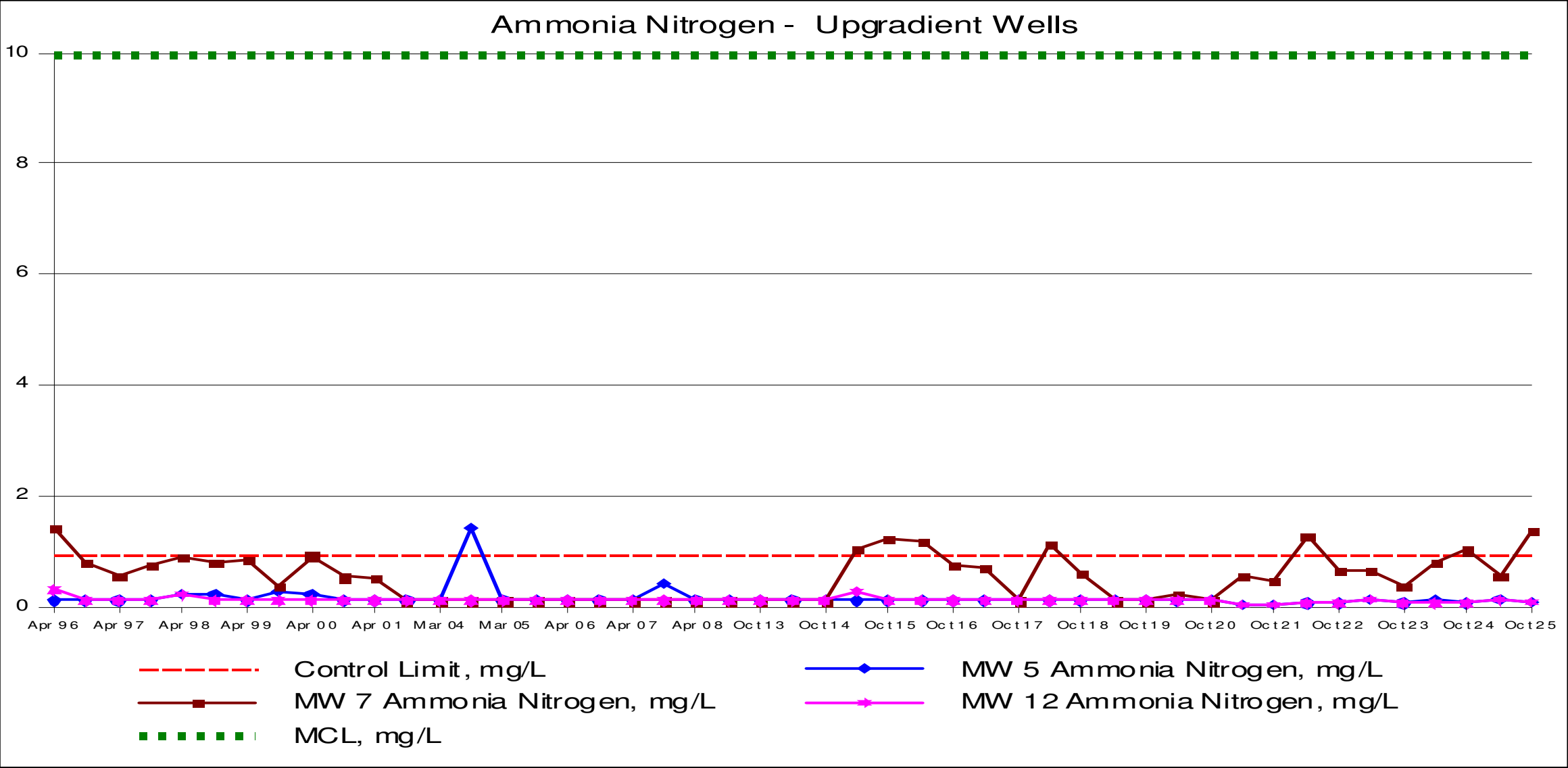
Attachment A

Line Graphs of Constituent Concentrations over Time

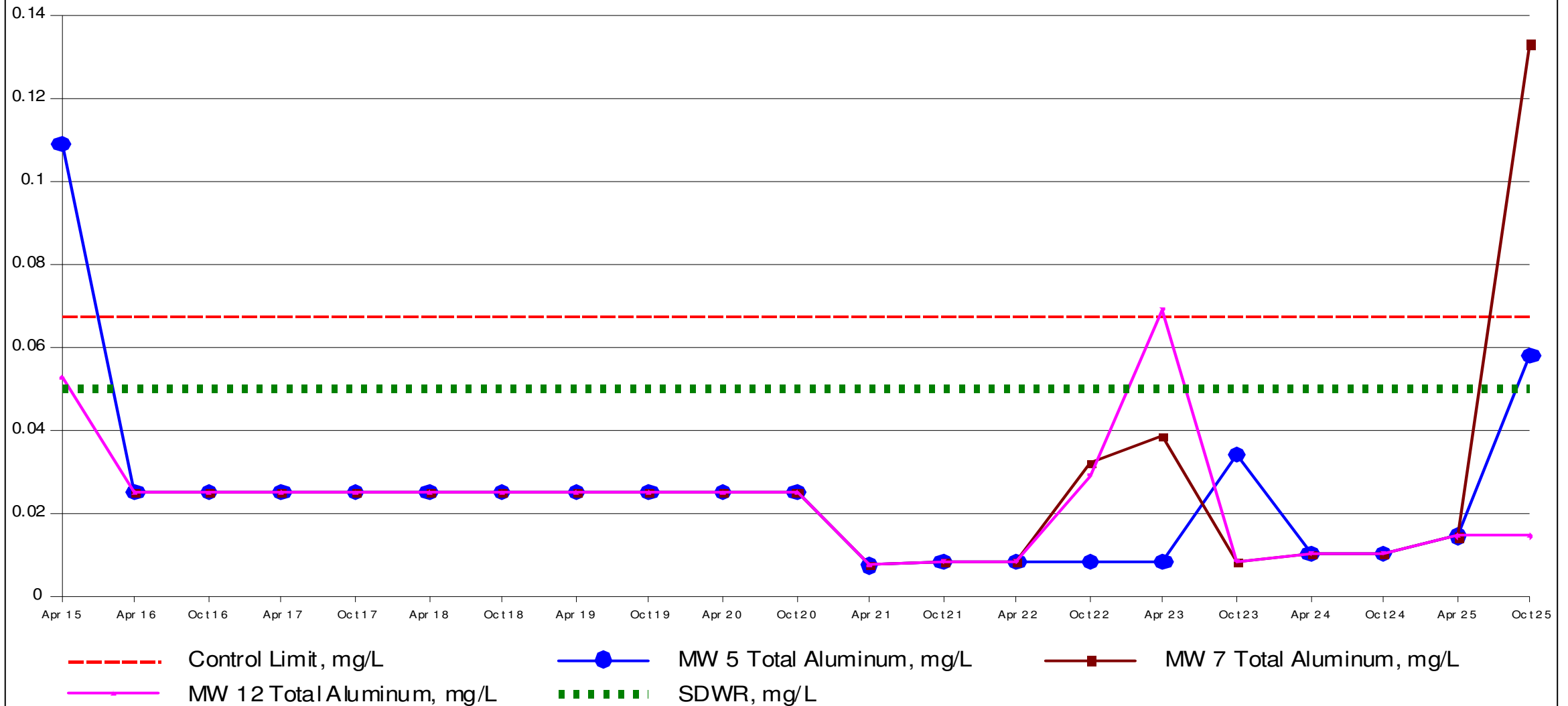


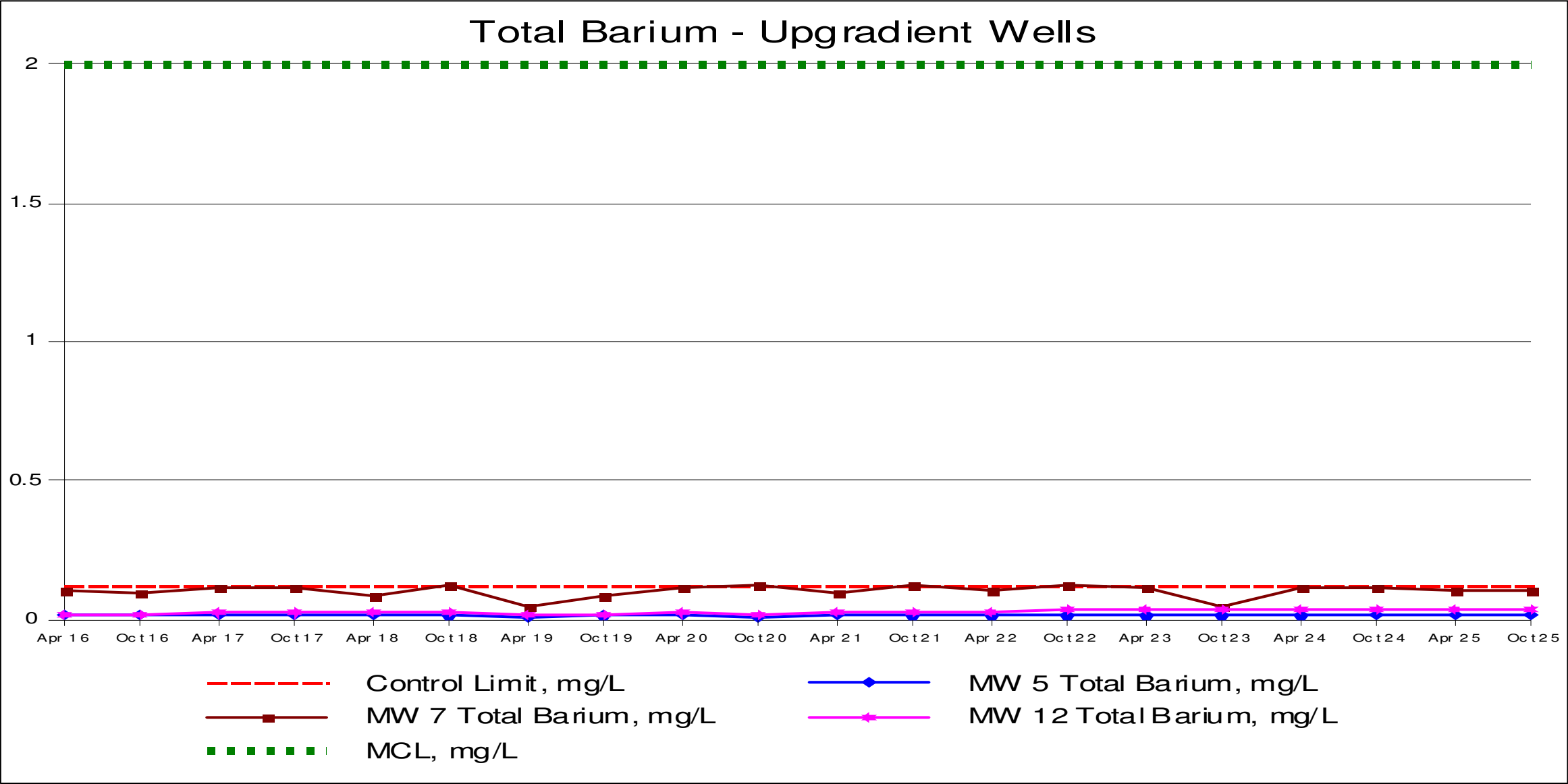


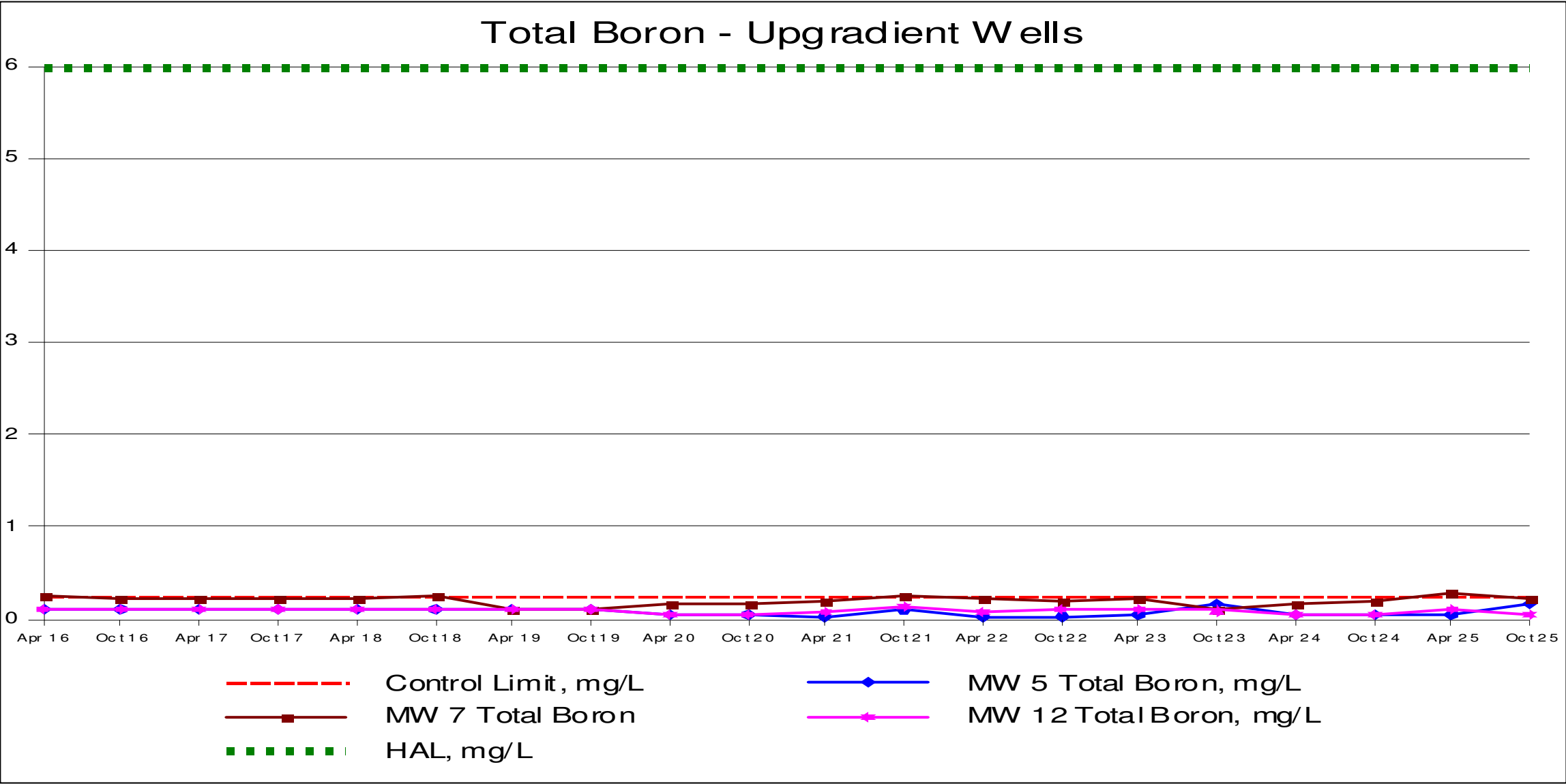


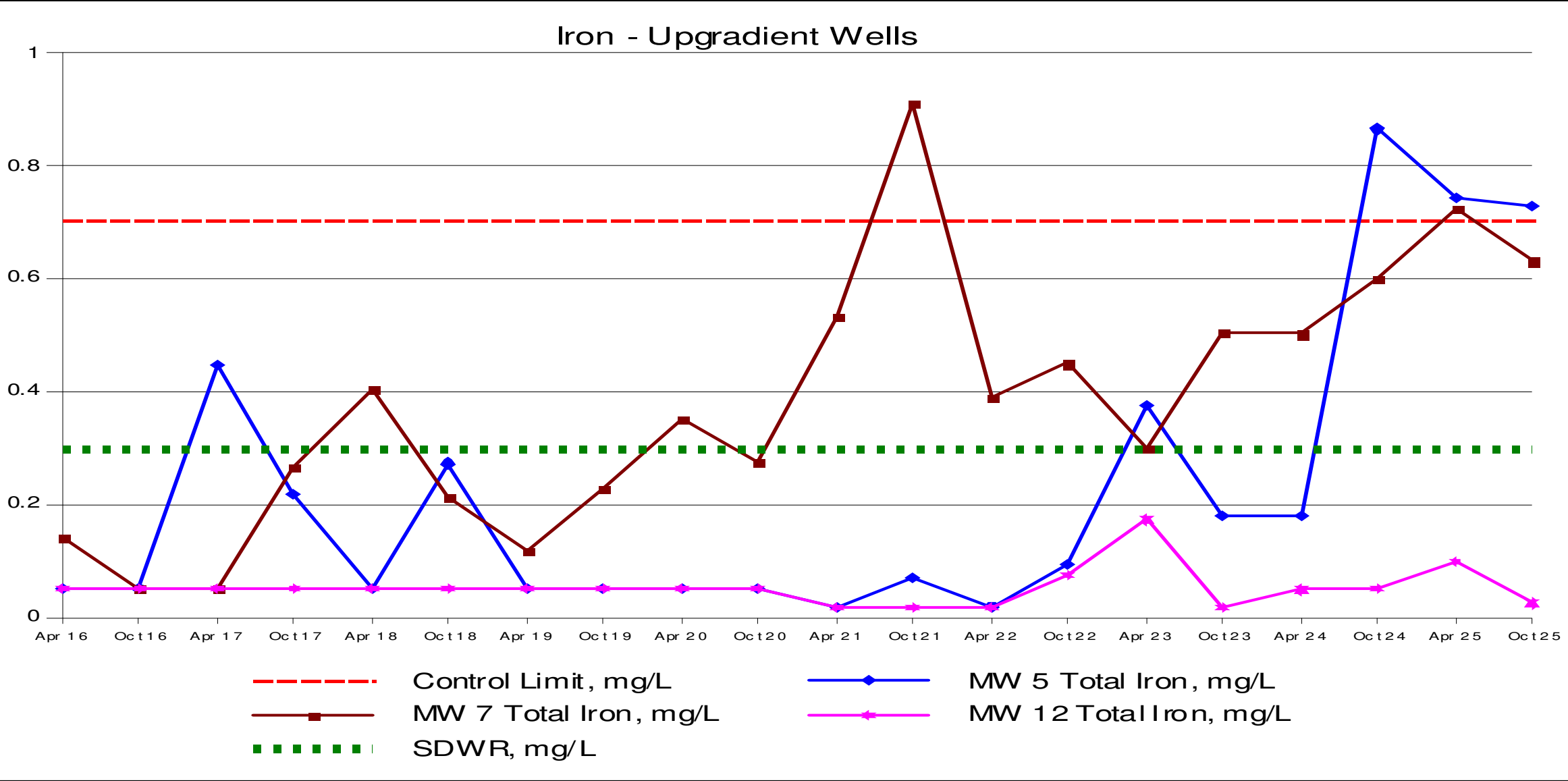


Aluminum - Upgradient Wells

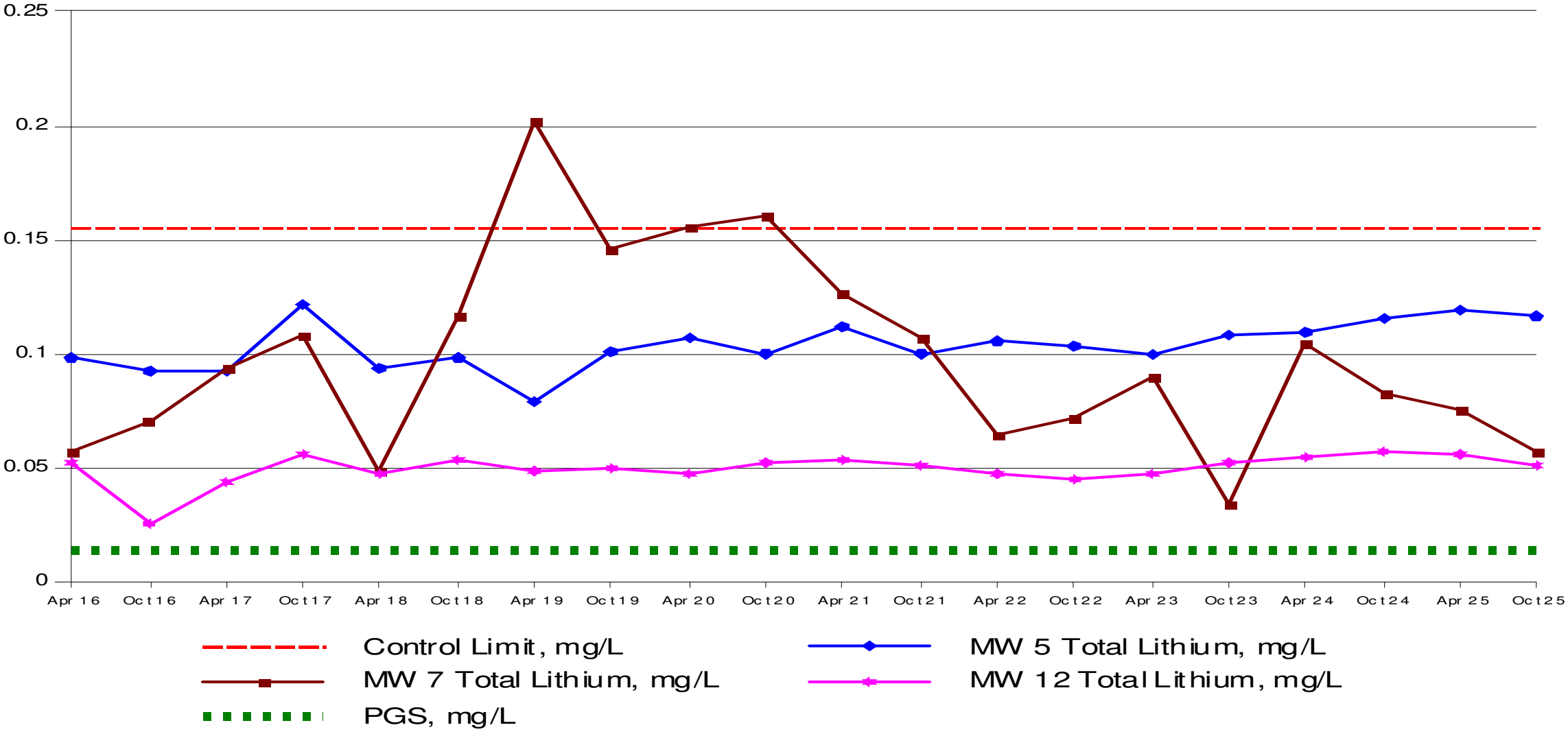


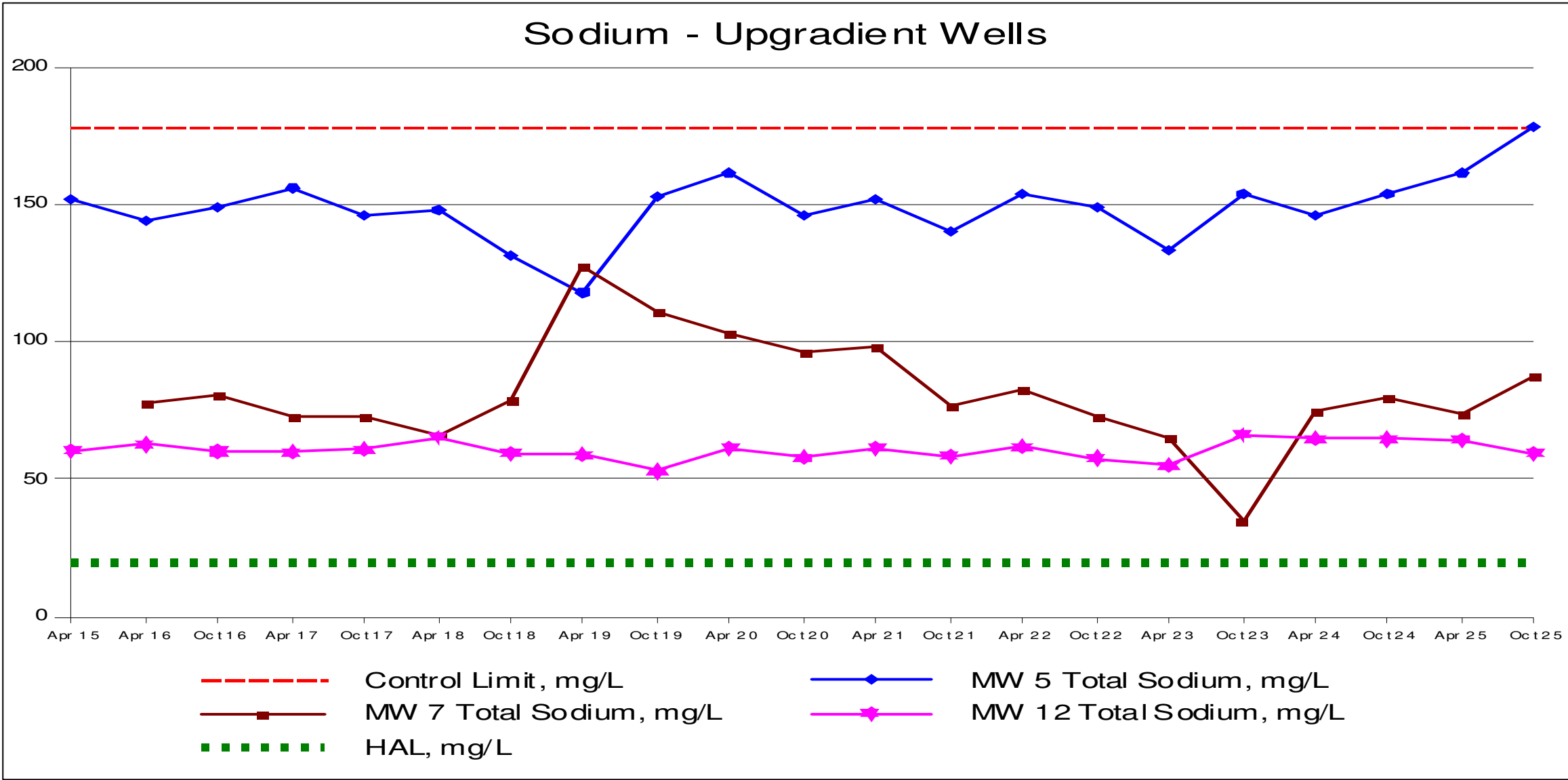


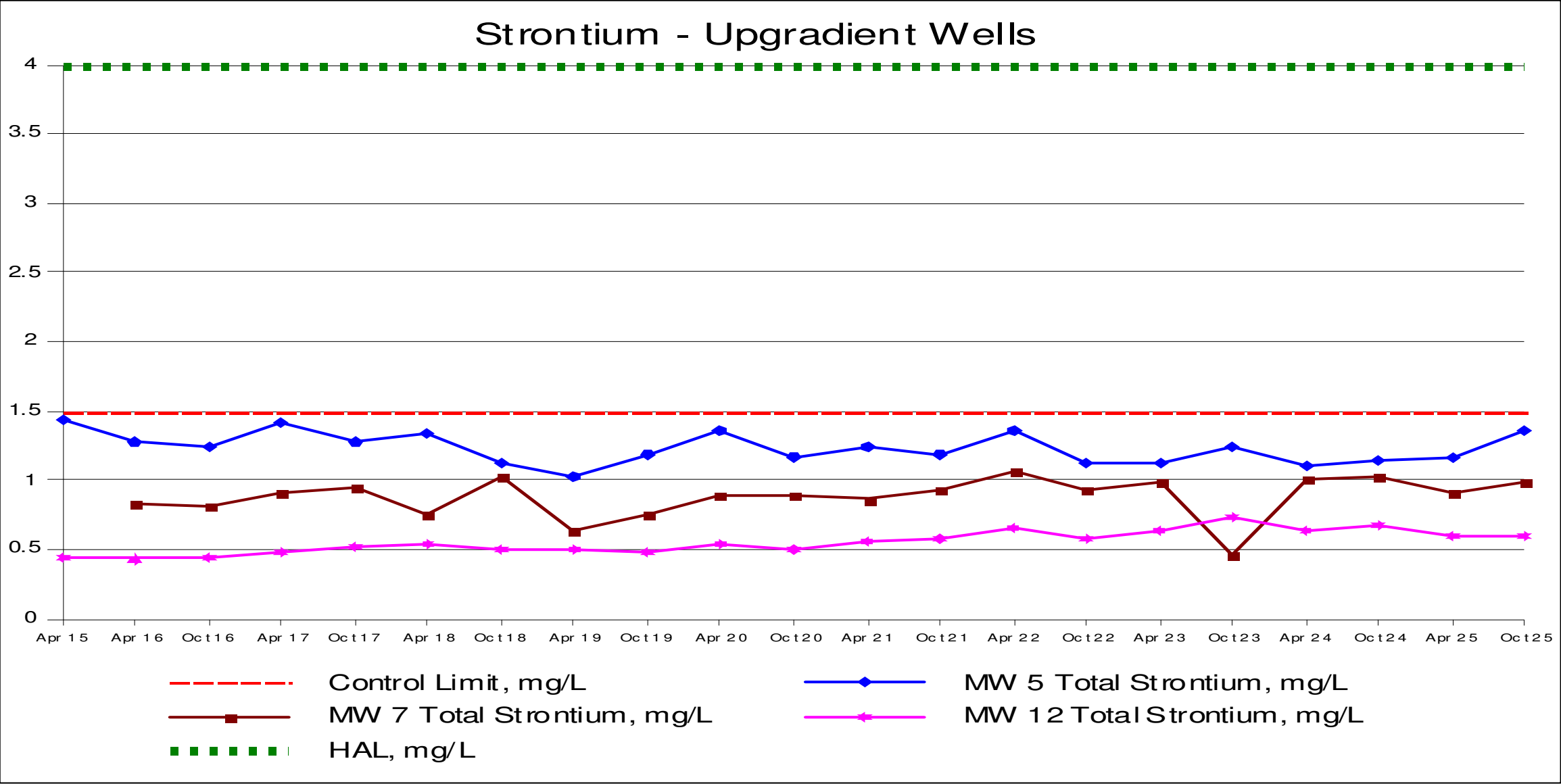


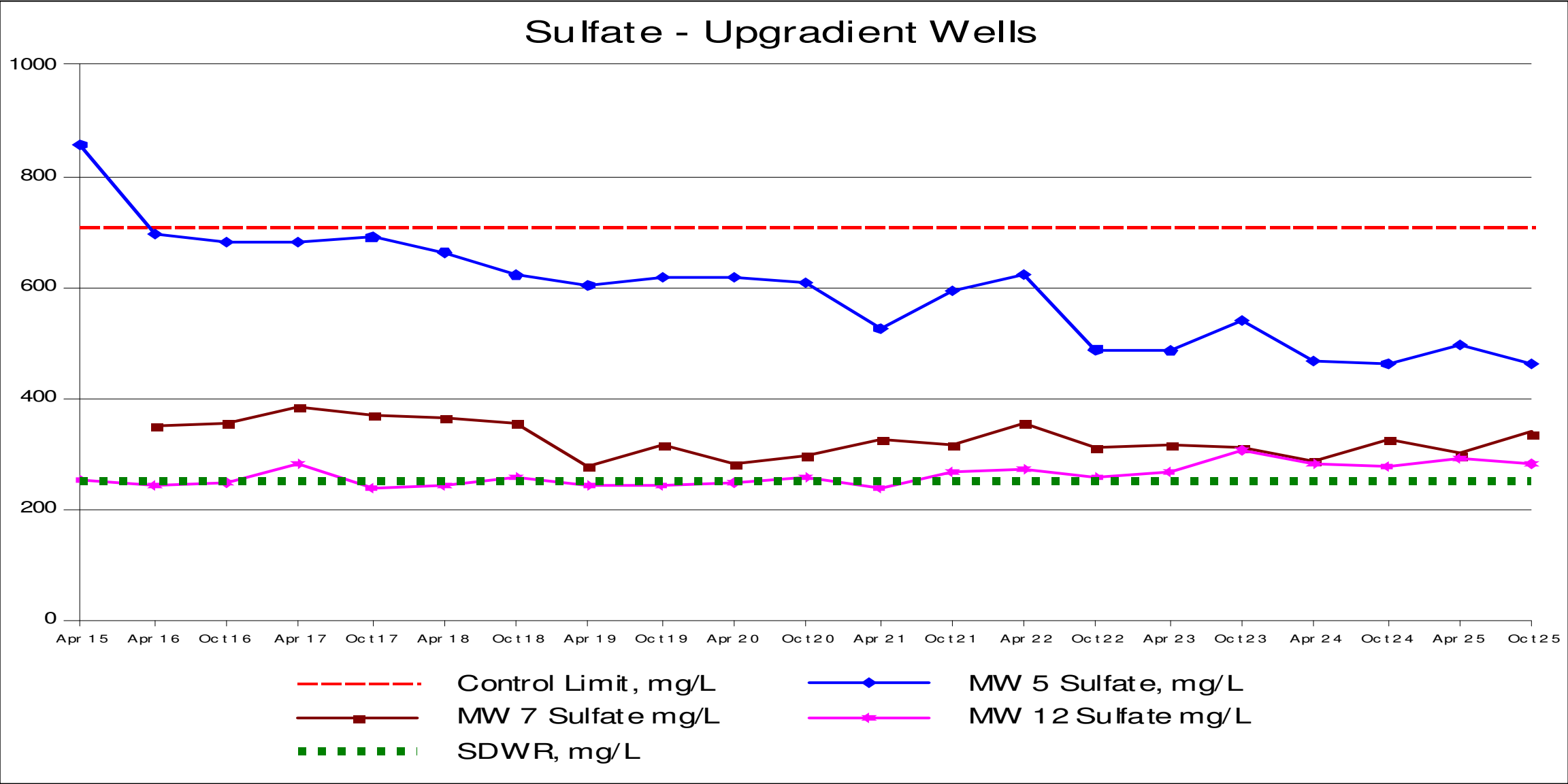


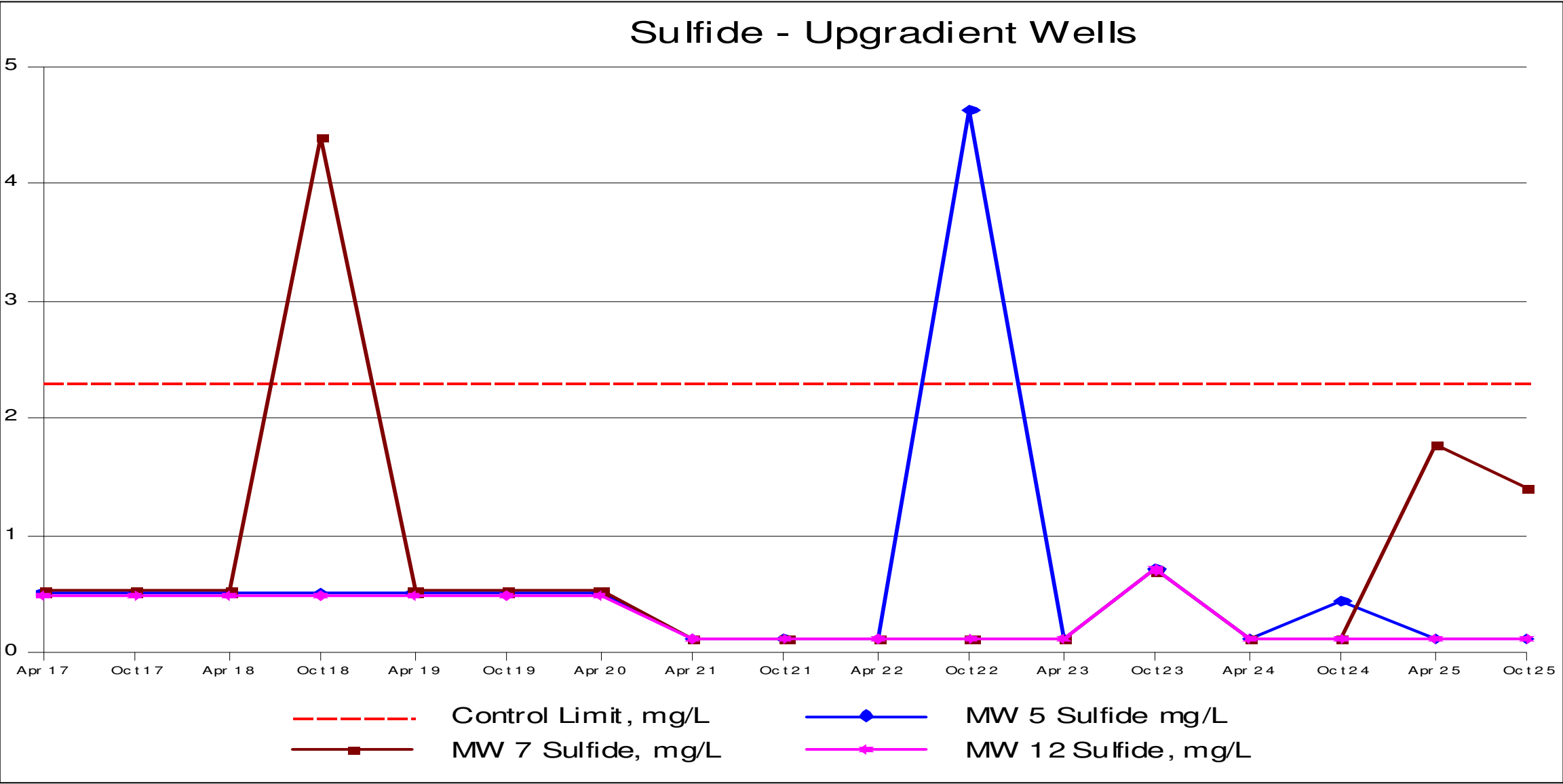
Lithium - Upgradient Wells

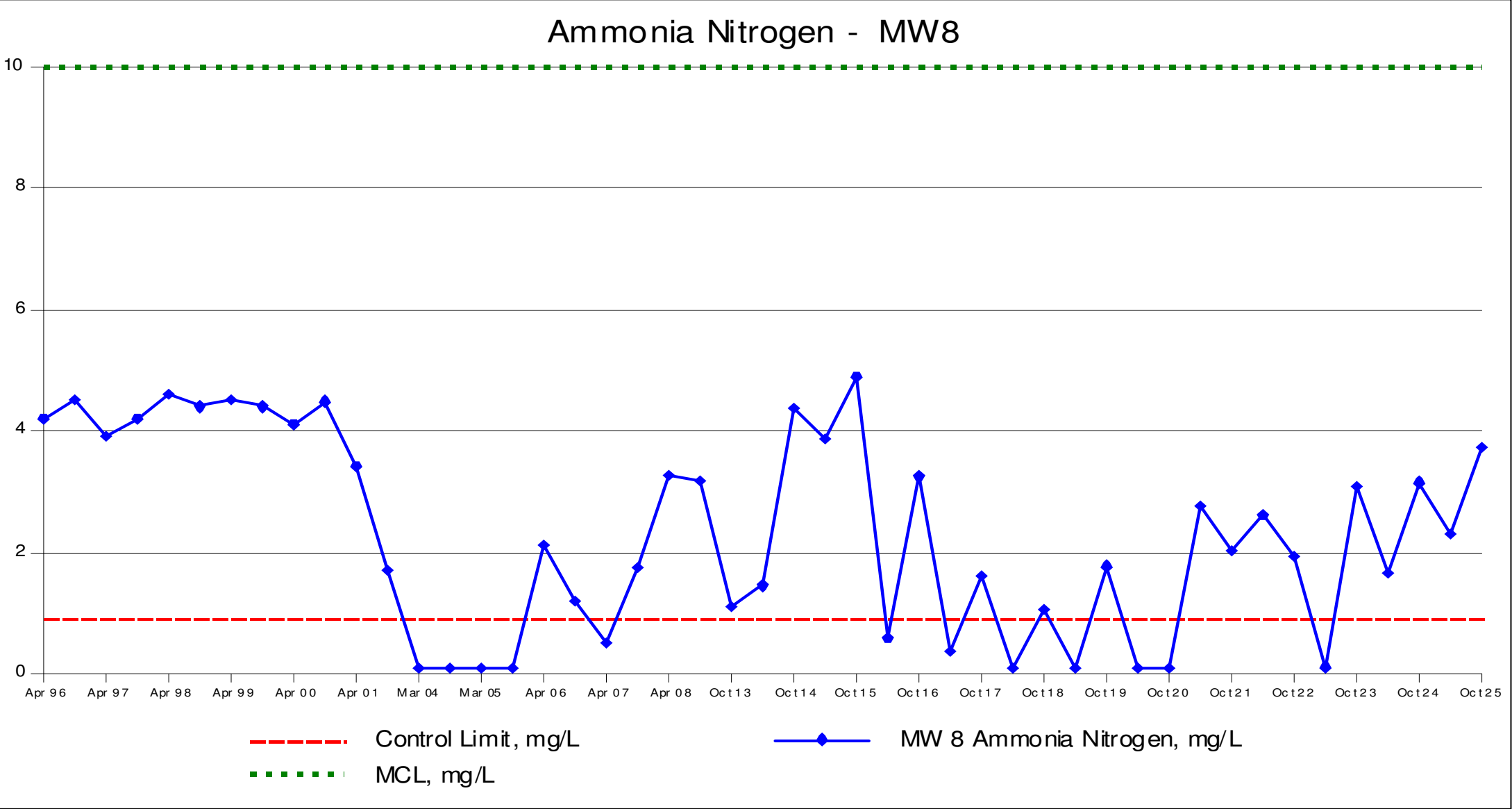


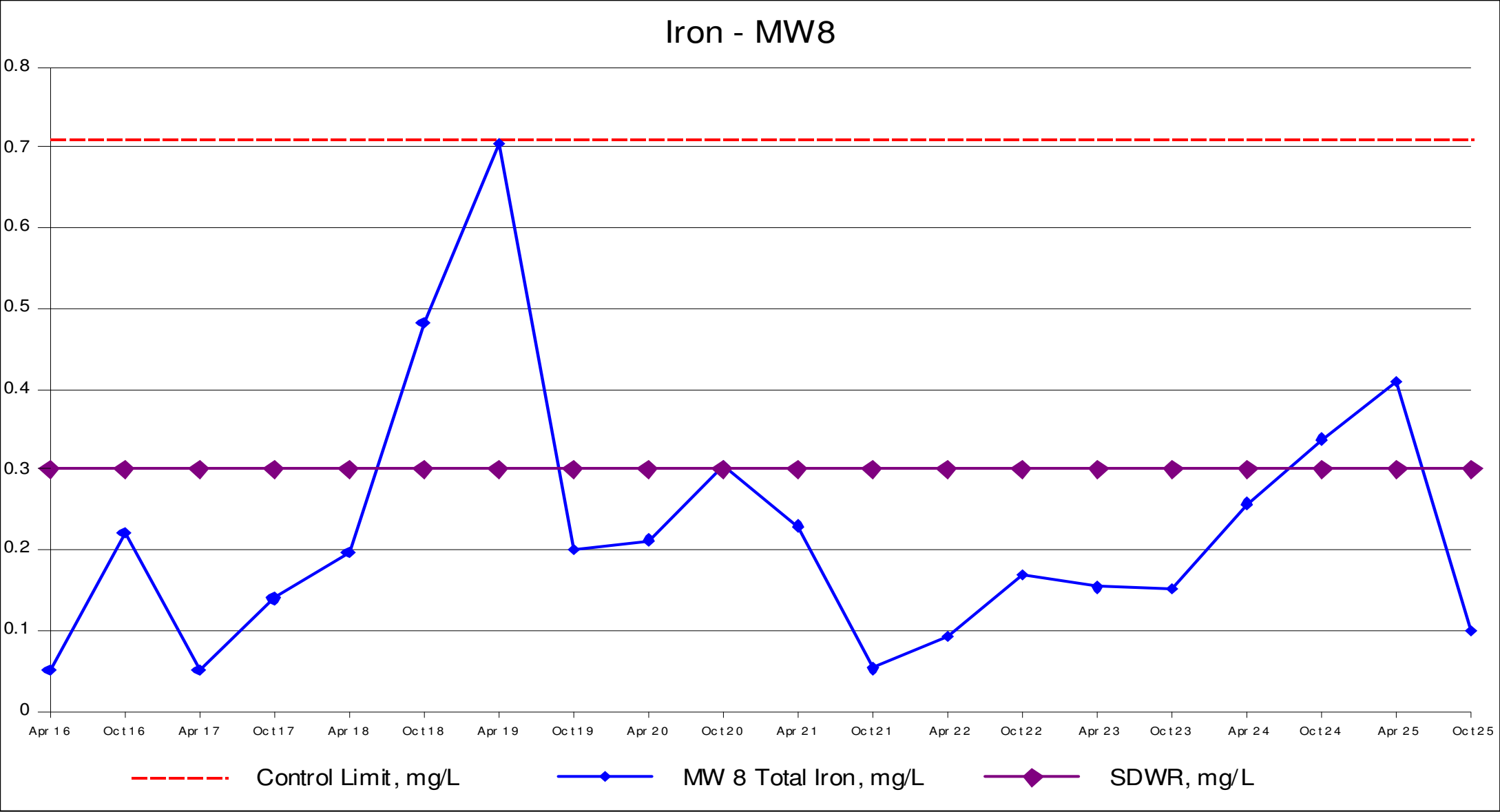


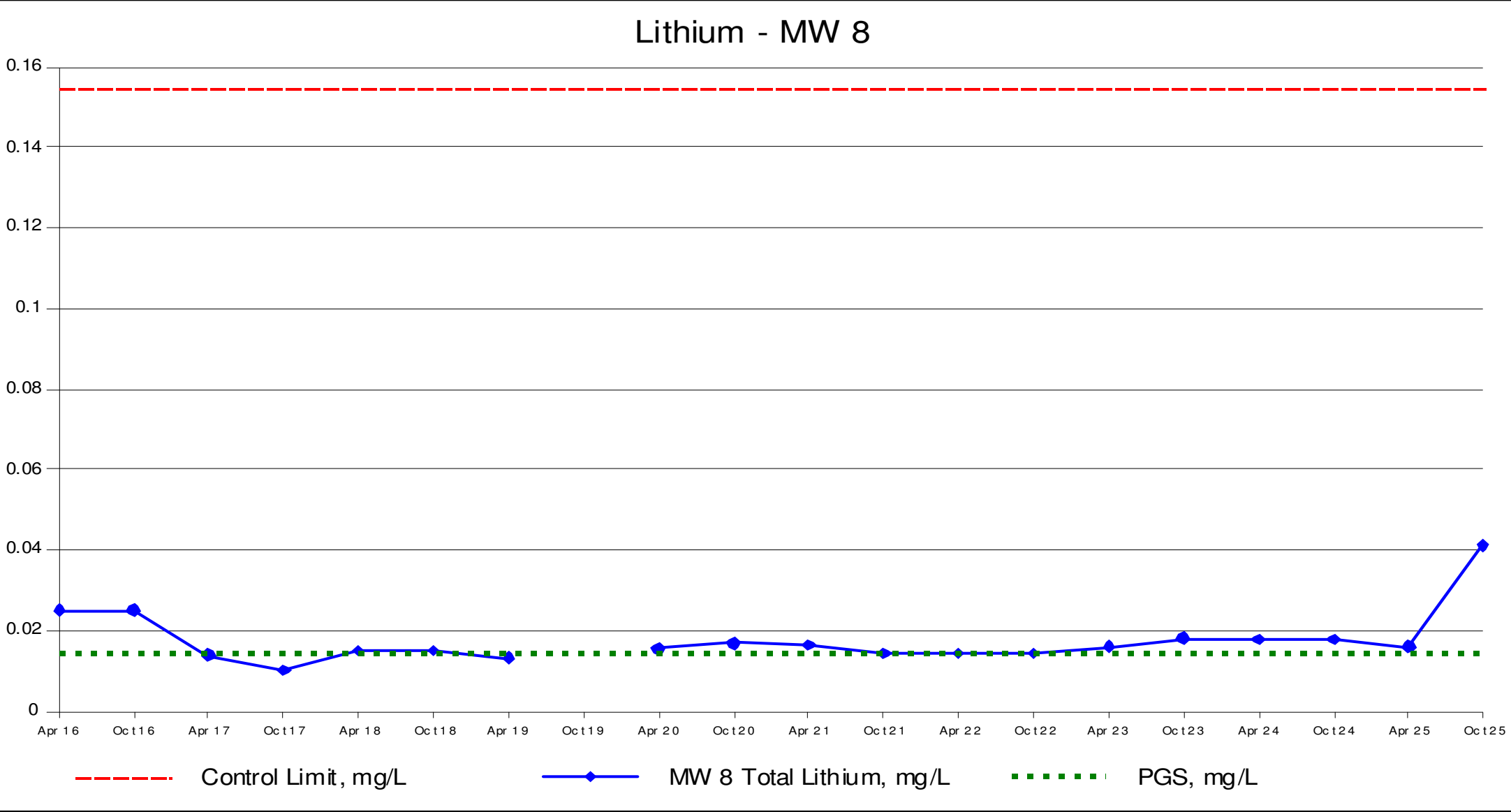


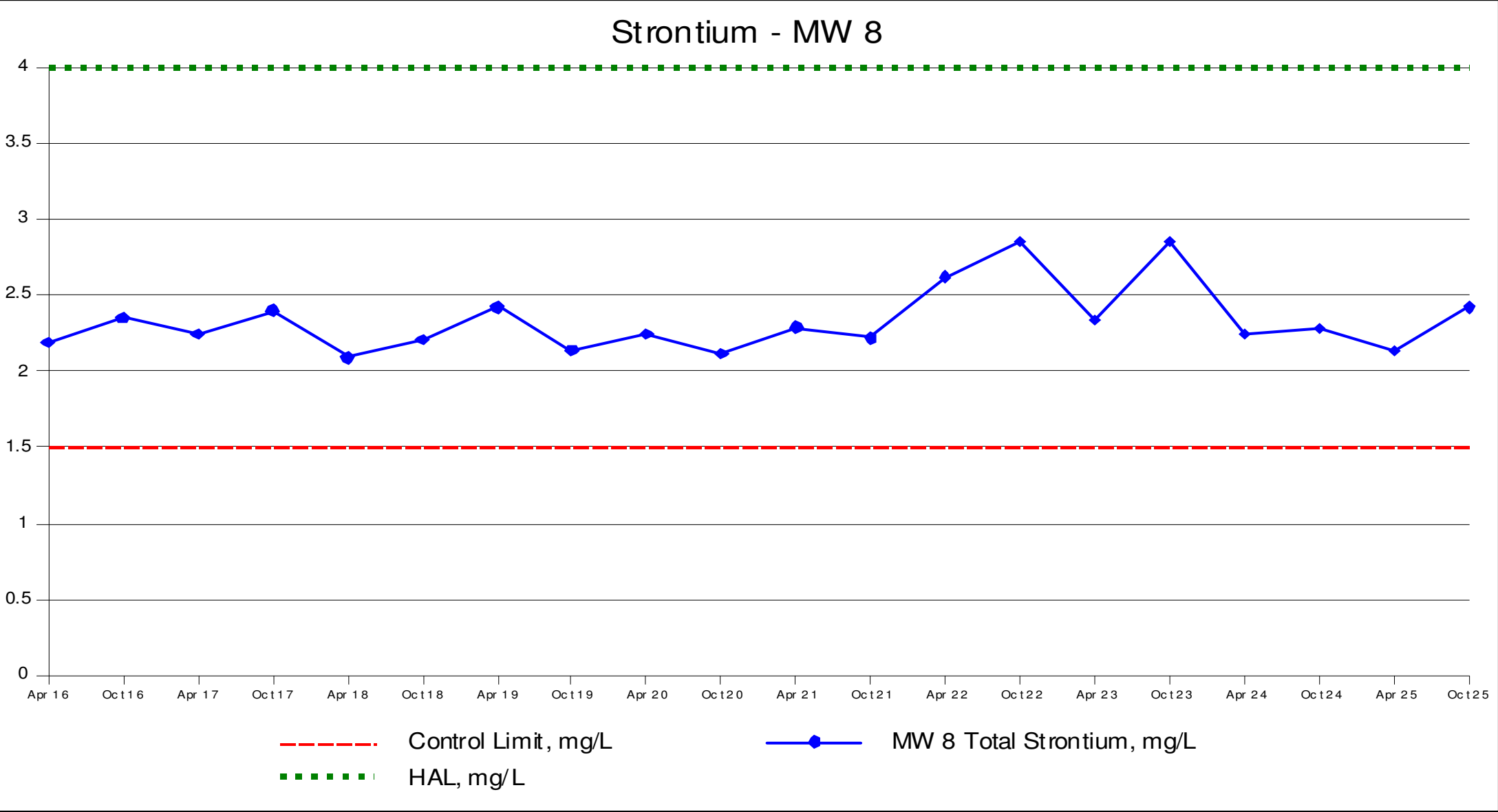


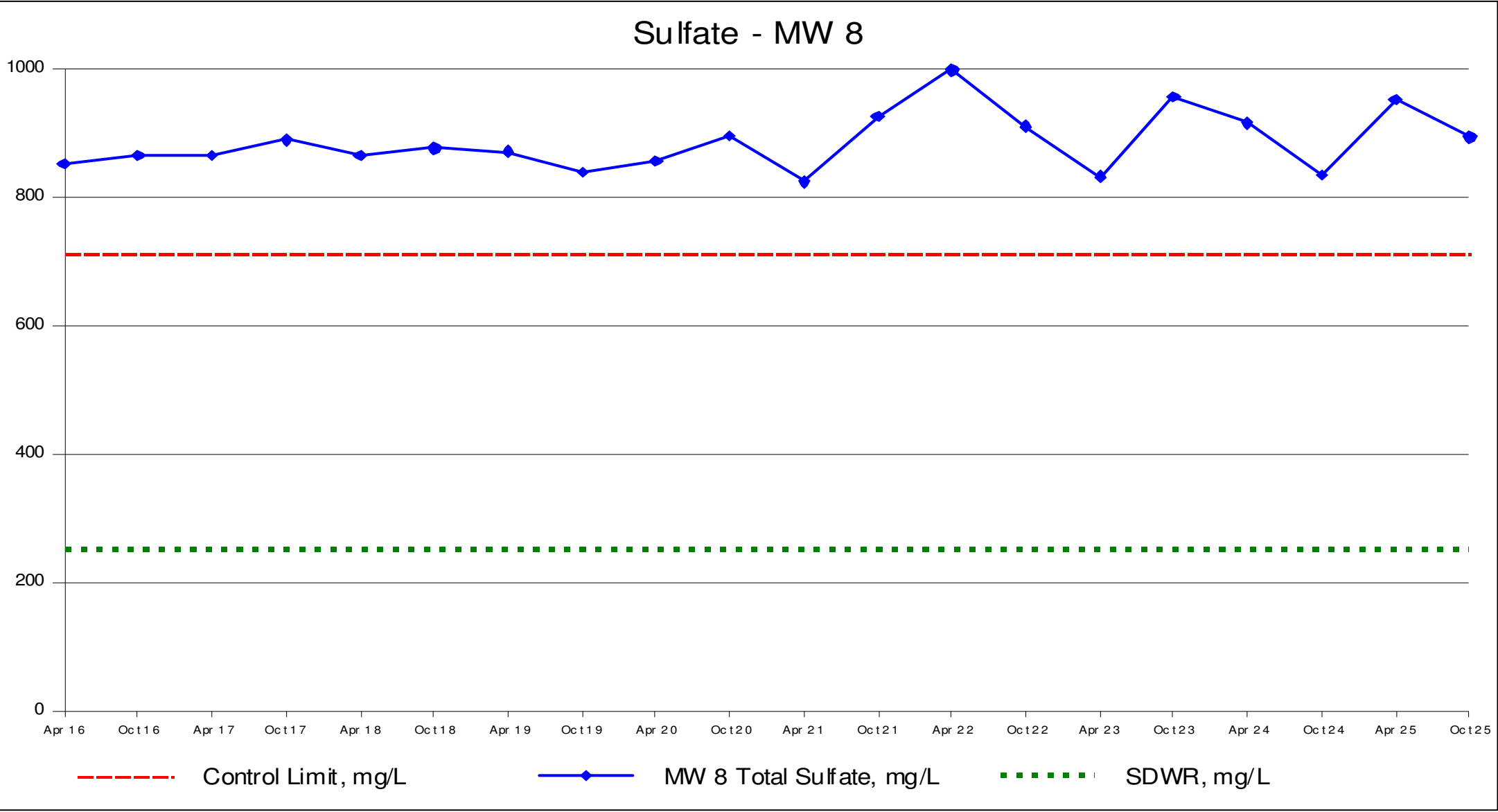


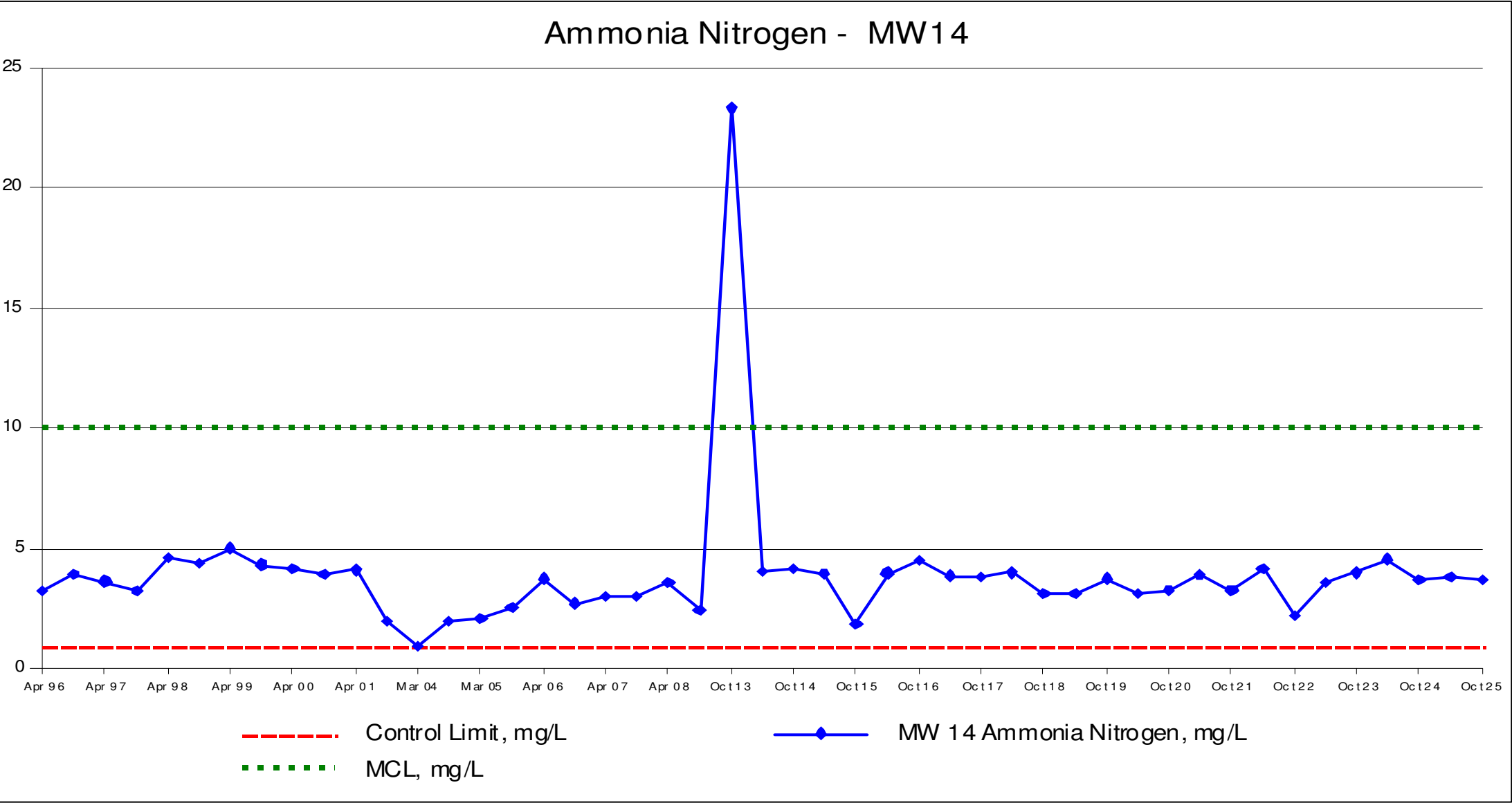


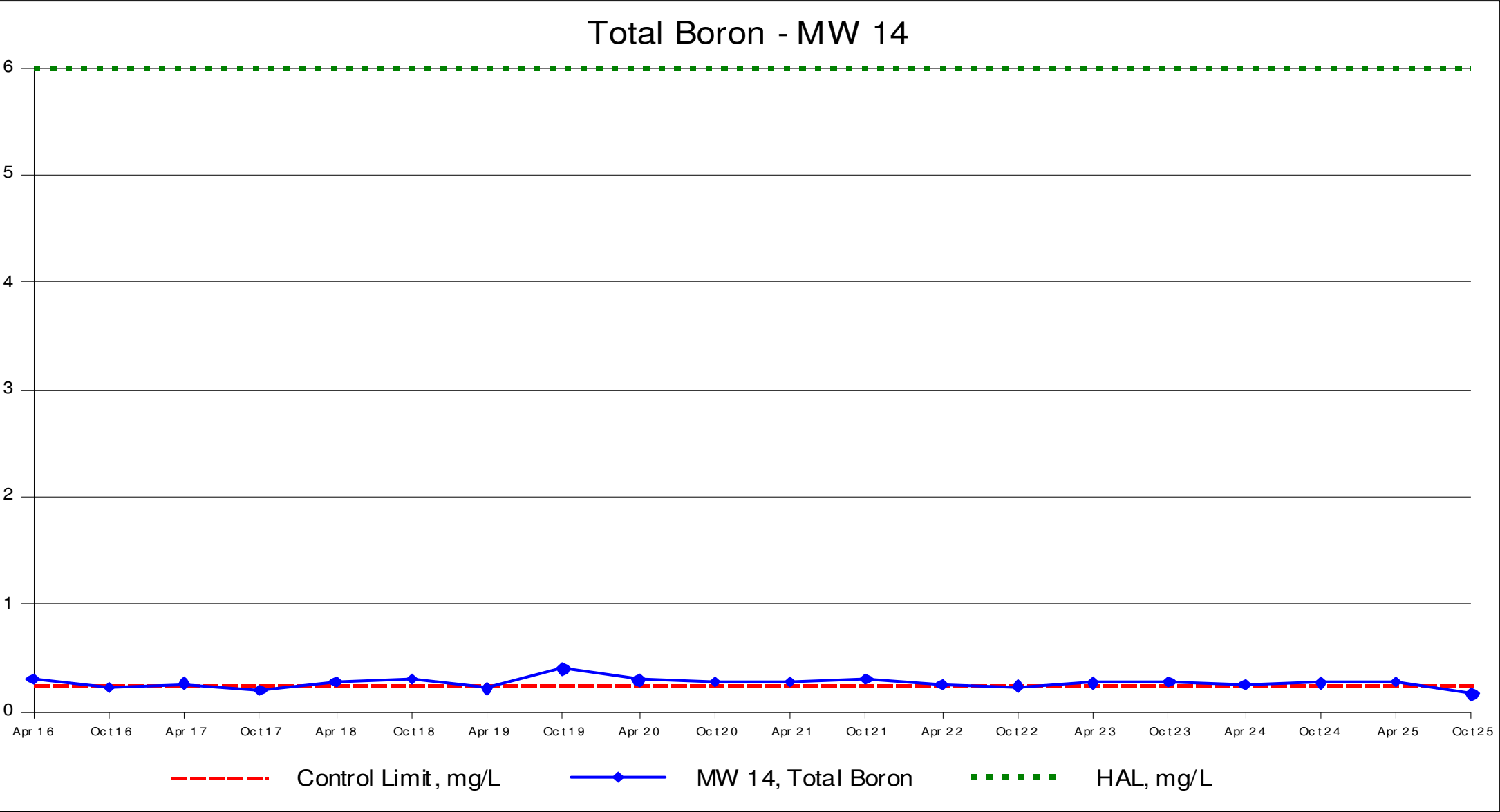


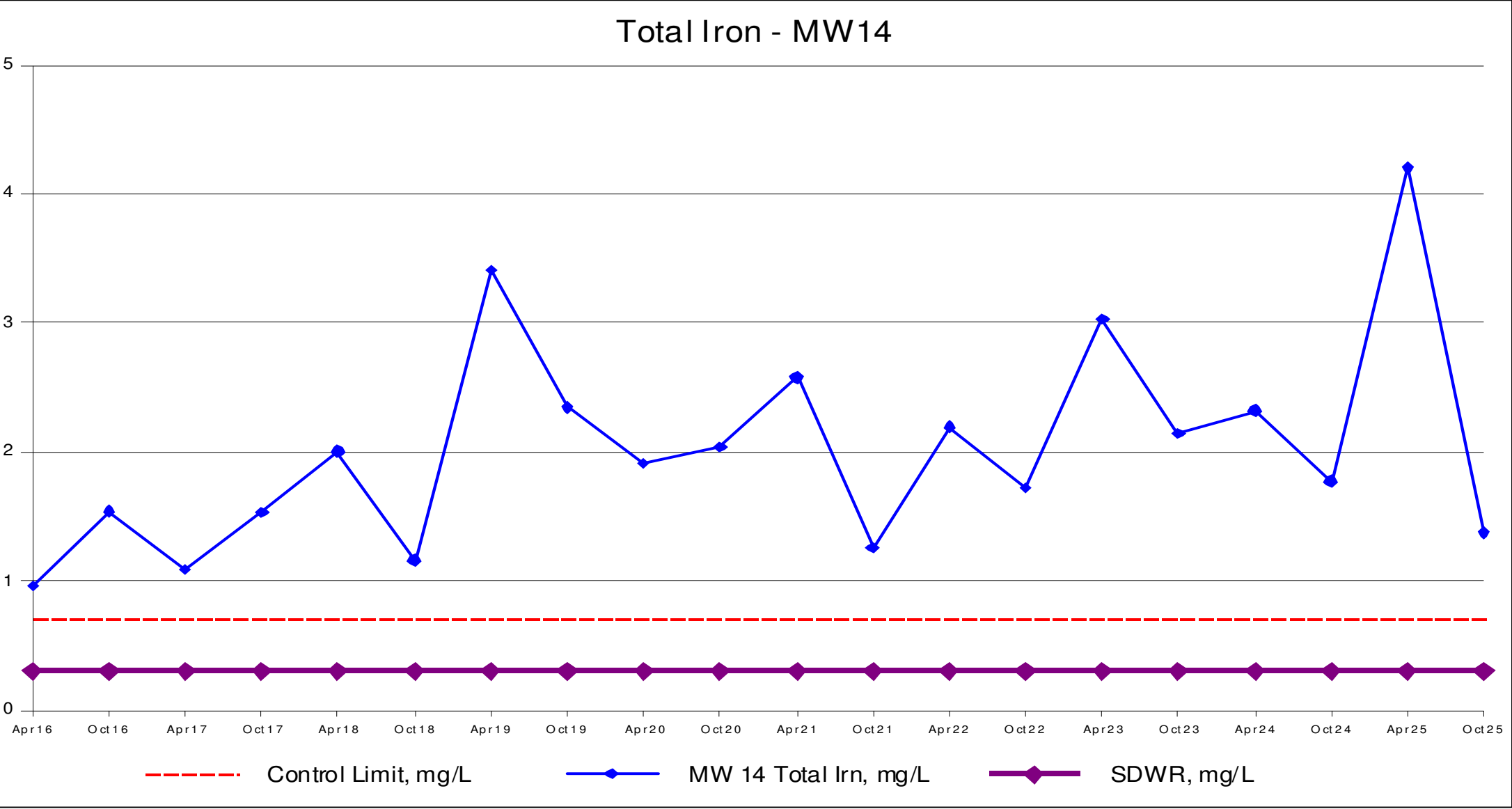


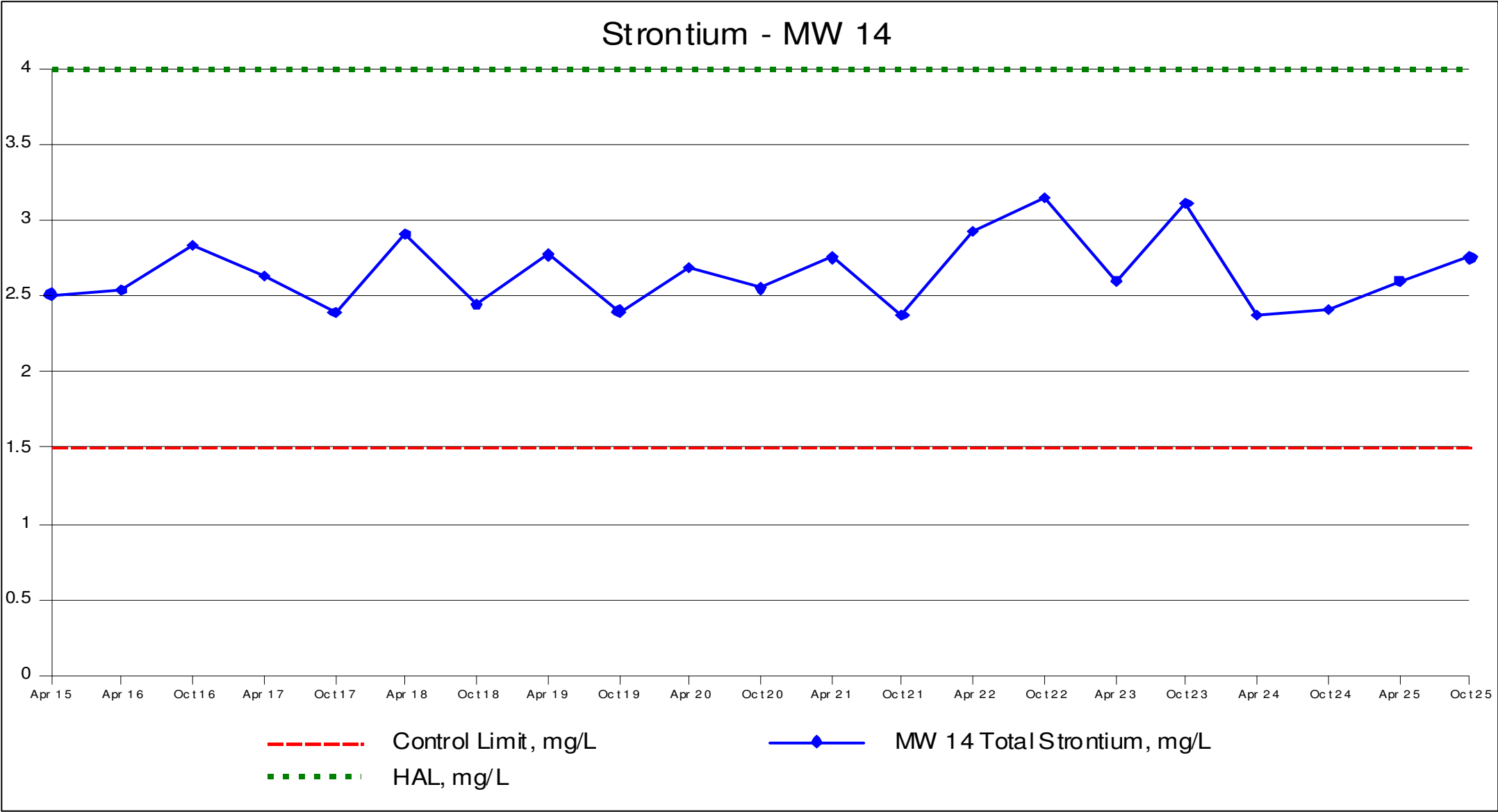


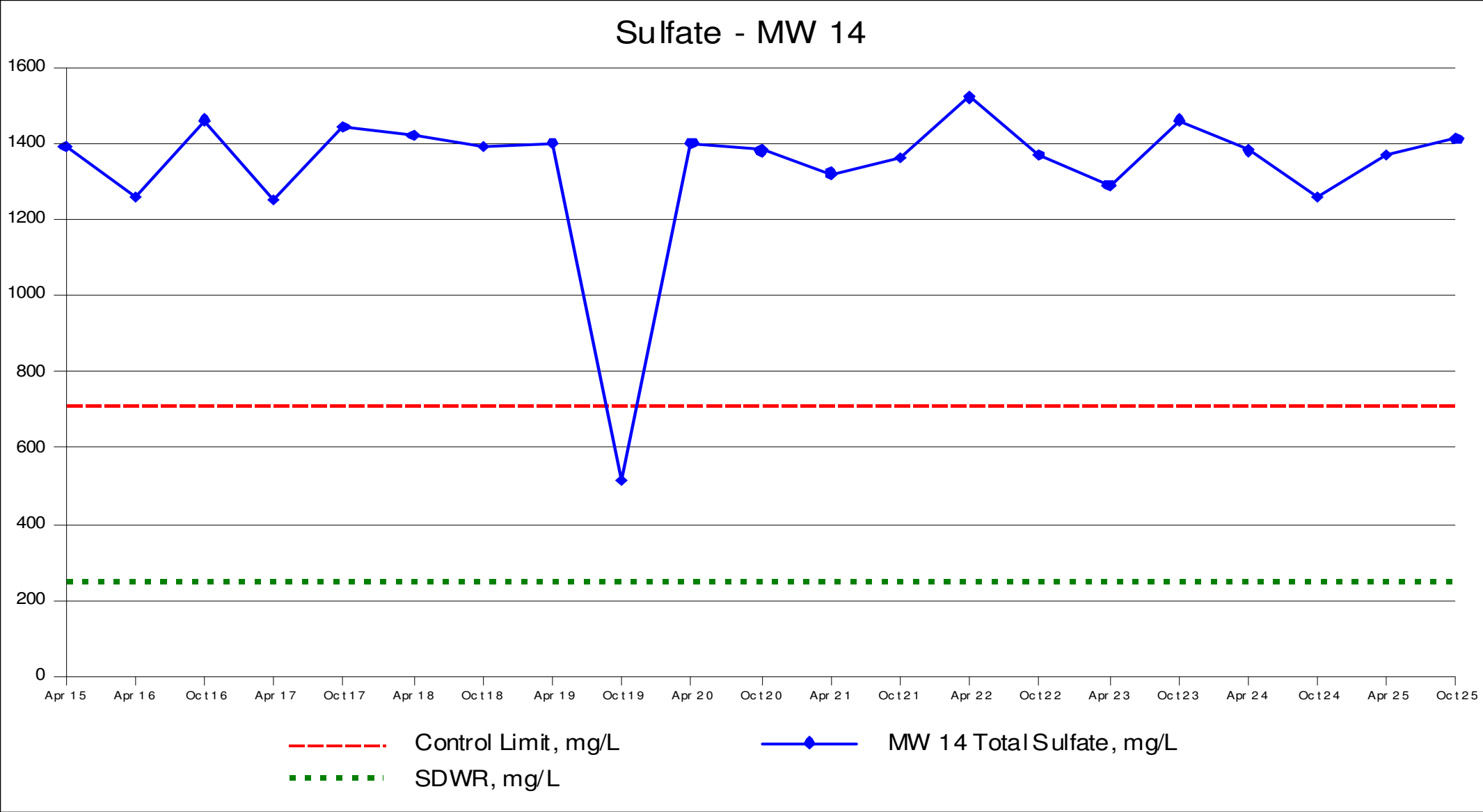


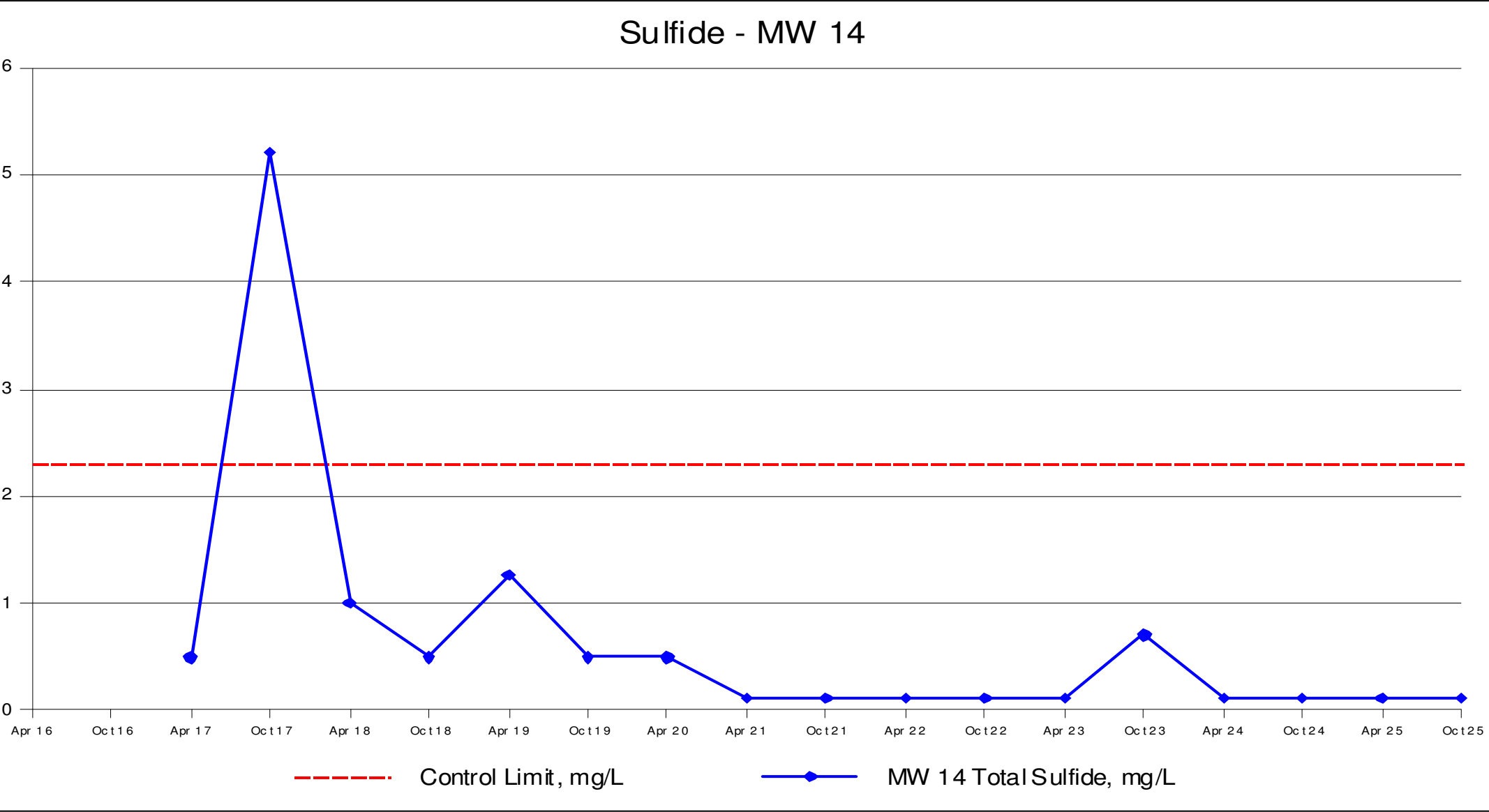


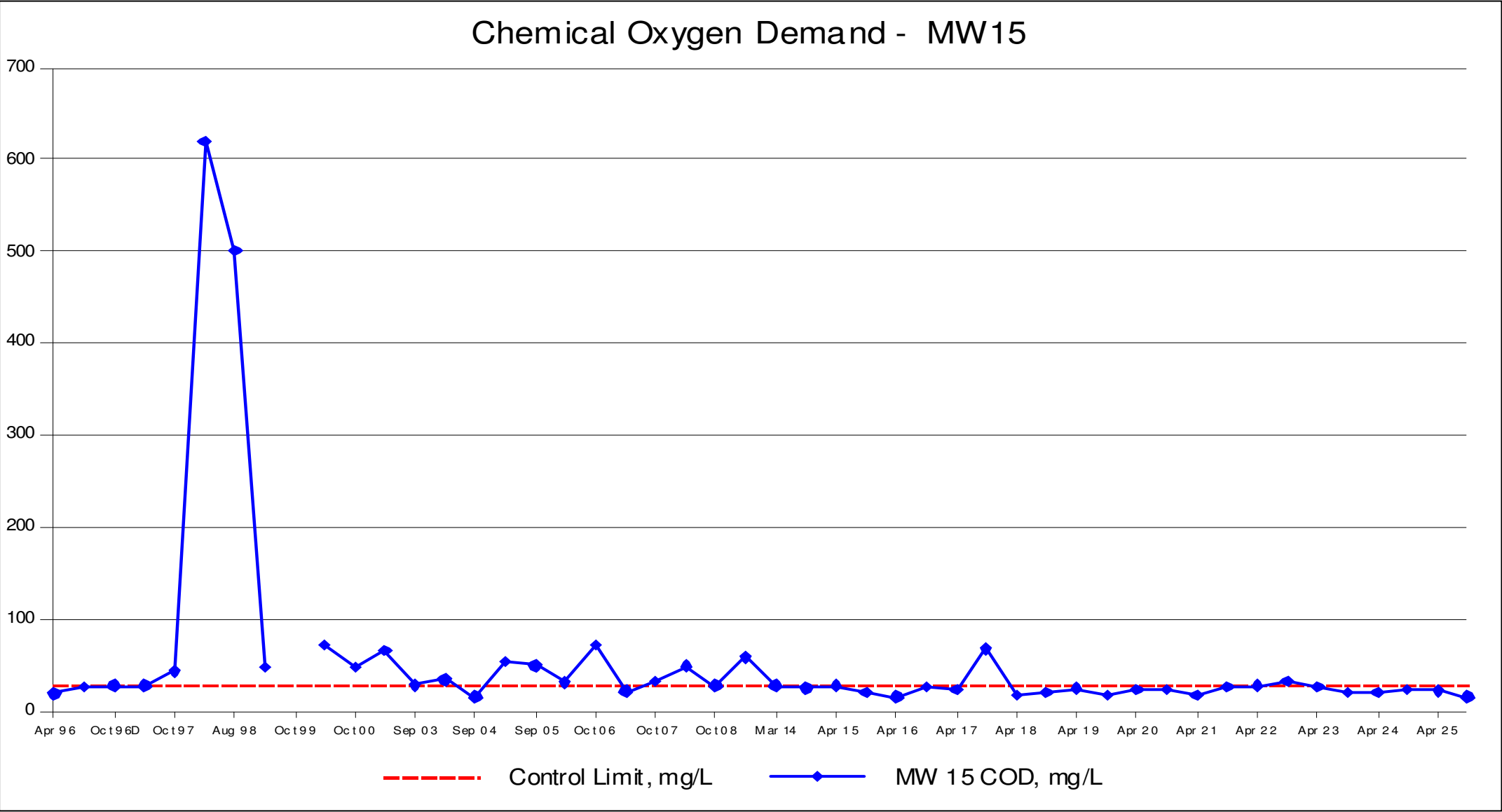


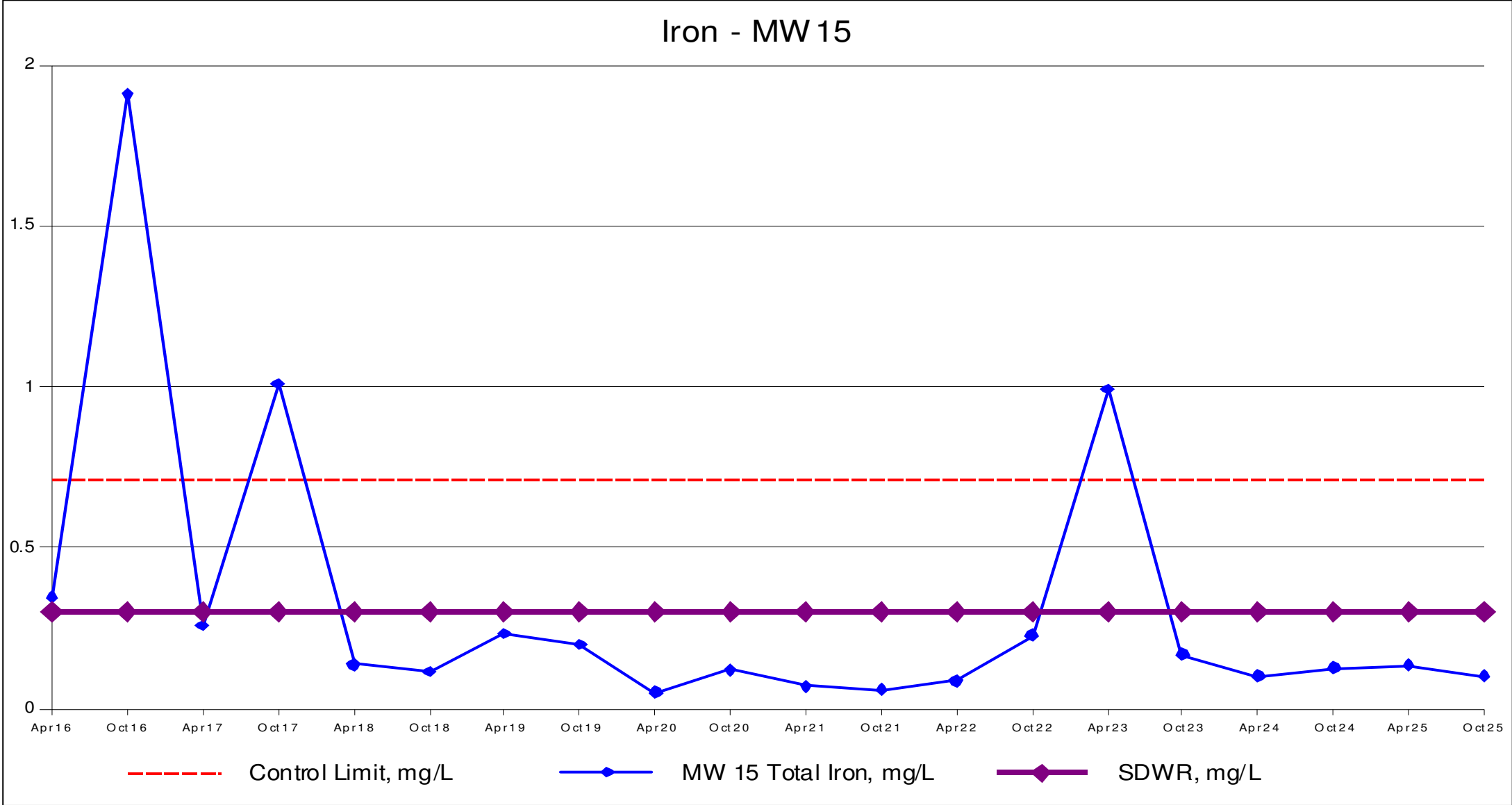


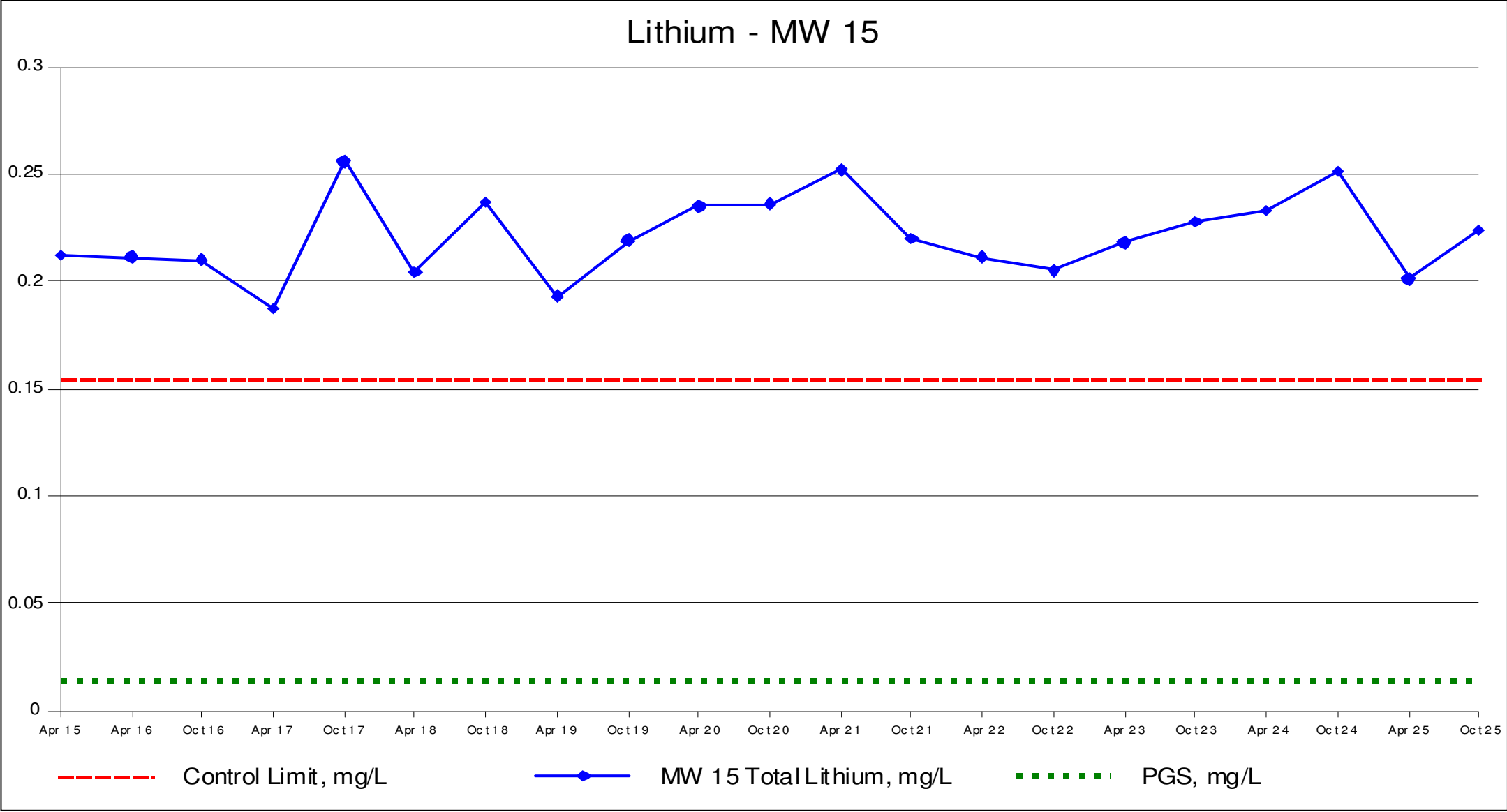


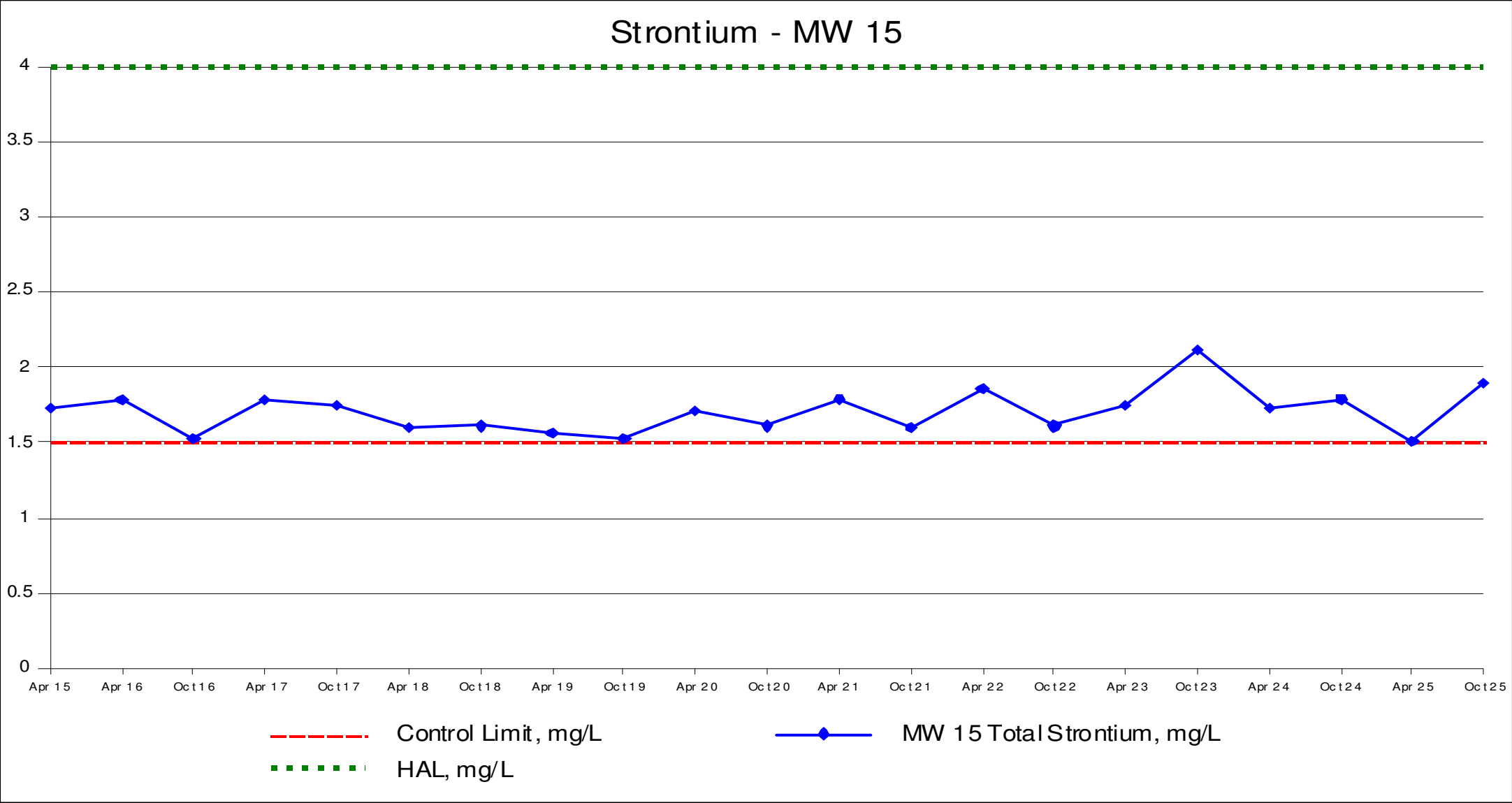


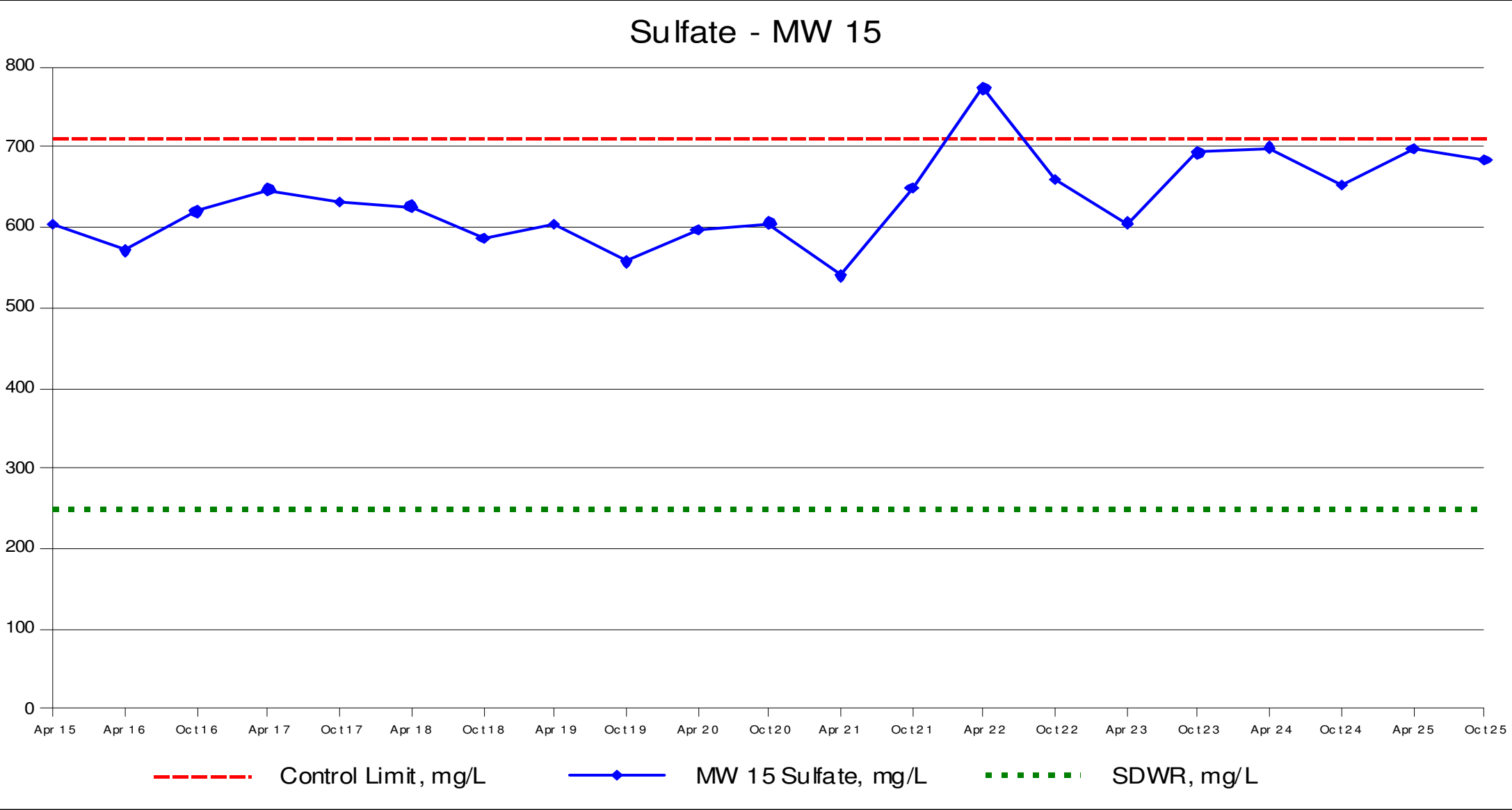


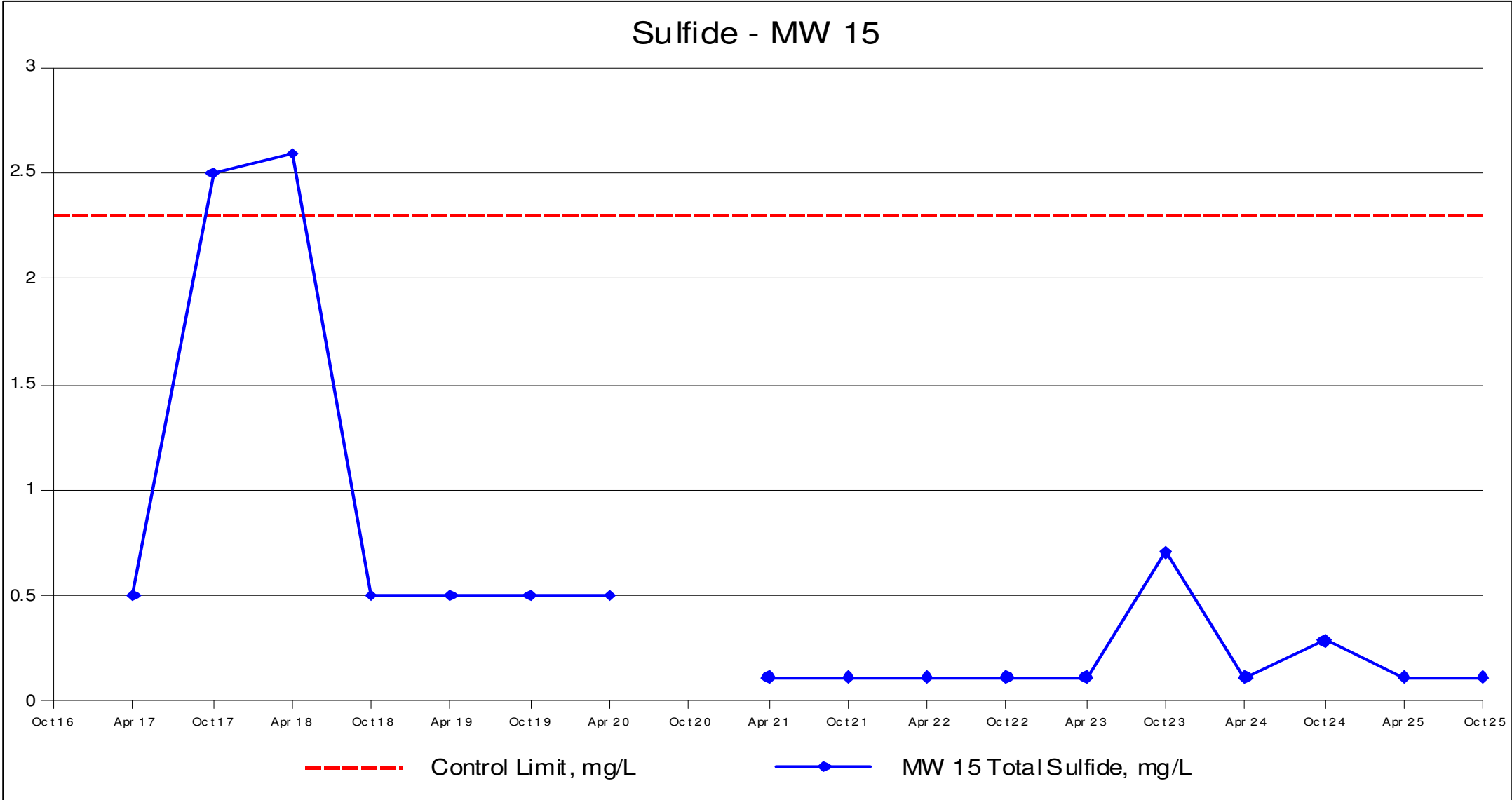


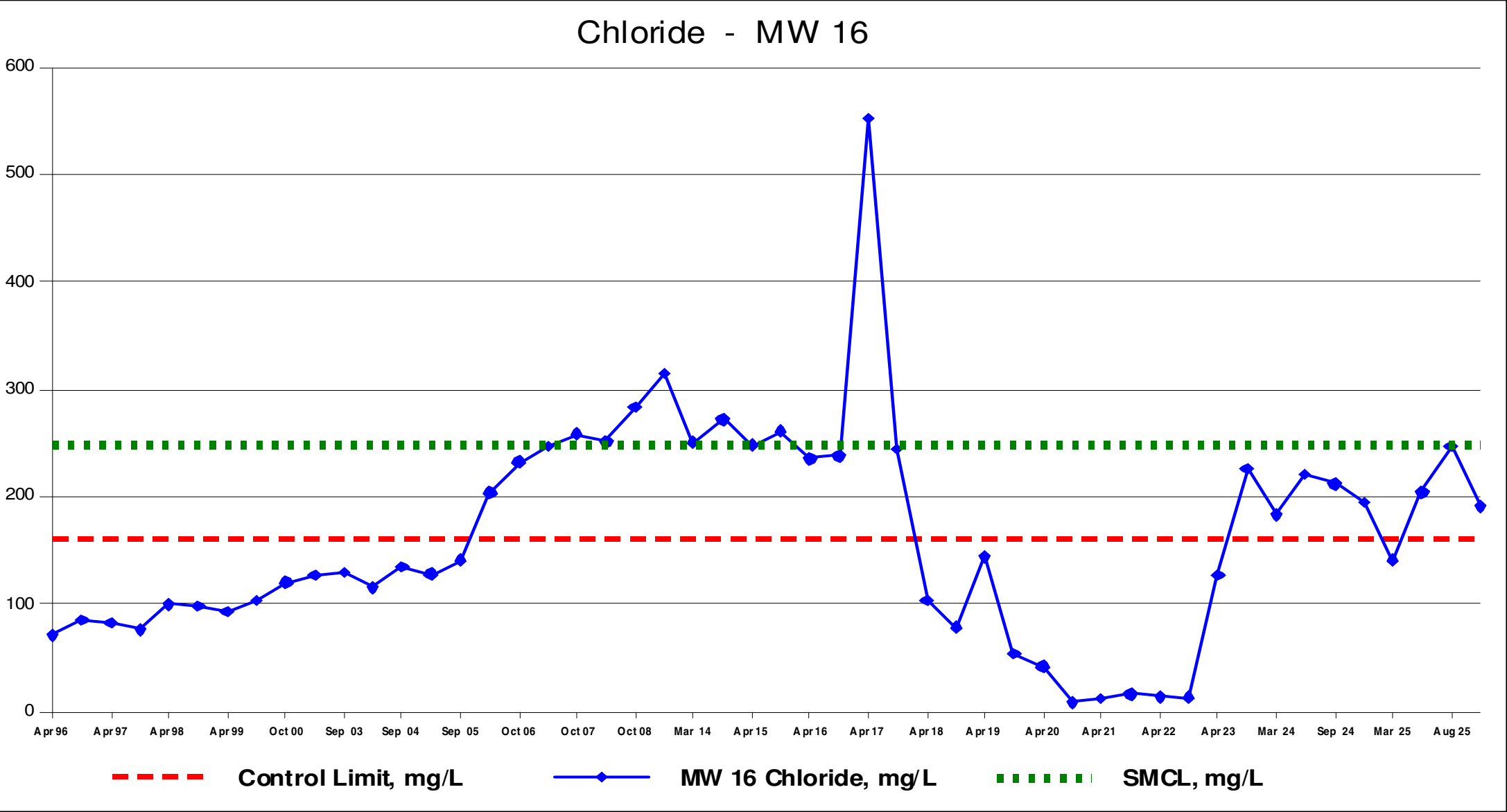


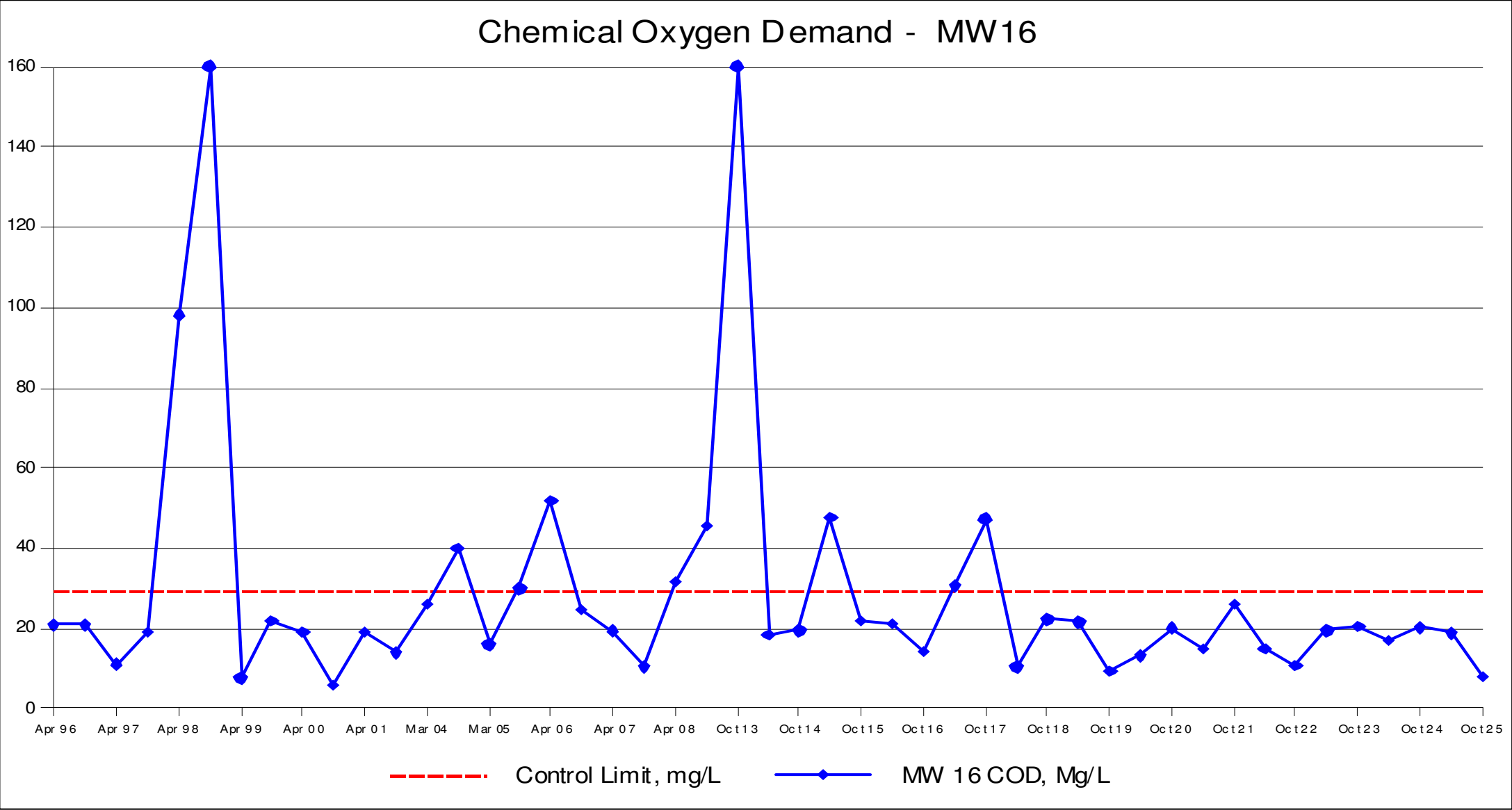


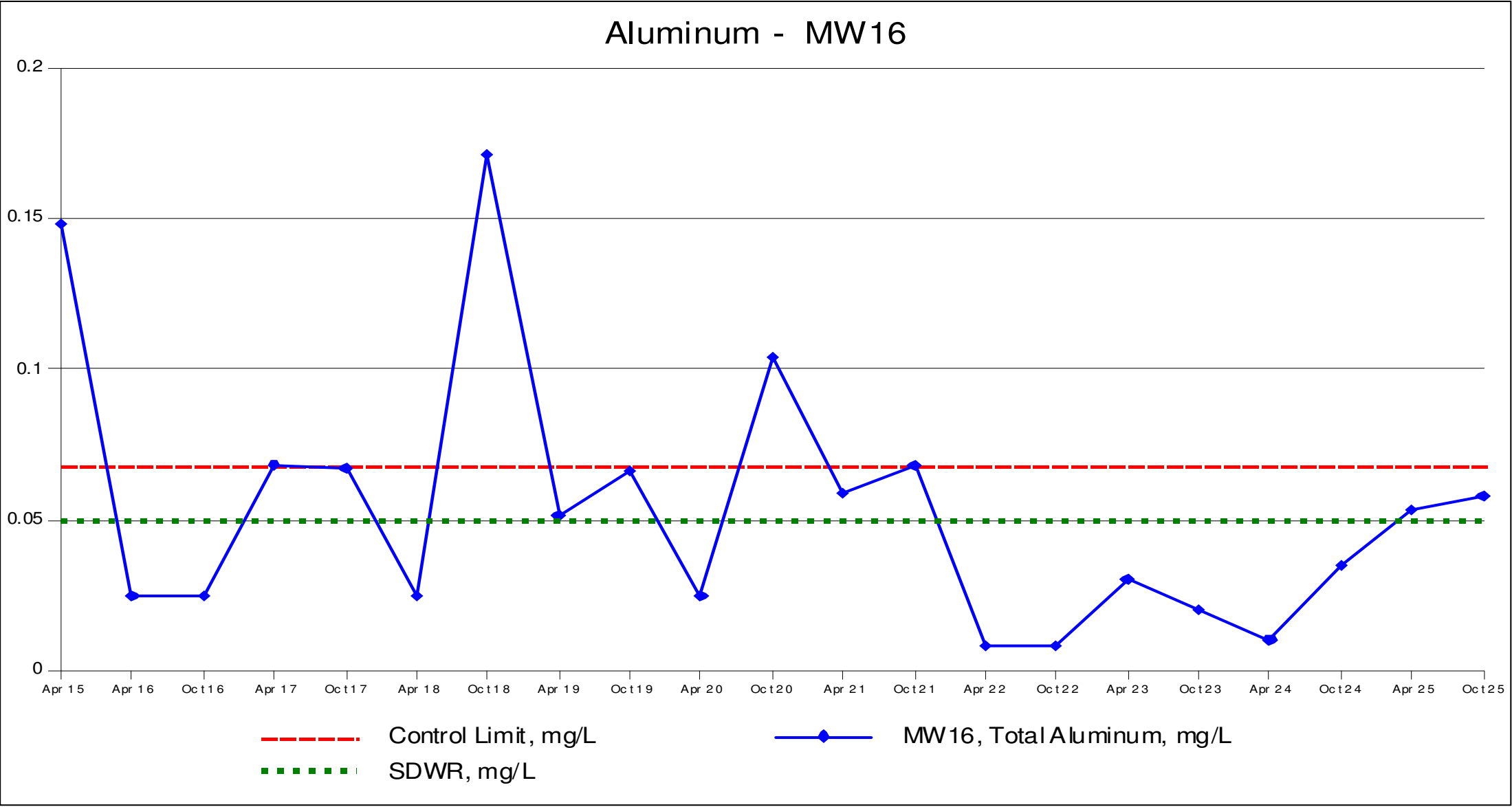


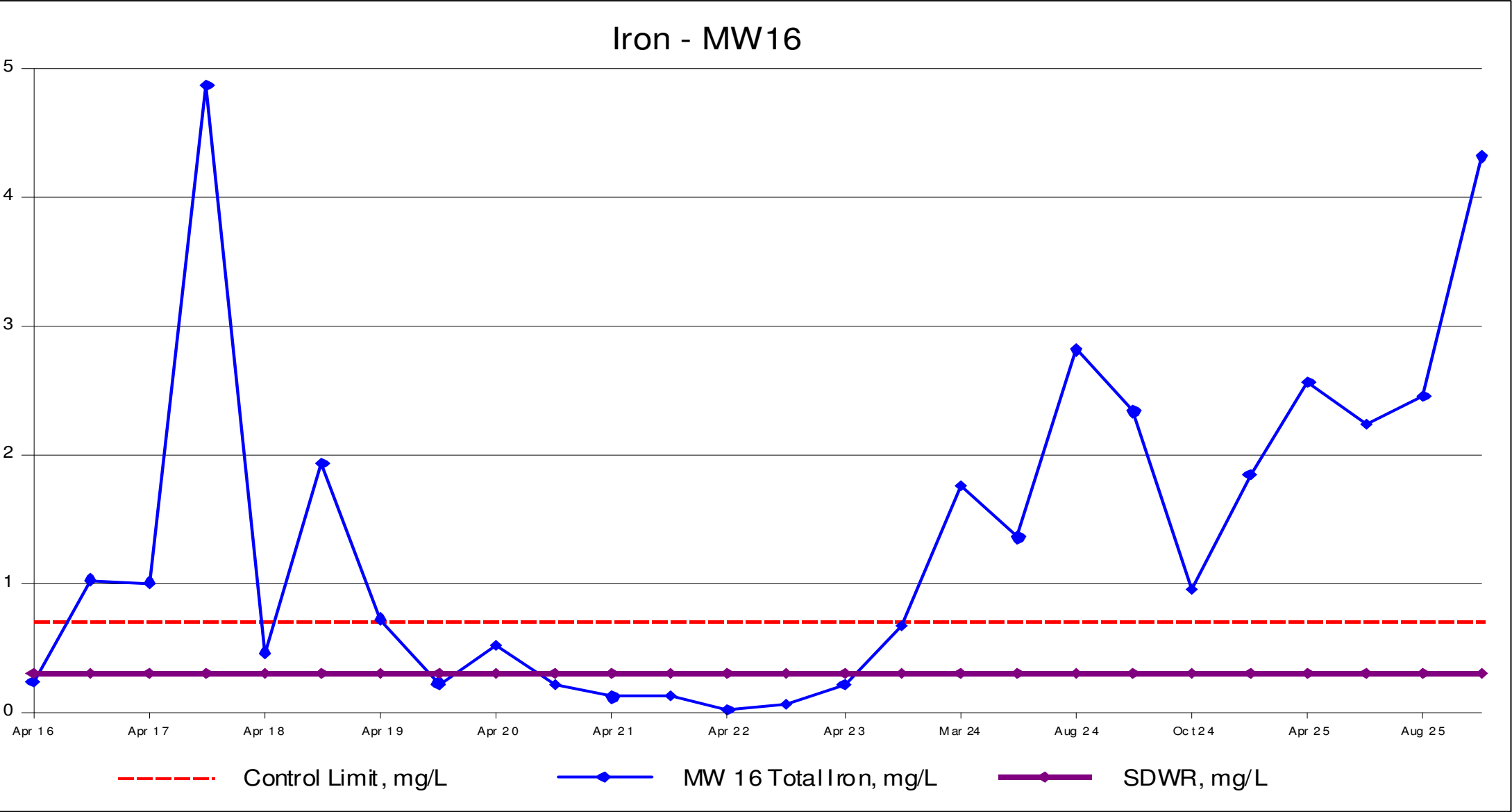


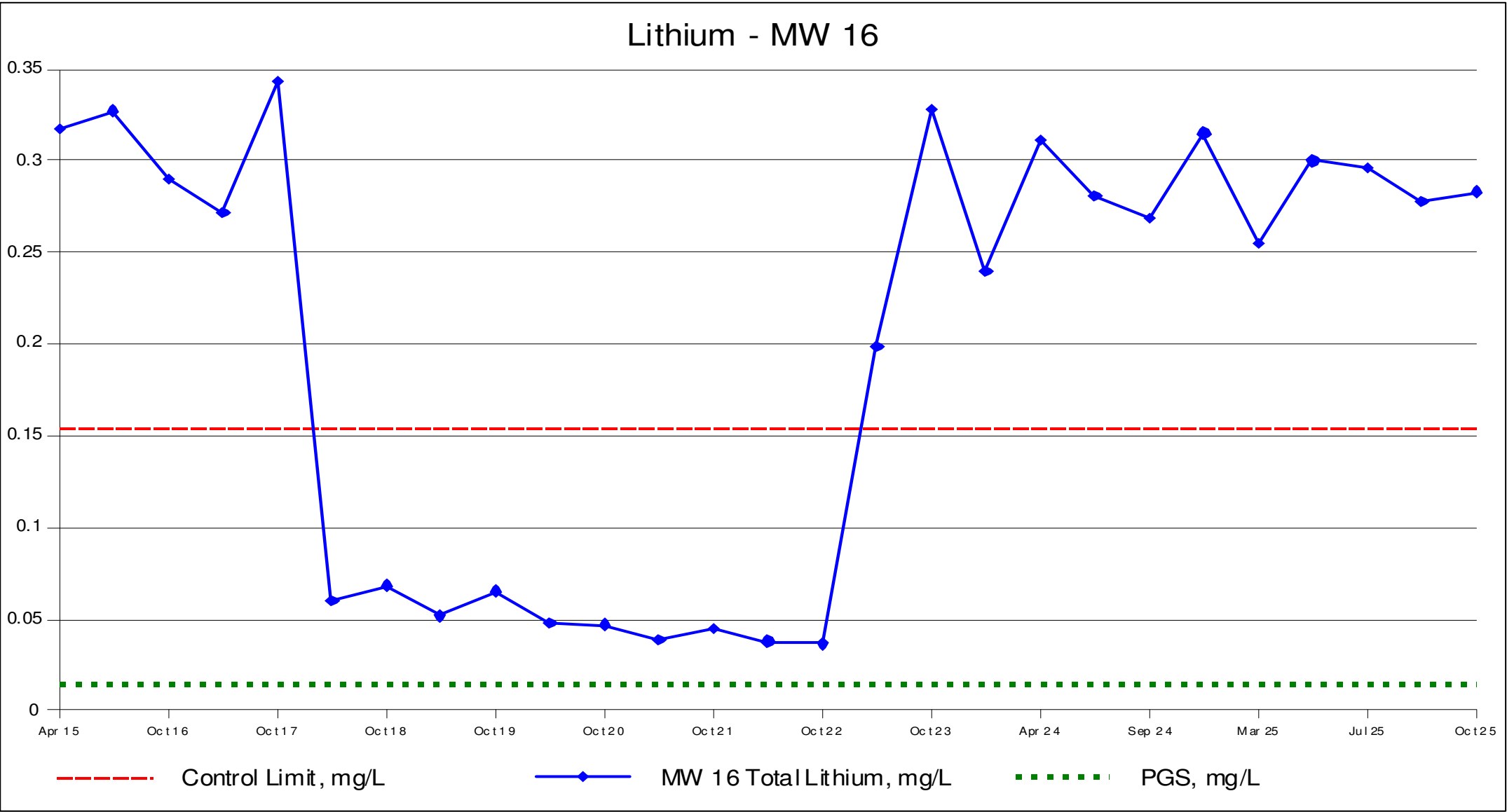


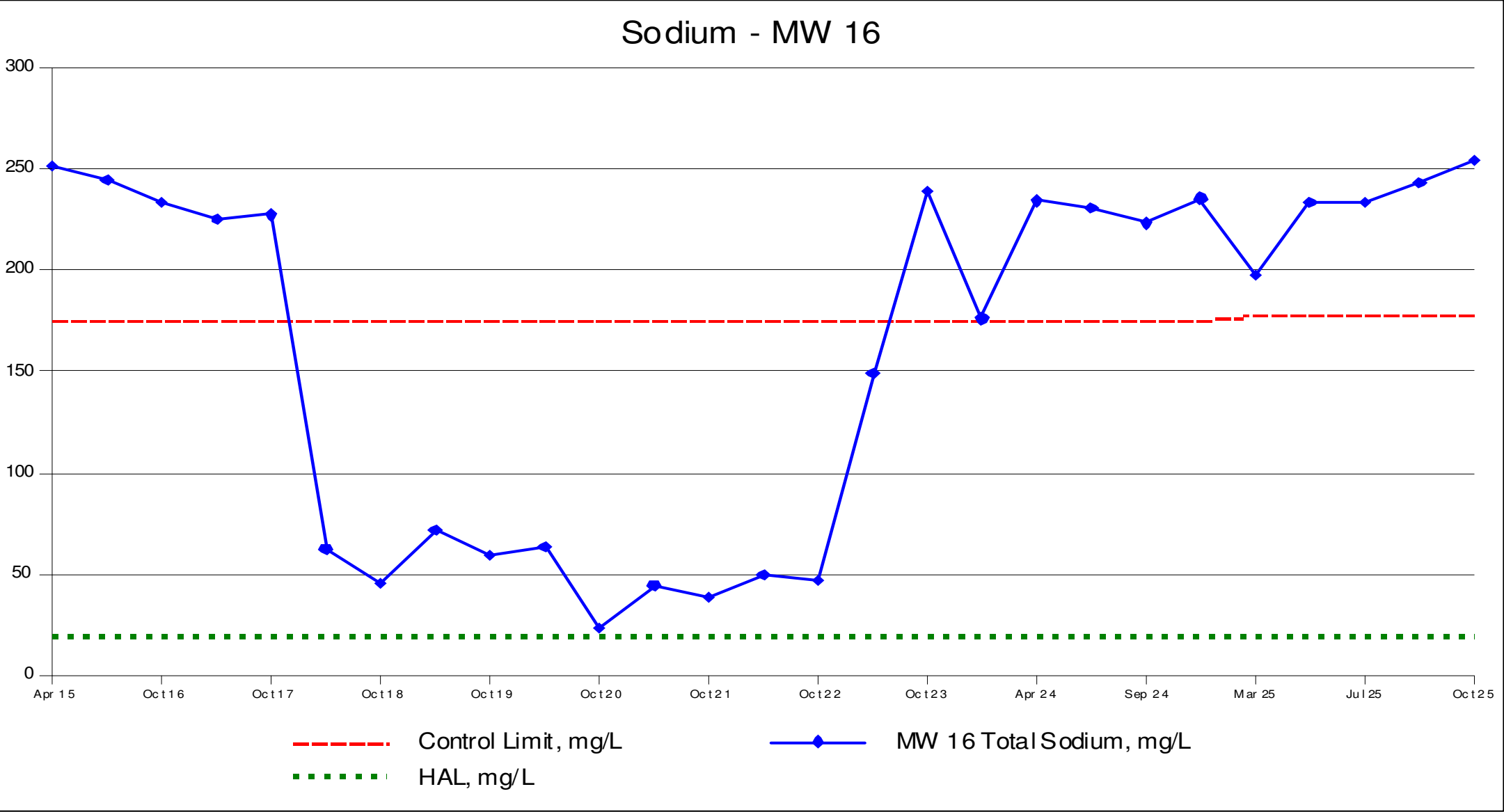


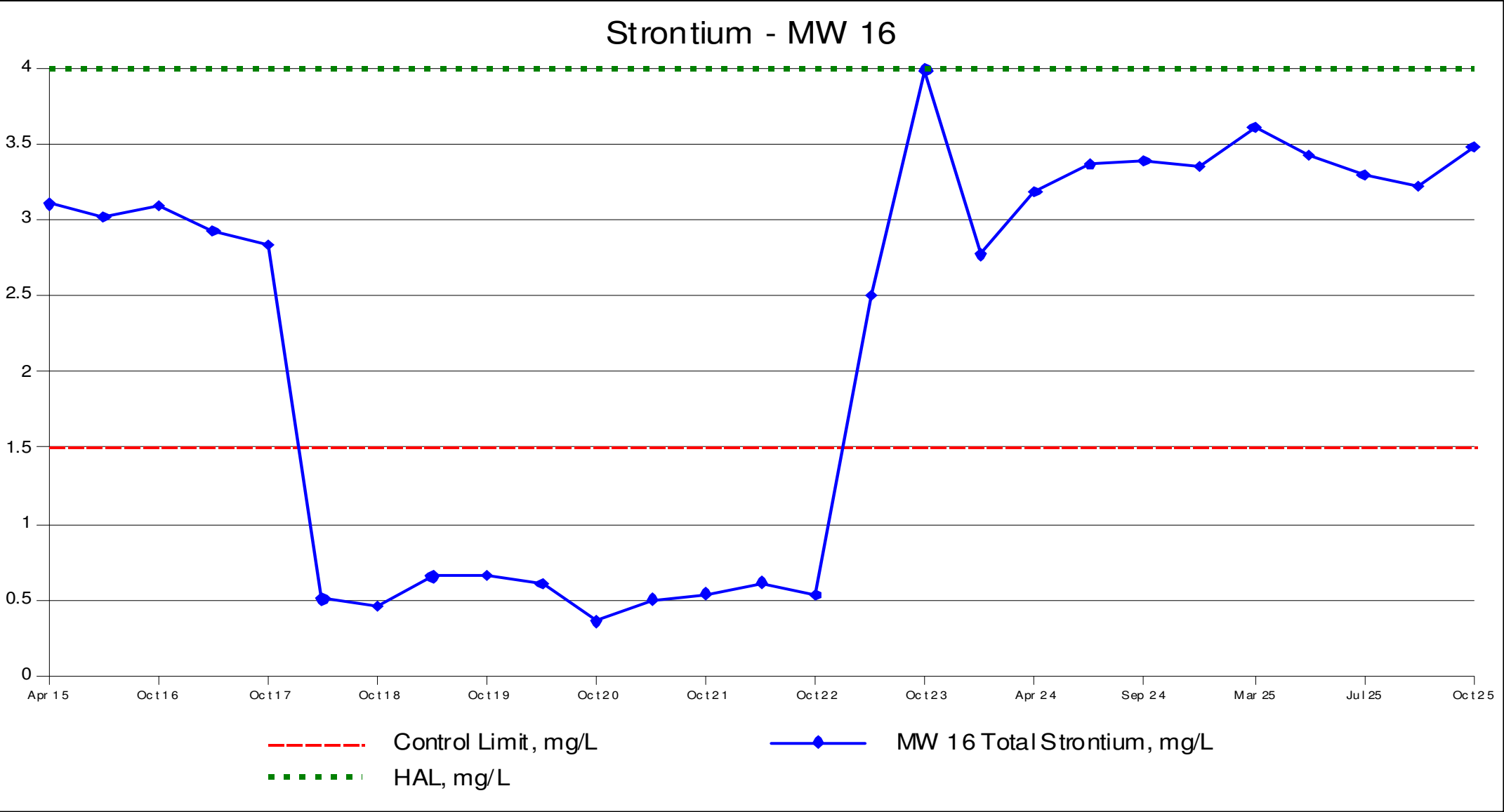


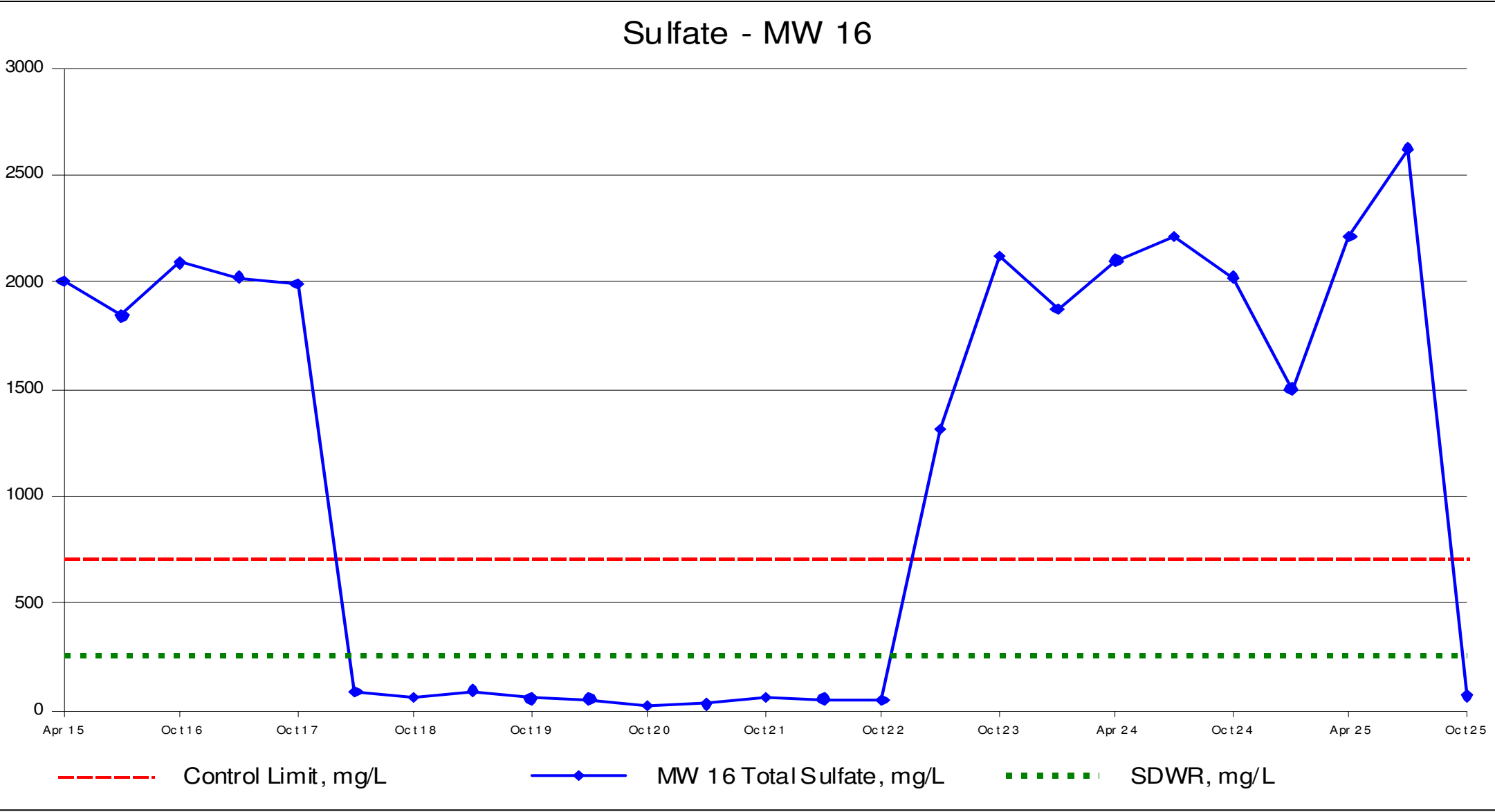












**Keokuk Ferro-Sil Monofill
2542 Carbide Lane
Keokuk, Iowa
Permit No. 56-SDP-17-91P**

Attachment B - Field Data Sheets

April 2025

Landfill Sampling Data					
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P	
Sampling point: MW-4		Upgradient		☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>					
A. Monitoring Well/Piezometer Conditions					
Properly capped?	Yes	☒	No	If no, explain:	
Standing water or litter?	Yes	☐	No	☒	If yes, explain:
B. Groundwater Elevation Measurement (± 0.01 foot MSL)					
Elevation: top of inner well casing			634.62		
Ground elevation:			632.44		
Depth of well: 90.6			Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator					
Groundwater level (± 0.01 foot below top of inner casing, MSL)					
	Date/time	Depth to Groundwater		GW elevation	
Before purging	04/17/2025	39.00		595.62	
After purging					
Before sampling					
C. Well Purging NA - Piezometer only					
Quantity of water removed from well (gallons): NA					
Number of well volumes (based on current water level): NA					
Was well pumped or bailed dry? NA					
Equipment used:					
	Bailer type			Dedicated?	
	Pump type			Dedicated?	
	If not dedicated, method of cleaning?				
D. Field Measurement					
Weather conditions:					
Field measurements (stabilized):					
Water temperature:			Equipment used:		
pH			Equipment used:		
Specific conductivity:			Equipment used:		
Comments: This well is used only for water level measurement.					

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.	Carbide Lane, Keokuk, IA		56-SDP-17-91P	
Sampling point: MW-5	Upgradient	☒	Downgradient	
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	No	☒	If yes, explain:
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 617.06		Ground elevation: 615.46		
Depth of well: 79.6		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	2.99	614.07	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons): 31.2				
Number of well volumes (based on current water level): 2.5				
Was well pumped or bailed dry? No				
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: Overcast, 68°F				
Field measurements (stabilized):				
Water temperature: 12.2°C		Equipment used: General		
pH 6.92		Equipment used: General		
Specific conductivity: 1970		Equipment used: Omega		
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-6		Upgradient	☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	☐ No	☒ If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		616.51	Ground elevation: 615.81	
Depth of well: 99.20		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	37.63	578.88	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement. When the well hinge cover was repaired on this well, it was necessary to remove 2 5/8 inches from the top of the well casing. The TOC elevation has been adjusted to this new height.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-7		Upgradient	☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		651.39	Ground elevation: 649.04	
Depth of well: 75.85		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	41.17		
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		16.2		
Number of well volumes (based on current water level):		3.0		
Was well pumped or bailed dry?		no		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: clear 63°F				
Field measurements (stabilized):				
Water temperature:		14.6 °C	Equipment used: General	
pH		7.46	Equipment used: General	
Specific conductivity:		1170	Equipment used: Omega	
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-8		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☐	No ☒	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		606.49	Ground elevation: 604.23	
Depth of well: 60.26		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	15.64	590.85	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		17.5		
Number of well volumes (based on current water level):		2.5		
Was well pumped or bailed dry?		no		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: clear 63°F				
Field measurements (stabilized):				
Water temperature:		14.0°C	Equipment used: General	
pH		7.28	Equipment used: General	
Specific conductivity:		71990	Equipment used: Omega	
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-9		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒ No ☒	If no, explain:		
Standing water or litter?	Yes ☐ No ☒	If yes, explain:		
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 606.46		Ground elevation: 604.38		
Depth of well: 40.58		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	16.14	590.32	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-11		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☐ No ☒	If no, explain:		
Standing water or litter?	Yes ☐ No ☒	If yes, explain:		
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 648.76		Ground elevation: 647.10		
Depth of well: 73.46		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	46.24	602.52	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-12		Upgradient ☒	Downgradient ☐	
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☐	No ☒	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 655.97		Ground elevation: 653.58		
Depth of well: 80.69		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	19.05	636.92	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		25.7		
Number of well volumes (based on current water level):		2.6		
Was well pumped or bailed dry?		no		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
If not dedicated, method of cleaning?				
D. Field Measurement				
Weather conditions: overcast 63° F				
Field measurements (stabilized):				
Water temperature: 16°C		Equipment used: General		
pH 7.19		Equipment used: General		
Specific conductivity: 980		Equipment used: Omega		
Comments: When the well hinge cover was repaired on this well, it was necessary to remove 1.75 inches from the top of the well casing. The TOC elevation has been adjusted to this new height.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-13		Upgradient	☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	☐ No	☒	If yes, explain:
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		656.52	Ground elevation:	
Depth of well: 42.80		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	18.74	637.78	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-14		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☐	No ☒	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		608.11	Ground elevation: 606.30	
Depth of well: 62.31		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	31.47		
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		15.0		
Number of well volumes (based on current water level):		3.3		
Was well pumped or bailed dry?		no		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: clear 63° F				
Field measurements (stabilized):				
Water temperature:		15.2	Equipment used: General	
pH		6.98	Equipment used: General	
Specific conductivity:		>1990	Equipment used: Omega	
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-15		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒ No ☐	If no, explain:		
Standing water or litter?	Yes ☐ No ☒	If yes, explain:		
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 623.85		Ground elevation: 621.60		
Depth of well: 62.75		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	8.92	614.93	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		25.5		
Number of well volumes (based on current water level):		3.1		
Was well pumped or bailed dry?		no		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: clear 63°F				
Field measurements (stabilized):				
Water temperature: 14.9°C		Equipment used: General		
pH 6.99		Equipment used: General		
Specific conductivity: >1990		Equipment used: Omega		
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-16		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒	No ☐	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		608.64	Ground elevation: 606.20	
Depth of well: 62.44		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	04/17/2025	31.19	577.45	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		14.1		
Number of well volumes (based on current water level):		3.0		
Was well pumped or bailed dry?		no		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: clear 63°F				
Field measurements (stabilized):				
Water temperature:		16.1°C	Equipment used: General	
pH		6.75	Equipment used: General	
Specific conductivity:		>1990	Equipment used: Omega	
Comments:				

**Keokuk Ferro-Sil Monofill
2542 Carbide Lane
Keokuk, Iowa
Permit No. 56-SDP-17-91P**

Attachment B - Field Data Sheets

October 2025

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-4		Upgradient	☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	☐ No	☒ If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		634.62	Ground elevation: 632.44	
Depth of well: 90.6		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	44.63		
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-5		Upgradient	☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	☐ No	☒	If yes, explain:
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		617.06	Ground elevation: 615.46	
Depth of well: 79.6		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	7.45	609.61	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		28		
Number of well volumes (based on current water level):		2.0 2.4		
Was well pumped or bailed dry?		no		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:		overcast 64°F		
Field measurements (stabilized):				
Water temperature:		16.5°C	Equipment used: General	
pH		6.94	Equipment used: General	
Specific conductivity:		1830	Equipment used: Omega	
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-6		Upgradient	☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	☐ No	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		616.51	Ground elevation: 615.81	
Depth of well: 99.20		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	40.11	576.40	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
If not dedicated, method of cleaning?				
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement. When the well hinge cover was repaired on this well, it was necessary to remove 2 5/8 inches from the top of the well casing. The TOC elevation has been adjusted to this new height.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-7		Upgradient ☒	Downgradient ☐	
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☐	No ☒	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 651.39		Ground elevation: 649.04		
Depth of well: 75.85		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	42.58	608.81	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons): 15.6				
Number of well volumes (based on current water level): 3.0				
Was well pumped or bailed dry? No				
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
If not dedicated, method of cleaning?				
D. Field Measurement				
Weather conditions: Overcast, 64°F				
Field measurements (stabilized):				
Water temperature: 14.0 °C		Equipment used: General		
pH 7.39		Equipment used: General		
Specific conductivity: 1240		Equipment used: Omega		
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-8		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒ No ☐	If no, explain:		
Standing water or litter?	Yes ☐ No ☒	If yes, explain:		
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 606.49		Ground elevation: 604.23		
Depth of well: 60.26		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	18.37	588.12	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons): 18.5				
Number of well volumes (based on current water level): 2.8				
Was well pumped or bailed dry? No				
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
If not dedicated, method of cleaning?				
D. Field Measurement				
Weather conditions: overcast, 64°F				
Field measurements (stabilized):				
Water temperature: 15°C		Equipment used: General		
pH 7.17		Equipment used: General		
Specific conductivity: >1990		Equipment used: Omega		
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-9		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒	No ☐	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		606.46	Ground elevation: 604.38	
Depth of well: 40.58		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	19.57	586.89	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-11		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☐	No ☒	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		648.76	Ground elevation: 647.10	
Depth of well: 73.46		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	48.42	600.34	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: overcast, 64°F				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-12		Upgradient ☒	Downgradient ☐	
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☐ No ☒	If no, explain:		
Standing water or litter?	Yes ☐ No ☒	If yes, explain:		
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing 655.97		Ground elevation: 653.58		
Depth of well: 80.69		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	41.08 21.24	634.73	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons): 24.7				
Number of well volumes (based on current water level): 2.6				
Was well pumped or bailed dry? No				
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
If not dedicated, method of cleaning?				
D. Field Measurement				
Weather conditions: overcast, 64°F				
Field measurements (stabilized):				
Water temperature: 14.8 °C		Equipment used: General		
pH 7.18		Equipment used: General		
Specific conductivity: 970		Equipment used: Omega		
Comments: When the well hinge cover was repaired on this well, it was necessary to remove 1.75 inches from the top of the well casing. The TOC elevation has been adjusted to this new height.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-13		Upgradient	☒	Downgradient
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes	☒ No	If no, explain:	
Standing water or litter?	Yes	☐ No	☒	If yes, explain:
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		656.52	Ground elevation:	
Depth of well:		42.80	Inside casing diameter (inches): 2.0	
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	21.08	635.44	
After purging				
Before sampling				
C. Well Purging NA - Piezometer only				
Quantity of water removed from well (gallons): NA				
Number of well volumes (based on current water level): NA				
Was well pumped or bailed dry? NA				
Equipment used:				
	Bailer type		Dedicated?	
	Pump type		Dedicated?	
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		Equipment used:		
pH		Equipment used:		
Specific conductivity:		Equipment used:		
Comments: This well is used only for water level measurement.				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-14		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒	No ☐	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		608.11	Ground elevation: 606.30	
Depth of well: 62.31		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	33.08	574.63	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		13.0		
Number of well volumes (based on current water level):		3.1		
Was well pumped or bailed dry?		No		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: overcast 64°F				
Field measurements (stabilized):				
Water temperature:		17.2°C	Equipment used: General	
pH		6.98	Equipment used: General	
Specific conductivity:		>1990	Equipment used: Omega	
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-15		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒	No ☐	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		623.85	Ground elevation: 621.60	
Depth of well: 62.75		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	14.97	608.88	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		16.8		
Number of well volumes (based on current water level):		2.3		
Was well pumped or bailed dry?		No		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions: overcast 64°F				
Field measurements (stabilized):				
Water temperature:		16°C	Equipment used: General	
pH		6.78	Equipment used: General	
Specific conductivity:		>1990	Equipment used: Omega	
Comments:				

Landfill Sampling Data				
Keokuk Ferro-Sil, Inc.		Carbide Lane, Keokuk, IA		56-SDP-17-91P
Sampling point: MW-16		Upgradient		Downgradient ☒
Sampler name: Carol Wilson, <i>CHEM-ECO Environmental, Inc.</i>				
A. Monitoring Well/Piezometer Conditions				
Properly capped?	Yes ☒	No ☐	If no, explain:	
Standing water or litter?	Yes ☐	No ☒	If yes, explain:	
B. Groundwater Elevation Measurement (± 0.01 foot MSL)				
Elevation: top of inner well casing		608.64	Ground elevation: 606.20	
Depth of well: 62.44		Inside casing diameter (inches): 2.0		
Equipment used: Slope Indicator				
Groundwater level (± 0.01 foot below top of inner casing, MSL)				
	Date/time	Depth to Groundwater	GW elevation	
Before purging	10/16/2025	33.14	575.5	
After purging				
Before sampling				
C. Well Purging				
Quantity of water removed from well (gallons):		13.0		
Number of well volumes (based on current water level):		3.0		
Was well pumped or bailed dry?		No		
Equipment used:				
	Bailer type	Polyethylene	Dedicated?	Yes
	Pump type	Waterra	Dedicated?	Yes
	If not dedicated, method of cleaning?			
D. Field Measurement				
Weather conditions:				
Field measurements (stabilized):				
Water temperature:		17°C	Equipment used: General	
pH		6.75	Equipment used: General	
Specific conductivity:		>1990	Equipment used: Omega	
Comments:				

**Keokuk Ferro-Sil Monofill
2542 Carbide Lane
Keokuk, Iowa
Permit No. 56-SDP-17-91P**

Attachment C – Laboratory Reports 2025

Semi-Annual Sampling

**17 April 2025
16 October 2025**

Supplemental Sampling MW-16

**20 March 2025
30 July 2025
21 August 2025**



ANALYTICAL REPORT

PREPARED FOR

Attn: Steven Demasi
Glencore Ltd
Three Stamford Plaza
301 Trersser Blvd
Stamford, Connecticut 06901

Generated 4/30/2025 9:27:03 AM

JOB DESCRIPTION

Keokuk Ferro-Sil Landfill

JOB NUMBER

310-304633-1

Eurofins Cedar Falls

Job Notes

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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
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Case Narrative

Client: Glencore Ltd
Project: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Job ID: 310-304633-1

Eurofins Cedar Falls

Job Narrative 310-304633-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

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

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

Receipt

The samples were received on 4/18/2025 1:10 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 4.4°C and 5.1°C.

Receipt Exceptions

The following sample was submitted for analysis; however, it was not listed on the Internal Chain-of-Custody (COC): Pond (310-304633-8)

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: MW-15 (310-304633-6). The sample 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: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-304633-1	MW-5	Water	04/17/25 11:00	04/18/25 13:10
310-304633-2	MW-7	Water	04/17/25 11:30	04/18/25 13:10
310-304633-3	MW-8	Water	04/17/25 12:00	04/18/25 13:10
310-304633-4	MW-12	Water	04/17/25 12:30	04/18/25 13:10
310-304633-5	MW-14	Water	04/17/25 12:50	04/18/25 13:10
310-304633-6	MW-15	Water	04/17/25 13:15	04/18/25 13:10
310-304633-7	MW-16	Water	04/17/25 13:40	04/18/25 13:10
310-304633-8	Pond	Water	04/17/25 14:00	04/18/25 13:10

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-5

Lab Sample ID: 310-304633-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	134		5.00	2.25	mg/L	5		9056A	Total/NA
Fluoride	0.641	J	1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	495		5.00	2.10	mg/L	5		9056A	Total/NA
Barium	0.0143		0.00200	0.000660	mg/L	1		6020B	Total/NA
Iron	0.744		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.119		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	161		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	1.16		0.00100	0.000530	mg/L	1		6020B	Total/NA
Chemical Oxygen Demand	7.14		5.00	4.60	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 310-304633-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	27.7		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	298		5.00	2.10	mg/L	5		9056A	Total/NA
Barium	0.107		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.268		0.100	0.0820	mg/L	1		6020B	Total/NA
Iron	0.725		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.0750		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	73.8		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	0.900		0.00100	0.000530	mg/L	1		6020B	Total/NA
Ammonia as N	0.570		0.500	0.210	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	25.9		5.00	4.60	mg/L	1		5220D LL	Total/NA
Sulfide	1.77		1.00	0.231	mg/L	1		9034	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 310-304633-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	24.0		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	949		20.0	8.40	mg/L	20		9056A	Total/NA
Barium	0.0458		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.213		0.100	0.0820	mg/L	1		6020B	Total/NA
Iron	0.408		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.0159		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	107		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	2.13		0.00100	0.000530	mg/L	1		6020B	Total/NA
Ammonia as N	2.31		0.500	0.210	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	10.8		5.00	4.60	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-12

Lab Sample ID: 310-304633-4

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
Fluoride	0.433	J	1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	291		5.00	2.10	mg/L	5		9056A	Total/NA
Barium	0.0336		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.0998	J	0.100	0.0820	mg/L	1		6020B	Total/NA
Iron	0.0979	J	0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.0552		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	64.1		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	0.604		0.00100	0.000530	mg/L	1		6020B	Total/NA
Chemical Oxygen Demand	6.15		5.00	4.60	mg/L	1		5220D LL	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-14

Lab Sample ID: 310-304633-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13.6		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	1370		20.0	8.40	mg/L	20		9056A	Total/NA
Barium	0.0257		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.283		0.100	0.0820	mg/L	1		6020B	Total/NA
Iron	4.20		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.0168		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	107		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	2.60		0.00400	0.00212	mg/L	4		6020B	Total/NA
Ammonia as N	3.83		0.500	0.210	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	12.1		5.00	4.60	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-15

Lab Sample ID: 310-304633-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	64.7		5.00	2.25	mg/L	5		9056A	Total/NA
Fluoride	1.01		1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	698		20.0	8.40	mg/L	20		9056A	Total/NA
Aluminum	0.0364	J	0.0500	0.0290	mg/L	1		6020B	Total/NA
Barium	0.0198		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.107		0.100	0.0820	mg/L	1		6020B	Total/NA
Iron	0.133		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.201		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	90.7		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	1.51		0.00100	0.000530	mg/L	1		6020B	Total/NA
Chemical Oxygen Demand	21.7		5.00	4.60	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-16

Lab Sample ID: 310-304633-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	204		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	2210		100	42.0	mg/L	100		9056A	Total/NA
Aluminum	0.0532		0.0500	0.0290	mg/L	1		6020B	Total/NA
Barium	0.0137		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.176		0.100	0.0820	mg/L	1		6020B	Total/NA
Iron	2.55		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.300		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	233		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	3.42		0.00400	0.00212	mg/L	4		6020B	Total/NA
Ammonia as N	0.456	J	0.500	0.210	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	18.9		10.0	9.20	mg/L	2		5220D LL	Total/NA

Client Sample ID: Pond

Lab Sample ID: 310-304633-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	199		5.00	2.25	mg/L	5		9056A	Total/NA
Fluoride	1.44		1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	136		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00191	J	0.00200	0.000530	mg/L	1		200.8	Total/NA
Barium	0.0197		0.00200	0.000660	mg/L	1		200.8	Total/NA
Boron	0.230		0.100	0.0820	mg/L	1		200.8	Total/NA
Iron	0.143		0.100	0.0500	mg/L	1		200.8	Total/NA
Lithium	0.292		0.0100	0.00290	mg/L	1		200.8	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: Pond (Continued)

Lab Sample ID: 310-304633-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	0.00200		0.00200	0.00130	mg/L	1		200.8	Total/NA
Sodium	86.6		1.00	0.650	mg/L	1		200.8	Total/NA
Strontium	0.896		0.00100	0.000530	mg/L	1		200.8	Total/NA
HEM (Oil and Grease)	3.3	J	4.7	2.9	mg/L	1		1664A	Total/NA
Total Kjeldahl Nitrogen	1.03		1.00	0.620	mg/L	1		351.2	Total/NA
Chemical Oxygen Demand	43.3		10.0	9.20	mg/L	2		5220D LL	Total/NA
Nitrogen, Total	1.03		1.00	0.620	mg/L	1		Total Nitrogen	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-5

Lab Sample ID: 310-304633-1

Date Collected: 04/17/25 11:00

Matrix: Water

Date Received: 04/18/25 13:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	134		5.00	2.25	mg/L			04/23/25 16:07	5
Fluoride	0.641	J	1.00	0.375	mg/L			04/23/25 16:07	5
Sulfate	495		5.00	2.10	mg/L			04/23/25 16:07	5

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		04/23/25 09:30	04/23/25 18:07	1
Barium	0.0143		0.00200	0.000660	mg/L		04/23/25 09:30	04/23/25 18:07	1
Boron	<0.0820		0.100	0.0820	mg/L		04/23/25 09:30	04/23/25 18:07	1
Iron	0.744		0.100	0.0500	mg/L		04/23/25 09:30	04/23/25 18:07	1
Lithium	0.119		0.0100	0.00290	mg/L		04/23/25 09:30	04/23/25 18:07	1
Sodium	161		1.00	0.650	mg/L		04/23/25 09:30	04/23/25 18:07	1
Strontium	1.16		0.00100	0.000530	mg/L		04/23/25 09:30	04/23/25 18:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.210		0.500	0.210	mg/L		04/25/25 12:50	04/25/25 19:06	1
Chemical Oxygen Demand (SM 5220D LL)	7.14		5.00	4.60	mg/L			04/24/25 10:53	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		04/22/25 18:06	04/22/25 23:34	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-7

Lab Sample ID: 310-304633-2

Date Collected: 04/17/25 11:30

Matrix: Water

Date Received: 04/18/25 13:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	27.7		5.00	2.25	mg/L			04/23/25 16:22	5
Fluoride	<0.375		1.00	0.375	mg/L			04/23/25 16:22	5
Sulfate	298		5.00	2.10	mg/L			04/23/25 16:22	5

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		04/24/25 09:00	04/25/25 15:58	1
Barium	0.107		0.00200	0.000660	mg/L		04/24/25 09:00	04/25/25 15:58	1
Boron	0.268		0.100	0.0820	mg/L		04/24/25 09:00	04/28/25 13:04	1
Iron	0.725		0.100	0.0500	mg/L		04/24/25 09:00	04/25/25 15:58	1
Lithium	0.0750		0.0100	0.00290	mg/L		04/24/25 09:00	04/25/25 15:58	1
Sodium	73.8		1.00	0.650	mg/L		04/24/25 09:00	04/25/25 15:58	1
Strontium	0.900		0.00100	0.000530	mg/L		04/24/25 09:00	04/25/25 15:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	0.570		0.500	0.210	mg/L		04/25/25 08:59	04/25/25 18:48	1
Chemical Oxygen Demand (SM 5220D LL)	25.9		5.00	4.60	mg/L			04/24/25 10:53	1
Sulfide (SW846 9034)	1.77		1.00	0.231	mg/L		04/22/25 18:09	04/22/25 23:44	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-8

Lab Sample ID: 310-304633-3

Date Collected: 04/17/25 12:00

Matrix: Water

Date Received: 04/18/25 13:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	24.0		5.00	2.25	mg/L			04/23/25 17:09	5
Fluoride	<0.375		1.00	0.375	mg/L			04/23/25 17:09	5
Sulfate	949		20.0	8.40	mg/L			04/23/25 17:25	20

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		04/23/25 09:30	04/23/25 17:38	1
Barium	0.0458		0.00200	0.000660	mg/L		04/23/25 09:30	04/23/25 17:38	1
Boron	0.213		0.100	0.0820	mg/L		04/23/25 09:30	04/23/25 17:38	1
Iron	0.408		0.100	0.0500	mg/L		04/23/25 09:30	04/23/25 17:38	1
Lithium	0.0159		0.0100	0.00290	mg/L		04/23/25 09:30	04/23/25 17:38	1
Sodium	107		1.00	0.650	mg/L		04/23/25 09:30	04/23/25 17:38	1
Strontium	2.13		0.00100	0.000530	mg/L		04/23/25 09:30	04/23/25 17:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	2.31		0.500	0.210	mg/L		04/28/25 09:06	04/28/25 17:07	1
Chemical Oxygen Demand (SM 5220D LL)	10.8		5.00	4.60	mg/L			04/24/25 10:53	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		04/22/25 18:12	04/22/25 23:55	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-12

Lab Sample ID: 310-304633-4

Date Collected: 04/17/25 12:30

Matrix: Water

Date Received: 04/18/25 13:10

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			04/23/25 17:40	5
Fluoride	0.433	J	1.00	0.375	mg/L			04/23/25 17:40	5
Sulfate	291		5.00	2.10	mg/L			04/23/25 17:40	5

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		04/23/25 09:30	04/23/25 18:09	1
Barium	0.0336		0.00200	0.000660	mg/L		04/23/25 09:30	04/23/25 18:09	1
Boron	0.0998	J	0.100	0.0820	mg/L		04/23/25 09:30	04/23/25 18:09	1
Iron	0.0979	J	0.100	0.0500	mg/L		04/23/25 09:30	04/23/25 18:09	1
Lithium	0.0552		0.0100	0.00290	mg/L		04/23/25 09:30	04/23/25 18:09	1
Sodium	64.1		1.00	0.650	mg/L		04/23/25 09:30	04/23/25 18:09	1
Strontium	0.604		0.00100	0.000530	mg/L		04/23/25 09:30	04/23/25 18:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.210		0.500	0.210	mg/L		04/28/25 09:06	04/28/25 17:06	1
Chemical Oxygen Demand (SM 5220D LL)	6.15		5.00	4.60	mg/L			04/24/25 10:53	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		04/22/25 18:15	04/23/25 00:05	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-14

Date Collected: 04/17/25 12:50

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-5

Matrix: Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13.6		5.00	2.25	mg/L			04/23/25 17:56	5
Fluoride	<0.375		1.00	0.375	mg/L			04/23/25 17:56	5
Sulfate	1370		20.0	8.40	mg/L			04/23/25 18:11	20

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		04/23/25 09:30	04/23/25 18:19	1
Barium	0.0257		0.00200	0.000660	mg/L		04/23/25 09:30	04/23/25 18:19	1
Boron	0.283		0.100	0.0820	mg/L		04/23/25 09:30	04/23/25 18:19	1
Iron	4.20		0.100	0.0500	mg/L		04/23/25 09:30	04/23/25 18:19	1
Lithium	0.0168		0.0100	0.00290	mg/L		04/23/25 09:30	04/23/25 18:19	1
Sodium	107		1.00	0.650	mg/L		04/23/25 09:30	04/23/25 18:19	1
Strontium	2.60		0.00400	0.00212	mg/L		04/23/25 09:30	04/24/25 15:38	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	3.83		0.500	0.210	mg/L		04/28/25 09:06	04/28/25 17:07	1
Chemical Oxygen Demand (SM 5220D LL)	12.1		5.00	4.60	mg/L			04/24/25 10:53	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		04/22/25 18:18	04/23/25 00:15	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-15

Lab Sample ID: 310-304633-6

Date Collected: 04/17/25 13:15

Matrix: Water

Date Received: 04/18/25 13:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	64.7		5.00	2.25	mg/L			04/23/25 18:27	5
Fluoride	1.01		1.00	0.375	mg/L			04/23/25 18:27	5
Sulfate	698		20.0	8.40	mg/L			04/23/25 18:43	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.0364	J	0.0500	0.0290	mg/L		04/24/25 09:00	04/25/25 15:43	1
Barium	0.0198		0.00200	0.000660	mg/L		04/24/25 09:00	04/25/25 15:43	1
Boron	0.107		0.100	0.0820	mg/L		04/24/25 09:00	04/28/25 12:52	1
Iron	0.133		0.100	0.0500	mg/L		04/24/25 09:00	04/25/25 15:43	1
Lithium	0.201		0.0100	0.00290	mg/L		04/24/25 09:00	04/25/25 15:43	1
Sodium	90.7		1.00	0.650	mg/L		04/24/25 09:00	04/25/25 15:43	1
Strontium	1.51		0.00100	0.000530	mg/L		04/24/25 09:00	04/25/25 15:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.210		0.500	0.210	mg/L		04/28/25 09:06	04/28/25 17:09	1
Chemical Oxygen Demand (SM 5220D LL)	21.7		5.00	4.60	mg/L			04/24/25 10:53	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		04/22/25 18:21	04/23/25 00:26	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-16

Lab Sample ID: 310-304633-7

Date Collected: 04/17/25 13:40

Matrix: Water

Date Received: 04/18/25 13:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	204		5.00	2.25	mg/L			04/23/25 18:58	5
Fluoride	<0.375		1.00	0.375	mg/L			04/23/25 18:58	5
Sulfate	2210		100	42.0	mg/L			04/24/25 17:01	100

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.0532		0.0500	0.0290	mg/L		04/23/25 09:30	04/23/25 17:55	1
Barium	0.0137		0.00200	0.000660	mg/L		04/23/25 09:30	04/23/25 17:55	1
Boron	0.176		0.100	0.0820	mg/L		04/23/25 09:30	04/23/25 17:55	1
Iron	2.55		0.100	0.0500	mg/L		04/23/25 09:30	04/23/25 17:55	1
Lithium	0.300		0.0100	0.00290	mg/L		04/23/25 09:30	04/23/25 17:55	1
Sodium	233		1.00	0.650	mg/L		04/23/25 09:30	04/23/25 17:55	1
Strontium	3.42		0.00400	0.00212	mg/L		04/23/25 09:30	04/24/25 15:36	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	0.456	J	0.500	0.210	mg/L		04/28/25 09:06	04/28/25 17:04	1
Chemical Oxygen Demand (SM 5220D LL)	18.9		10.0	9.20	mg/L			04/24/25 10:53	2
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		04/22/25 18:24	04/23/25 00:36	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: Pond

Lab Sample ID: 310-304633-8

Date Collected: 04/17/25 14:00

Matrix: Water

Date Received: 04/18/25 13:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	199		5.00	2.25	mg/L			04/23/25 19:29	5
Fluoride	1.44		1.00	0.375	mg/L			04/23/25 19:29	5
Sulfate	136		5.00	2.10	mg/L			04/23/25 19:29	5

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		04/23/25 09:30	04/23/25 17:41	1
Arsenic	0.00191	J	0.00200	0.000530	mg/L		04/23/25 09:30	04/23/25 17:41	1
Barium	0.0197		0.00200	0.000660	mg/L		04/23/25 09:30	04/23/25 17:41	1
Boron	0.230		0.100	0.0820	mg/L		04/23/25 09:30	04/23/25 17:41	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		04/23/25 09:30	04/23/25 17:41	1
Chromium	<0.00180		0.00500	0.00180	mg/L		04/23/25 09:30	04/23/25 17:41	1
Copper	<0.00320		0.00500	0.00320	mg/L		04/23/25 09:30	04/23/25 17:41	1
Iron	0.143		0.100	0.0500	mg/L		04/23/25 09:30	04/23/25 17:41	1
Lead	<0.000330		0.000500	0.000330	mg/L		04/23/25 09:30	04/23/25 17:41	1
Lithium	0.292		0.0100	0.00290	mg/L		04/23/25 09:30	04/23/25 17:41	1
Molybdenum	0.00200		0.00200	0.00130	mg/L		04/23/25 09:30	04/23/25 17:41	1
Nickel	<0.00230		0.00500	0.00230	mg/L		04/23/25 09:30	04/23/25 17:41	1
Selenium	<0.00140		0.00500	0.00140	mg/L		04/23/25 09:30	04/23/25 17:41	1
Silver	<0.000500		0.00100	0.000500	mg/L		04/23/25 09:30	04/23/25 17:41	1
Sodium	86.6		1.00	0.650	mg/L		04/23/25 09:30	04/23/25 17:41	1
Strontium	0.896		0.00100	0.000530	mg/L		04/23/25 09:30	04/23/25 17:41	1
Zinc	<0.0130		0.0200	0.0130	mg/L		04/23/25 09:30	04/23/25 17:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil and Grease) (40CFR136A 1664A)	3.3	J	4.7	2.9	mg/L		04/29/25 06:00	04/29/25 06:00	1
SGT-HEM (Oil and Grease - Nonpolar) (40CFR136A 1664A)	<2.9		4.7	2.9	mg/L		04/29/25 06:00	04/29/25 06:00	1
Cyanide, Total (EPA 335.4)	<0.00350		0.0100	0.00350	mg/L		04/23/25 08:55	04/24/25 20:43	1
Total Kjeldahl Nitrogen (EPA 351.2)	1.03		1.00	0.620	mg/L		04/22/25 05:12	04/22/25 23:59	1
Nitrate Nitrite as N (EPA 353.2)	<0.0800		0.100	0.0800	mg/L			04/24/25 23:37	1
Phosphorus, Total (EPA 365.1)	<0.0680		0.100	0.0680	mg/L		04/25/25 13:16	04/25/25 20:24	1
Chemical Oxygen Demand (SM 5220D LL)	43.3		10.0	9.20	mg/L			04/24/25 10:53	2
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		04/22/25 18:27	04/23/25 00:46	1
Total Suspended Solids (USGS I-3765-85)	<3.50		5.00	3.50	mg/L			04/23/25 09:51	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrogen, Total (EPA Total Nitrogen)	1.03		1.00	0.620	mg/L			04/24/25 23:37	1

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Definitions/Glossary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

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

General Chemistry

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

Glossary

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

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-452709/3

Matrix: Water

Analysis Batch: 452709

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			04/23/25 14:49	1
Fluoride	<0.0750		0.200	0.0750	mg/L			04/23/25 14:49	1
Sulfate	<0.420		1.00	0.420	mg/L			04/23/25 14:49	1

Lab Sample ID: LCS 310-452709/4

Matrix: Water

Analysis Batch: 452709

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	10.11		mg/L		101	90 - 110
Fluoride	2.00	2.175		mg/L		109	90 - 110
Sulfate	10.0	10.18		mg/L		102	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-452353/1-A

Matrix: Water

Analysis Batch: 452529

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 452353

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		04/23/25 09:30	04/23/25 17:17	1
Barium	<0.000660		0.00200	0.000660	mg/L		04/23/25 09:30	04/23/25 17:17	1
Boron	<0.0820		0.100	0.0820	mg/L		04/23/25 09:30	04/23/25 17:17	1
Iron	<0.0500		0.100	0.0500	mg/L		04/23/25 09:30	04/23/25 17:17	1
Lithium	<0.00290		0.0100	0.00290	mg/L		04/23/25 09:30	04/23/25 17:17	1
Sodium	<0.650		1.00	0.650	mg/L		04/23/25 09:30	04/23/25 17:17	1
Strontium	<0.000530		0.00100	0.000530	mg/L		04/23/25 09:30	04/23/25 17:17	1

Lab Sample ID: LCS 310-452353/2-A

Matrix: Water

Analysis Batch: 452529

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 452353

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2119		mg/L		106	80 - 120
Barium	0.100	0.1001		mg/L		100	80 - 120
Boron	0.200	0.2051		mg/L		103	80 - 120
Iron	0.200	0.2041		mg/L		102	80 - 120
Lithium	0.200	0.1953		mg/L		98	80 - 120
Sodium	2.00	2.180		mg/L		109	80 - 120
Strontium	0.200	0.1899		mg/L		95	80 - 120

Lab Sample ID: MB 310-452473/1-A

Matrix: Water

Analysis Batch: 452834

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 452473

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		04/24/25 09:00	04/25/25 15:10	1
Barium	<0.000660		0.00200	0.000660	mg/L		04/24/25 09:00	04/25/25 15:10	1
Iron	<0.0500		0.100	0.0500	mg/L		04/24/25 09:00	04/25/25 15:10	1
Lithium	<0.00290		0.0100	0.00290	mg/L		04/24/25 09:00	04/25/25 15:10	1

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QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

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

Lab Sample ID: MB 310-452473/1-A

Matrix: Water

Analysis Batch: 452834

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 452473

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	<0.650		1.00	0.650	mg/L		04/24/25 09:00	04/25/25 15:10	1
Strontium	<0.000530		0.00100	0.000530	mg/L		04/24/25 09:00	04/25/25 15:10	1

Lab Sample ID: MB 310-452473/1-A

Matrix: Water

Analysis Batch: 452946

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 452473

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.0820		0.100	0.0820	mg/L		04/24/25 09:00	04/28/25 12:33	1

Lab Sample ID: LCS 310-452473/2-A

Matrix: Water

Analysis Batch: 452834

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 452473

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.1999		mg/L		100	80 - 120
Barium	0.100	0.1003		mg/L		100	80 - 120
Iron	0.200	0.2080		mg/L		104	80 - 120
Lithium	0.200	0.1956		mg/L		98	80 - 120
Sodium	2.00	2.208		mg/L		110	80 - 120
Strontium	0.200	0.1855		mg/L		93	80 - 120

Lab Sample ID: LCS 310-452473/2-A

Matrix: Water

Analysis Batch: 452946

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 452473

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.1897		mg/L		95	80 - 120

Method: 1664A - HEM and SGT-HEM by Extraction and Gravimetry

Lab Sample ID: MB 310-452914/1-A

Matrix: Water

Analysis Batch: 453082

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 452914

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil and Grease)	<3.1		5.0	3.1	mg/L		04/29/25 06:00	04/29/25 06:00	1
SGT-HEM (Oil and Grease - Nonpolar)	<3.1		5.0	3.1	mg/L		04/29/25 06:00	04/29/25 06:00	1

Lab Sample ID: LCS 310-452914/2-A

Matrix: Water

Analysis Batch: 453082

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 452914

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil and Grease)	40.0	33.10		mg/L		83	78 - 114
SGT-HEM (Oil and Grease - Nonpolar)	20.0	14.60		mg/L		73	64 - 132

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QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 310-452448/1-A
Matrix: Water
Analysis Batch: 452660

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452448

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	<0.00350		0.0100	0.00350	mg/L		04/23/25 08:55	04/24/25 20:27	1

Lab Sample ID: LCS 310-452448/2-A
Matrix: Water
Analysis Batch: 452660

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452448

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.1817		mg/L		91	90 - 110

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-452691/1-A
Matrix: Water
Analysis Batch: 452799

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452691

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.210		0.500	0.210	mg/L		04/25/25 08:59	04/25/25 18:30	1

Lab Sample ID: LCS 310-452691/2-A
Matrix: Water
Analysis Batch: 452799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452691

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	4.00	3.866		mg/L		97	90 - 110

Lab Sample ID: MB 310-452735/1-A
Matrix: Water
Analysis Batch: 452799

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452735

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.210		0.500	0.210	mg/L		04/25/25 12:50	04/25/25 18:52	1

Lab Sample ID: LCS 310-452735/2-A
Matrix: Water
Analysis Batch: 452799

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452735

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	4.00	4.029		mg/L		101	90 - 110

Lab Sample ID: MB 310-452854/1-A
Matrix: Water
Analysis Batch: 452953

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452854

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.210		0.500	0.210	mg/L		04/28/25 09:06	04/28/25 17:02	1

Eurofins Cedar Falls

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 310-452854/2-A
Matrix: Water
Analysis Batch: 452953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452854

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	4.00	3.877		mg/L		97	90 - 110

Lab Sample ID: 310-304633-7 MS
Matrix: Water
Analysis Batch: 452953

Client Sample ID: MW-16
Prep Type: Total/NA
Prep Batch: 452854

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	0.456	J	4.00	4.487		mg/L		101	90 - 110

Lab Sample ID: 310-304633-7 MSD
Matrix: Water
Analysis Batch: 452953

Client Sample ID: MW-16
Prep Type: Total/NA
Prep Batch: 452854

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia as N	0.456	J	4.00	4.476		mg/L		100	90 - 110	0	14

Method: 351.2 - Nitrogen, Total Kjeldahl

Lab Sample ID: MB 310-452253/1-A
Matrix: Water
Analysis Batch: 452384

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 452253

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Kjeldahl Nitrogen	<0.620		1.00	0.620	mg/L		04/22/25 05:12	04/22/25 23:48	1

Lab Sample ID: LCS 310-452253/25-A
Matrix: Water
Analysis Batch: 452384

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 452253

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Kjeldahl Nitrogen	4.01	3.817		mg/L		95	90 - 110

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 310-452648/16
Matrix: Water
Analysis Batch: 452648

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.0800		0.100	0.0800	mg/L			04/24/25 10:34	1

Lab Sample ID: MB 310-452648/173
Matrix: Water
Analysis Batch: 452648

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.0800		0.100	0.0800	mg/L			04/24/25 22:52	1

Eurofins Cedar Falls

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

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

Lab Sample ID: LCS 310-452648/17

Matrix: Water

Analysis Batch: 452648

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	2.07	2.036		mg/L		98	90 - 110

Lab Sample ID: LCS 310-452648/174

Matrix: Water

Analysis Batch: 452648

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	2.07	2.086		mg/L		101	90 - 110

Method: 365.1 - Phosphorus, Total

Lab Sample ID: MB 310-452741/1-A

Matrix: Water

Analysis Batch: 452805

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 452741

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus, Total	<0.0680		0.100	0.0680	mg/L		04/25/25 13:16	04/25/25 20:17	1

Lab Sample ID: LCS 310-452741/2-A

Matrix: Water

Analysis Batch: 452805

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 452741

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phosphorus, Total	1.00	0.9404		mg/L		94	90 - 110

Method: 5220D LL - COD

Lab Sample ID: MB 310-452591/5

Matrix: Water

Analysis Batch: 452591

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<4.60		5.00	4.60	mg/L			04/24/25 10:53	1

Lab Sample ID: MB 310-452591/90

Matrix: Water

Analysis Batch: 452591

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<4.60		5.00	4.60	mg/L			04/24/25 10:53	1

Lab Sample ID: LCS 310-452591/3

Matrix: Water

Analysis Batch: 452591

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	123.3		mg/L		98	85 - 110

Eurofins Cedar Falls

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Method: 5220D LL - COD (Continued)

Lab Sample ID: LCS 310-452591/91
Matrix: Water
Analysis Batch: 452591

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	121.6		mg/L		97	85 - 110

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 500-814774/1-A
Matrix: Water
Analysis Batch: 814792

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 814774

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	<0.231		1.00	0.231	mg/L		04/22/25 18:00	04/22/25 23:14	1

Lab Sample ID: LCS 500-814774/2-A
Matrix: Water
Analysis Batch: 814792

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 814774

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	3.97	3.761		mg/L		95	80 - 120

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

Lab Sample ID: MB 310-452431/1
Matrix: Water
Analysis Batch: 452431

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<3.50		5.00	3.50	mg/L			04/23/25 09:51	1

Lab Sample ID: LCS 310-452431/2
Matrix: Water
Analysis Batch: 452431

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	112.0		mg/L		112	81 - 116

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

HPLC/IC

Analysis Batch: 452709

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	9056A	
310-304633-2	MW-7	Total/NA	Water	9056A	
310-304633-3	MW-8	Total/NA	Water	9056A	
310-304633-3	MW-8	Total/NA	Water	9056A	
310-304633-4	MW-12	Total/NA	Water	9056A	
310-304633-5	MW-14	Total/NA	Water	9056A	
310-304633-5	MW-14	Total/NA	Water	9056A	
310-304633-6	MW-15	Total/NA	Water	9056A	
310-304633-6	MW-15	Total/NA	Water	9056A	
310-304633-7	MW-16	Total/NA	Water	9056A	
310-304633-7	MW-16	Total/NA	Water	9056A	
310-304633-8	Pond	Total/NA	Water	9056A	
MB 310-452709/3	Method Blank	Total/NA	Water	9056A	
LCS 310-452709/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 452353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	3005A	
310-304633-3	MW-8	Total/NA	Water	3005A	
310-304633-4	MW-12	Total/NA	Water	3005A	
310-304633-5	MW-14	Total/NA	Water	3005A	
310-304633-7	MW-16	Total/NA	Water	3005A	
310-304633-8	Pond	Total/NA	Water	200.8	
MB 310-452353/1-A	Method Blank	Total/NA	Water	200.8	
LCS 310-452353/2-A	Lab Control Sample	Total/NA	Water	200.8	

Prep Batch: 452473

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-2	MW-7	Total/NA	Water	3005A	
310-304633-6	MW-15	Total/NA	Water	3005A	
MB 310-452473/1-A	Method Blank	Total/NA	Water	200.8	
LCS 310-452473/2-A	Lab Control Sample	Total/NA	Water	200.8	

Analysis Batch: 452529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	6020B	452353
310-304633-3	MW-8	Total/NA	Water	6020B	452353
310-304633-4	MW-12	Total/NA	Water	6020B	452353
310-304633-5	MW-14	Total/NA	Water	6020B	452353
310-304633-7	MW-16	Total/NA	Water	6020B	452353
310-304633-8	Pond	Total/NA	Water	200.8	452353
MB 310-452353/1-A	Method Blank	Total/NA	Water	6020B	452353
LCS 310-452353/2-A	Lab Control Sample	Total/NA	Water	6020B	452353

Analysis Batch: 452677

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-5	MW-14	Total/NA	Water	6020B	452353
310-304633-7	MW-16	Total/NA	Water	6020B	452353

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QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Metals

Analysis Batch: 452834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-2	MW-7	Total/NA	Water	6020B	452473
310-304633-6	MW-15	Total/NA	Water	6020B	452473
MB 310-452473/1-A	Method Blank	Total/NA	Water	6020B	452473
LCS 310-452473/2-A	Lab Control Sample	Total/NA	Water	6020B	452473

Analysis Batch: 452946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-2	MW-7	Total/NA	Water	6020B	452473
310-304633-6	MW-15	Total/NA	Water	6020B	452473
MB 310-452473/1-A	Method Blank	Total/NA	Water	6020B	452473
LCS 310-452473/2-A	Lab Control Sample	Total/NA	Water	6020B	452473

General Chemistry

Analysis Batch: 452229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	Total Nitrogen	

Prep Batch: 452253

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	351.2	
MB 310-452253/1-A	Method Blank	Total/NA	Water	351.2	
LCS 310-452253/25-A	Lab Control Sample	Total/NA	Water	351.2	

Analysis Batch: 452384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	351.2	452253
MB 310-452253/1-A	Method Blank	Total/NA	Water	351.2	452253
LCS 310-452253/25-A	Lab Control Sample	Total/NA	Water	351.2	452253

Analysis Batch: 452431

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	I-3765-85	
MB 310-452431/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-452431/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Prep Batch: 452448

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	Distill/CN	
MB 310-452448/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 310-452448/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	

Analysis Batch: 452591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	5220D LL	
310-304633-2	MW-7	Total/NA	Water	5220D LL	
310-304633-3	MW-8	Total/NA	Water	5220D LL	
310-304633-4	MW-12	Total/NA	Water	5220D LL	
310-304633-5	MW-14	Total/NA	Water	5220D LL	
310-304633-6	MW-15	Total/NA	Water	5220D LL	
310-304633-7	MW-16	Total/NA	Water	5220D LL	

Eurofins Cedar Falls

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

General Chemistry (Continued)

Analysis Batch: 452591 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	5220D LL	
MB 310-452591/5	Method Blank	Total/NA	Water	5220D LL	
MB 310-452591/90	Method Blank	Total/NA	Water	5220D LL	
LCS 310-452591/3	Lab Control Sample	Total/NA	Water	5220D LL	
LCS 310-452591/91	Lab Control Sample	Total/NA	Water	5220D LL	

Analysis Batch: 452648

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	353.2	
MB 310-452648/16	Method Blank	Total/NA	Water	353.2	
MB 310-452648/173	Method Blank	Total/NA	Water	353.2	
LCS 310-452648/17	Lab Control Sample	Total/NA	Water	353.2	
LCS 310-452648/174	Lab Control Sample	Total/NA	Water	353.2	

Analysis Batch: 452660

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	335.4	452448
MB 310-452448/1-A	Method Blank	Total/NA	Water	335.4	452448
LCS 310-452448/2-A	Lab Control Sample	Total/NA	Water	335.4	452448

Prep Batch: 452691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-2	MW-7	Total/NA	Water	Distill/Ammonia	
MB 310-452691/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 310-452691/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	

Prep Batch: 452735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	Distill/Ammonia	
MB 310-452735/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 310-452735/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	

Prep Batch: 452741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	365.1	
MB 310-452741/1-A	Method Blank	Total/NA	Water	365.1	
LCS 310-452741/2-A	Lab Control Sample	Total/NA	Water	365.1	

Analysis Batch: 452799

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	350.1	452735
310-304633-2	MW-7	Total/NA	Water	350.1	452691
MB 310-452691/1-A	Method Blank	Total/NA	Water	350.1	452691
MB 310-452735/1-A	Method Blank	Total/NA	Water	350.1	452735
LCS 310-452691/2-A	Lab Control Sample	Total/NA	Water	350.1	452691
LCS 310-452735/2-A	Lab Control Sample	Total/NA	Water	350.1	452735

Analysis Batch: 452805

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	365.1	452741
MB 310-452741/1-A	Method Blank	Total/NA	Water	365.1	452741

Eurofins Cedar Falls

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

General Chemistry (Continued)

Analysis Batch: 452805 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-452741/2-A	Lab Control Sample	Total/NA	Water	365.1	452741

Prep Batch: 452854

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-3	MW-8	Total/NA	Water	Distill/Ammonia	
310-304633-4	MW-12	Total/NA	Water	Distill/Ammonia	
310-304633-5	MW-14	Total/NA	Water	Distill/Ammonia	
310-304633-6	MW-15	Total/NA	Water	Distill/Ammonia	
310-304633-7	MW-16	Total/NA	Water	Distill/Ammonia	
MB 310-452854/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 310-452854/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	
310-304633-7 MS	MW-16	Total/NA	Water	Distill/Ammonia	
310-304633-7 MSD	MW-16	Total/NA	Water	Distill/Ammonia	

Prep Batch: 452914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	1664A	
MB 310-452914/1-A	Method Blank	Total/NA	Water	1664A	
LCS 310-452914/2-A	Lab Control Sample	Total/NA	Water	1664A	

Analysis Batch: 452953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-3	MW-8	Total/NA	Water	350.1	452854
310-304633-4	MW-12	Total/NA	Water	350.1	452854
310-304633-5	MW-14	Total/NA	Water	350.1	452854
310-304633-6	MW-15	Total/NA	Water	350.1	452854
310-304633-7	MW-16	Total/NA	Water	350.1	452854
MB 310-452854/1-A	Method Blank	Total/NA	Water	350.1	452854
LCS 310-452854/2-A	Lab Control Sample	Total/NA	Water	350.1	452854
310-304633-7 MS	MW-16	Total/NA	Water	350.1	452854
310-304633-7 MSD	MW-16	Total/NA	Water	350.1	452854

Analysis Batch: 453082

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-8	Pond	Total/NA	Water	1664A	452914
MB 310-452914/1-A	Method Blank	Total/NA	Water	1664A	452914
LCS 310-452914/2-A	Lab Control Sample	Total/NA	Water	1664A	452914

Prep Batch: 814774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	9030B	
310-304633-2	MW-7	Total/NA	Water	9030B	
310-304633-3	MW-8	Total/NA	Water	9030B	
310-304633-4	MW-12	Total/NA	Water	9030B	
310-304633-5	MW-14	Total/NA	Water	9030B	
310-304633-6	MW-15	Total/NA	Water	9030B	
310-304633-7	MW-16	Total/NA	Water	9030B	
310-304633-8	Pond	Total/NA	Water	9030B	
MB 500-814774/1-A	Method Blank	Total/NA	Water	9030B	
LCS 500-814774/2-A	Lab Control Sample	Total/NA	Water	9030B	

Eurofins Cedar Falls

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

General Chemistry

Analysis Batch: 814792

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-304633-1	MW-5	Total/NA	Water	9034	814774
310-304633-2	MW-7	Total/NA	Water	9034	814774
310-304633-3	MW-8	Total/NA	Water	9034	814774
310-304633-4	MW-12	Total/NA	Water	9034	814774
310-304633-5	MW-14	Total/NA	Water	9034	814774
310-304633-6	MW-15	Total/NA	Water	9034	814774
310-304633-7	MW-16	Total/NA	Water	9034	814774
310-304633-8	Pond	Total/NA	Water	9034	814774
MB 500-814774/1-A	Method Blank	Total/NA	Water	9034	814774
LCS 500-814774/2-A	Lab Control Sample	Total/NA	Water	9034	814774

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-5

Date Collected: 04/17/25 11:00

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 16:07
Total/NA	Prep	3005A			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	6020B		1	452529	NFT2	EET CF	04/23/25 18:07
Total/NA	Prep	Distill/Ammonia			452735	RLT9	EET CF	04/25/25 12:50
Total/NA	Analysis	350.1		1	452799	ZJX4	EET CF	04/25/25 19:06
Total/NA	Analysis	5220D LL		1	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:06 - 04/22/25 18:09 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/22/25 23:34 - 04/22/25 23:44 ¹

Client Sample ID: MW-7

Date Collected: 04/17/25 11:30

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 16:22
Total/NA	Prep	3005A			452473	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452834	NFT2	EET CF	04/25/25 15:58
Total/NA	Prep	3005A			452473	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452946	NFT2	EET CF	04/28/25 13:04
Total/NA	Prep	Distill/Ammonia			452691	RLT9	EET CF	04/25/25 08:59
Total/NA	Analysis	350.1		1	452799	ZJX4	EET CF	04/25/25 18:48
Total/NA	Analysis	5220D LL		1	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:09 - 04/22/25 18:12 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/22/25 23:44 - 04/22/25 23:55 ¹

Client Sample ID: MW-8

Date Collected: 04/17/25 12:00

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 17:09
Total/NA	Analysis	9056A		20	452709	ZRI4	EET CF	04/23/25 17:25
Total/NA	Prep	3005A			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	6020B		1	452529	NFT2	EET CF	04/23/25 17:38
Total/NA	Prep	Distill/Ammonia			452854	RLT9	EET CF	04/28/25 09:06
Total/NA	Analysis	350.1		1	452953	ZJX4	EET CF	04/28/25 17:07
Total/NA	Analysis	5220D LL		1	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:12 - 04/22/25 18:15 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/22/25 23:55 - 04/23/25 00:05 ¹

Eurofins Cedar Falls

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-12

Date Collected: 04/17/25 12:30

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 17:40
Total/NA	Prep	3005A			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	6020B		1	452529	NFT2	EET CF	04/23/25 18:09
Total/NA	Prep	Distill/Ammonia			452854	RLT9	EET CF	04/28/25 09:06
Total/NA	Analysis	350.1		1	452953	ZJX4	EET CF	04/28/25 17:06
Total/NA	Analysis	5220D LL		1	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:15 - 04/22/25 18:18 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/23/25 00:05 - 04/23/25 00:15 ¹

Client Sample ID: MW-14

Date Collected: 04/17/25 12:50

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 17:56
Total/NA	Analysis	9056A		20	452709	ZRI4	EET CF	04/23/25 18:11
Total/NA	Prep	3005A			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	6020B		1	452529	NFT2	EET CF	04/23/25 18:19
Total/NA	Prep	3005A			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	6020B		4	452677	NFT2	EET CF	04/24/25 15:38
Total/NA	Prep	Distill/Ammonia			452854	RLT9	EET CF	04/28/25 09:06
Total/NA	Analysis	350.1		1	452953	ZJX4	EET CF	04/28/25 17:07
Total/NA	Analysis	5220D LL		1	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:18 - 04/22/25 18:21 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/23/25 00:15 - 04/23/25 00:26 ¹

Client Sample ID: MW-15

Date Collected: 04/17/25 13:15

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 18:27
Total/NA	Analysis	9056A		20	452709	ZRI4	EET CF	04/23/25 18:43
Total/NA	Prep	3005A			452473	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452834	NFT2	EET CF	04/25/25 15:43
Total/NA	Prep	3005A			452473	QTZ5	EET CF	04/24/25 09:00
Total/NA	Analysis	6020B		1	452946	NFT2	EET CF	04/28/25 12:52
Total/NA	Prep	Distill/Ammonia			452854	RLT9	EET CF	04/28/25 09:06
Total/NA	Analysis	350.1		1	452953	ZJX4	EET CF	04/28/25 17:09
Total/NA	Analysis	5220D LL		1	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:21 - 04/22/25 18:24 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/23/25 00:26 - 04/23/25 00:36 ¹

Eurofins Cedar Falls

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Client Sample ID: MW-16

Date Collected: 04/17/25 13:40

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 18:58
Total/NA	Analysis	9056A		100	452709	ZRI4	EET CF	04/24/25 17:01
Total/NA	Prep	3005A			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	6020B		1	452529	NFT2	EET CF	04/23/25 17:55
Total/NA	Prep	3005A			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	6020B		4	452677	NFT2	EET CF	04/24/25 15:36
Total/NA	Prep	Distill/Ammonia			452854	RLT9	EET CF	04/28/25 09:06
Total/NA	Analysis	350.1		1	452953	ZJX4	EET CF	04/28/25 17:04
Total/NA	Analysis	5220D LL		2	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:24 - 04/22/25 18:27 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/23/25 00:36 - 04/23/25 00:46 ¹

Client Sample ID: Pond

Date Collected: 04/17/25 14:00

Date Received: 04/18/25 13:10

Lab Sample ID: 310-304633-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	452709	ZRI4	EET CF	04/23/25 19:29
Total/NA	Prep	200.8			452353	QTZ5	EET CF	04/23/25 09:30
Total/NA	Analysis	200.8		1	452529	NFT2	EET CF	04/23/25 17:41
Total/NA	Prep	1664A			452914	DGU1	EET CF	04/29/25 06:00
Total/NA	Analysis	1664A		1	453082	DGU1	EET CF	04/29/25 06:00
Total/NA	Prep	Distill/CN			452448	ENB7	EET CF	04/23/25 08:55
Total/NA	Analysis	335.4		1	452660	ZJX4	EET CF	04/24/25 20:43
Total/NA	Prep	351.2			452253	W9YR	EET CF	04/22/25 05:12
Total/NA	Analysis	351.2		1	452384	ZJX4	EET CF	04/22/25 23:59
Total/NA	Analysis	353.2		1	452648	ENB7	EET CF	04/24/25 23:37
Total/NA	Prep	365.1			452741	T5AC	EET CF	04/25/25 13:16
Total/NA	Analysis	365.1		1	452805	ZJX4	EET CF	04/25/25 20:24
Total/NA	Analysis	5220D LL		2	452591	HE7K	EET CF	04/24/25 10:53
Total/NA	Prep	9030B			814774	CLB	EET CHI	04/22/25 18:27 - 04/22/25 18:30 ¹
Total/NA	Analysis	9034		1	814792	CLB	EET CHI	04/23/25 00:46 - 04/23/25 00:57 ¹
Total/NA	Analysis	I-3765-85		1	452431	HE7K	EET CF	04/23/25 09:51
Total/NA	Analysis	Total Nitrogen		1	452229	HE7K	EET CF	04/24/25 23:37

¹ This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

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

EET CHI = Eurofins Chicago, 18410 Crossing Drive, Suite E, Tinley Park, IL 60487, TEL (708)534-5200

Eurofins Cedar Falls

Accreditation/Certification Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1664A	1664A	Water	SGT-HEM (Oil and Grease - Nonpolar)
200.8	200.8	Water	Lithium
200.8	200.8	Water	Strontium
6020B	3005A	Water	Lithium
Total Nitrogen		Water	Nitrogen, Total

Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Georgia	State	N/A	05-31-25
Georgia (DW)	State	939	05-31-25
Hawaii	State	NA	05-31-25
Illinois	NELAP	100201	05-31-26
Indiana	State	C-IL-02	05-31-25
Iowa	State	082	05-01-26
Kansas	NELAP	E-10161	10-31-25
Kentucky (UST)	State	AI # 108083	05-31-25
Kentucky (WW)	State	KY90023	12-31-24 *
Louisiana (All)	NELAP	02046	06-30-25
Mississippi	State	NA	05-31-25
North Carolina (WW/SW)	State	291	12-31-25
North Dakota	State	R-194	04-29-24 *
Oklahoma	State	8908	08-31-25
South Carolina	State	77001003	05-31-25
USDA	US Federal Programs	P330-18-00018	03-30-26
Wisconsin	State	399172840	08-31-25
Wyoming	State	8TMS-Q	05-31-25

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

Eurofins Cedar Falls

Method Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-304633-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
200.8	Metals (ICP/MS)	EPA	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
1664A	HEM and SGT-HEM by Extraction and Gravimetry	40CFR136A	EET CF
335.4	Cyanide, Total	EPA	EET CF
350.1	Nitrogen, Ammonia	EPA	EET CF
351.2	Nitrogen, Total Kjeldahl	EPA	EET CF
353.2	Nitrogen, Nitrate-Nitrite	EPA	EET CF
365.1	Phosphorus, Total	EPA	EET CF
5220D LL	COD	SM	EET CF
9034	Sulfide, Acid soluble and Insoluble (Titrimetric)	SW846	EET CHI
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
Total Nitrogen	Nitrogen, Total	EPA	EET CF
1664A	HEM and SGT-HEM (SPE)	1664A	EET CF
200.8	Preparation, Total Metals	EPA	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
351.2	Nitrogen, Total Kjeldahl	EPA	EET CF
365.1	Sample Digestion for Total Phosphorus	MCAWW	EET CF
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	EET CHI
Distill/Ammonia	Distillation, Ammonia	None	EET CF
Distill/CN	Distillation, Cyanide	None	EET CF

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

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

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

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

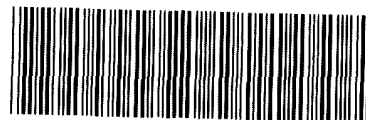
Laboratory References:

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

EET CHI = Eurofins Chicago, 18410 Crossing Drive, Suite E, Tinley Park, IL 60487, TEL (708)534-5200



Environment Testing
America



310-304633 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Glencore LTD</u>			
City/State:	<u>Stanford</u>	STATE: <u>CT</u>	Project:
Receipt Information			
Date/Time Received:	<u>4/18/25</u>	TIME: <u>1340</u>	Received By: <u>XB</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 # <u>1</u> of <u>2</u>
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? <u>↓</u>
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>2</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>4.4</u>		Corrected Temp (°C): <u>4.4</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			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Glencore Ltd</u>			
City/State:	<u>STAMFORD</u>	<u>CT</u>	Project:
Receipt Information			
Date/Time Received:	<u>4/18/25</u>	<u>1310</u>	Received By: <u>XB</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 # <u>2</u> of <u>2</u>
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>2</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>5.1</u>		Corrected Temp (°C): <u>5.1</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			

- 1
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Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-304633-1

Login Number: 304633

List Number: 1

Creator: Collins, Charlotte G

List Source: Eurofins Cedar Falls

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	

Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-304633-1

Login Number: 304633

List Number: 2

Creator: Scott, Sherri L

List Source: Eurofins Chicago

List Creation: 04/22/25 01:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	True	

ANALYTICAL REPORT

PREPARED FOR

Attn: Steven Demasi
Glencore Ltd
Three Stamford Plaza
301 Trersser Blvd
Stamford, Connecticut 06901

Generated 11/3/2025 4:04:52 PM

JOB DESCRIPTION

Keokuk Ferro-Sil Landfill
13-024

JOB NUMBER

310-318382-1

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



Generated
11/3/2025 4:04:52 PM

Authorized for release by
Hannah Dietz, Project Manager I
Hannah.Dietz@et.eurofinsus.com
(319)277-2401



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Case Narrative

Client: Glencore Ltd
Project: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1

Job ID: 310-318382-1

Eurofins Cedar Falls

Job Narrative 310-318382-1

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 10/17/2025 2:40 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.7°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-7 (310-318382-2), MW-8 (310-318382-3), MW-12 (310-318382-4), MW-14 (310-318382-5), MW-15 (310-318382-6) and MW-16 (310-318382-7). Elevated reporting limits (RLs) are provided.

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

Metals

Method 200.8_CWA: The continuing calibration verification (CCV) associated with batch 310-471367 recovered above the upper control limit for Thallium. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

Method 6020B: The laboratory control sample (LCS) for preparation batch 310-471148 and analytical batch 310-471990 recovered outside control limits for the following analytes: silver. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

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

General Chemistry

Method 9034_Calc: The method blank for preparation batch 500-840206 and analytical batch 500-840208 contained Sulfide above the method detection limit. This target analyte concentration was less than the reporting limit (RL) in the method blank; therefore, re-extraction and/or re-analysis of samples was not performed.

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: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-318382-1	MW-5	Ground Water	10/16/25 10:30	10/17/25 14:40	Iowa
310-318382-2	MW-7	Ground Water	10/16/25 11:00	10/17/25 14:40	Iowa
310-318382-3	MW-8	Ground Water	10/16/25 11:30	10/17/25 14:40	Iowa
310-318382-4	MW-12	Ground Water	10/16/25 10:00	10/17/25 14:40	Iowa
310-318382-5	MW-14	Ground Water	10/16/25 12:30	10/17/25 14:40	Iowa
310-318382-6	MW-15	Ground Water	10/16/25 12:00	10/17/25 14:40	Iowa
310-318382-7	MW-16	Ground Water	10/16/25 13:00	10/17/25 14:40	Iowa
310-318382-8	Pond	Ground Water	10/16/25 13:30	10/17/25 14:40	Iowa

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-5

Lab Sample ID: 310-318382-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	130		5.00	2.25	mg/L	5		9056A	Total/NA
Fluoride	0.628	J	1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	460		5.00	2.10	mg/L	5		9056A	Total/NA
Barium	0.0152		0.00200	0.000660	mg/L	1		6020B	Total/NA
Iron	0.729		0.400	0.200	mg/L	4		6020B	Total/NA
Lithium	0.116		0.0400	0.0116	mg/L	4		6020B	Total/NA
Sodium	178		4.00	2.60	mg/L	4		6020B	Total/NA
Strontium	1.35		0.00400	0.00212	mg/L	4		6020B	Total/NA

Client Sample ID: MW-7

Lab Sample ID: 310-318382-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	25.3		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	337		5.00	2.10	mg/L	5		9056A	Total/NA
Aluminum	0.133		0.0500	0.0290	mg/L	1		6020B	Total/NA
Barium	0.103		0.00200	0.000660	mg/L	1		6020B	Total/NA
Boron	0.235		0.100	0.0820	mg/L	1		6020B	Total/NA
Iron	0.632		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.0570		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	87.5		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	0.979		0.00100	0.000530	mg/L	1		6020B	Total/NA
Ammonia as N	1.36		0.500	0.120	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	28.8		5.00	4.60	mg/L	1		5220D LL	Total/NA
Sulfide	1.40		1.00	0.231	mg/L	1		9034	Total/NA

Client Sample ID: MW-8

Lab Sample ID: 310-318382-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	23.1		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	892		20.0	8.40	mg/L	20		9056A	Total/NA
Barium	0.0485		0.00200	0.000660	mg/L	1		6020B	Total/NA
Lithium	0.0142	J	0.0400	0.0116	mg/L	4		6020B	Total/NA
Sodium	104		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	2.42		0.00400	0.00212	mg/L	4		6020B	Total/NA
Ammonia as N	3.72		0.500	0.120	mg/L	1		350.1	Total/NA

Client Sample ID: MW-12

Lab Sample ID: 310-318382-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	18.7		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	283		5.00	2.10	mg/L	5		9056A	Total/NA
Barium	0.0328		0.00200	0.000660	mg/L	1		6020B	Total/NA
Lithium	0.0512		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	59.4		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	0.594		0.00100	0.000530	mg/L	1		6020B	Total/NA

Client Sample ID: MW-14

Lab Sample ID: 310-318382-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12.6		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	1410		20.0	8.40	mg/L	20		9056A	Total/NA
Barium	0.0276		0.00200	0.000660	mg/L	1		6020B	Total/NA
Iron	1.38		0.400	0.200	mg/L	4		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-14 (Continued)

Lab Sample ID: 310-318382-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	0.0159	J	0.0400	0.0116	mg/L	4		6020B	Total/NA
Sodium	102		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	2.75		0.00400	0.00212	mg/L	4		6020B	Total/NA
Ammonia as N	3.70		0.500	0.120	mg/L	1		350.1	Total/NA

Client Sample ID: MW-15

Lab Sample ID: 310-318382-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	62.1		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	683		10.0	4.20	mg/L	10		9056A	Total/NA
Barium	0.0261		0.00200	0.000660	mg/L	1		6020B	Total/NA
Lithium	0.224		0.0400	0.0116	mg/L	4		6020B	Total/NA
Sodium	95.3		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	1.90		0.00400	0.00212	mg/L	4		6020B	Total/NA
Chemical Oxygen Demand	14.9		5.00	4.60	mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-16

Lab Sample ID: 310-318382-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	191		5.00	2.25	mg/L	5		9056A	Total/NA
Sulfate	67.5		20.0	8.40	mg/L	20		9056A	Total/NA
Barium	0.0140		0.00800	0.00264	mg/L	4		6020B	Total/NA
Iron	4.31		0.400	0.200	mg/L	4		6020B	Total/NA
Lithium	0.283		0.0400	0.0116	mg/L	4		6020B	Total/NA
Sodium	254		4.00	2.60	mg/L	4		6020B	Total/NA
Strontium	3.48		0.00400	0.00212	mg/L	4		6020B	Total/NA
Ammonia as N	0.624		0.500	0.120	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	7.94		5.00	4.60	mg/L	1		5220D LL	Total/NA

Client Sample ID: Pond

Lab Sample ID: 310-318382-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	221		5.00	2.25	mg/L	5		9056A	Total/NA
Fluoride	1.55		1.00	0.375	mg/L	5		9056A	Total/NA
Sulfate	67.3		5.00	2.10	mg/L	5		9056A	Total/NA
Arsenic	0.00179	J	0.00200	0.000530	mg/L	1		200.8	Total/NA
Barium	0.0649		0.00200	0.000660	mg/L	1		200.8	Total/NA
Boron	0.341		0.100	0.0820	mg/L	1		200.8	Total/NA
Iron	0.0969	J	0.100	0.0500	mg/L	1		200.8	Total/NA
Lithium	0.356		0.0100	0.00290	mg/L	1		200.8	Total/NA
Sodium	94.1		1.00	0.650	mg/L	1		200.8	Total/NA
Strontium	0.925		0.00100	0.000530	mg/L	1		200.8	Total/NA
HEM (Oil and Grease)	3.5	J	4.7	2.9	mg/L	1		1664A	Total/NA
Total Kjeldahl Nitrogen	0.650	J	1.00	0.620	mg/L	1		351.2	Total/NA
Chemical Oxygen Demand	25.5		5.00	4.60	mg/L	1		5220D LL	Total/NA
Sulfide	1.96	H3 B	1.00	0.231	mg/L	1		9034	Total/NA
Total Suspended Solids	4.00	J	5.00	3.50	mg/L	1		I-3765-85	Total/NA
Nitrogen, Total	0.650	J	1.00	0.620	mg/L	1		Total Nitrogen	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-5

Lab Sample ID: 310-318382-1

Date Collected: 10/16/25 10:30

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	130		5.00	2.25	mg/L			10/31/25 14:24	5
Fluoride	0.628	J	1.00	0.375	mg/L			10/31/25 14:24	5
Sulfate	460		5.00	2.10	mg/L			10/31/25 14:24	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.116		0.200	0.116	mg/L		10/24/25 09:00	10/30/25 15:56	4
Barium	0.0152		0.00200	0.000660	mg/L		10/24/25 09:00	10/29/25 14:52	1
Boron	<0.328		0.400	0.328	mg/L		10/24/25 09:00	10/31/25 14:00	4
Iron	0.729		0.400	0.200	mg/L		10/24/25 09:00	10/31/25 14:00	4
Lithium	0.116		0.0400	0.0116	mg/L		10/24/25 09:00	10/30/25 15:56	4
Sodium	178		4.00	2.60	mg/L		10/24/25 09:00	10/30/25 15:56	4
Strontium	1.35		0.00400	0.00212	mg/L		10/24/25 09:00	10/30/25 15:56	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.120		0.500	0.120	mg/L			10/23/25 18:30	1
Chemical Oxygen Demand (SM 5220D LL)	<4.60		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		10/22/25 18:05	10/23/25 03:54	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-7

Lab Sample ID: 310-318382-2

Date Collected: 10/16/25 11:00

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	25.3		5.00	2.25	mg/L			10/31/25 14:40	5
Fluoride	<0.375		1.00	0.375	mg/L			10/31/25 14:40	5
Sulfate	337		5.00	2.10	mg/L			10/31/25 14:40	5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	0.133		0.0500	0.0290	mg/L		10/24/25 09:00	10/30/25 15:58	1
Barium	0.103		0.00200	0.000660	mg/L		10/24/25 09:00	10/29/25 14:55	1
Boron	0.235		0.100	0.0820	mg/L		10/24/25 09:00	10/31/25 14:03	1
Iron	0.632		0.100	0.0500	mg/L		10/24/25 09:00	10/31/25 14:03	1
Lithium	0.0570		0.0100	0.00290	mg/L		10/24/25 09:00	10/30/25 15:58	1
Sodium	87.5		1.00	0.650	mg/L		10/24/25 09:00	10/30/25 15:58	1
Strontium	0.979		0.00100	0.000530	mg/L		10/24/25 09:00	10/30/25 15:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	1.36		0.500	0.120	mg/L			10/23/25 18:26	1
Chemical Oxygen Demand (SM 5220D LL)	28.8		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	1.40		1.00	0.231	mg/L		10/22/25 18:08	10/23/25 04:03	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-8

Lab Sample ID: 310-318382-3

Date Collected: 10/16/25 11:30

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23.1		5.00	2.25	mg/L			10/31/25 14:56	5
Fluoride	<0.375		1.00	0.375	mg/L			10/31/25 14:56	5
Sulfate	892		20.0	8.40	mg/L			10/31/25 19:21	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.116		0.200	0.116	mg/L		10/24/25 09:00	10/30/25 16:01	4
Barium	0.0485		0.00200	0.000660	mg/L		10/24/25 09:00	10/29/25 15:03	1
Boron	<0.328		0.400	0.328	mg/L		10/24/25 09:00	10/31/25 14:06	4
Iron	<0.200		0.400	0.200	mg/L		10/24/25 09:00	10/31/25 14:06	4
Lithium	0.0142	J	0.0400	0.0116	mg/L		10/24/25 09:00	10/30/25 16:01	4
Sodium	104		1.00	0.650	mg/L		10/24/25 09:00	10/29/25 15:03	1
Strontium	2.42		0.00400	0.00212	mg/L		10/24/25 09:00	10/30/25 16:01	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	3.72		0.500	0.120	mg/L			10/23/25 14:06	1
Chemical Oxygen Demand (SM 5220D LL)	<4.60		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		10/22/25 18:10	10/23/25 04:11	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-12

Lab Sample ID: 310-318382-4

Date Collected: 10/16/25 10:00

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	18.7		5.00	2.25	mg/L			10/31/25 15:42	5
Fluoride	<0.375		1.00	0.375	mg/L			10/31/25 15:42	5
Sulfate	283		5.00	2.10	mg/L			10/31/25 15:42	5

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		10/24/25 09:00	10/30/25 16:03	1
Barium	0.0328		0.00200	0.000660	mg/L		10/24/25 09:00	10/29/25 15:06	1
Boron	<0.0820		0.100	0.0820	mg/L		10/24/25 09:00	10/31/25 14:09	1
Iron	<0.0500		0.100	0.0500	mg/L		10/24/25 09:00	10/31/25 14:09	1
Lithium	0.0512		0.0100	0.00290	mg/L		10/24/25 09:00	10/30/25 16:03	1
Sodium	59.4		1.00	0.650	mg/L		10/24/25 09:00	10/29/25 15:06	1
Strontium	0.594		0.00100	0.000530	mg/L		10/24/25 09:00	10/30/25 16:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.120		0.500	0.120	mg/L			10/23/25 14:09	1
Chemical Oxygen Demand (SM 5220D LL)	<4.60		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		10/22/25 18:13	10/23/25 04:20	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-14

Lab Sample ID: 310-318382-5

Date Collected: 10/16/25 12:30

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12.6		5.00	2.25	mg/L			10/31/25 15:58	5
Fluoride	<0.375		1.00	0.375	mg/L			10/31/25 15:58	5
Sulfate	1410		20.0	8.40	mg/L			11/03/25 09:03	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.116		0.200	0.116	mg/L		10/24/25 09:00	10/30/25 16:06	4
Barium	0.0276		0.00200	0.000660	mg/L		10/24/25 09:00	10/29/25 15:09	1
Boron	<0.328		0.400	0.328	mg/L		10/24/25 09:00	10/31/25 14:11	4
Iron	1.38		0.400	0.200	mg/L		10/24/25 09:00	10/31/25 14:11	4
Lithium	0.0159 J		0.0400	0.0116	mg/L		10/24/25 09:00	10/30/25 16:06	4
Sodium	102		1.00	0.650	mg/L		10/24/25 09:00	10/29/25 15:09	1
Strontium	2.75		0.00400	0.00212	mg/L		10/24/25 09:00	10/30/25 16:06	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	3.70		0.500	0.120	mg/L			10/23/25 14:13	1
Chemical Oxygen Demand (SM 5220D LL)	<4.60		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		10/22/25 18:21	10/23/25 04:45	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-15

Lab Sample ID: 310-318382-6

Date Collected: 10/16/25 12:00

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	62.1		5.00	2.25	mg/L			10/31/25 16:14	5
Fluoride	<0.375		1.00	0.375	mg/L			10/31/25 16:14	5
Sulfate	683		10.0	4.20	mg/L			11/03/25 09:19	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.116		0.200	0.116	mg/L		10/24/25 09:00	10/30/25 16:14	4
Barium	0.0261		0.00200	0.000660	mg/L		10/24/25 09:00	10/29/25 15:12	1
Boron	<0.328		0.400	0.328	mg/L		10/24/25 09:00	10/31/25 14:14	4
Iron	<0.200		0.400	0.200	mg/L		10/24/25 09:00	10/31/25 14:14	4
Lithium	0.224		0.0400	0.0116	mg/L		10/24/25 09:00	10/30/25 16:14	4
Sodium	95.3		1.00	0.650	mg/L		10/24/25 09:00	10/29/25 15:12	1
Strontium	1.90		0.00400	0.00212	mg/L		10/24/25 09:00	10/30/25 16:14	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.120		0.500	0.120	mg/L			10/23/25 14:17	1
Chemical Oxygen Demand (SM 5220D LL)	14.9		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		10/22/25 18:24	10/23/25 04:54	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-16

Lab Sample ID: 310-318382-7

Date Collected: 10/16/25 13:00

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	191		5.00	2.25	mg/L			10/31/25 16:29	5
Fluoride	<0.375		1.00	0.375	mg/L			10/31/25 16:29	5
Sulfate	67.5		20.0	8.40	mg/L			11/03/25 09:35	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.116		0.200	0.116	mg/L		10/24/25 09:00	10/30/25 16:16	4
Barium	0.0140		0.00800	0.00264	mg/L		10/24/25 09:00	10/30/25 16:16	4
Boron	<0.328		0.400	0.328	mg/L		10/24/25 09:00	10/31/25 14:17	4
Iron	4.31		0.400	0.200	mg/L		10/24/25 09:00	10/31/25 14:17	4
Lithium	0.283		0.0400	0.0116	mg/L		10/24/25 09:00	10/30/25 16:16	4
Sodium	254		4.00	2.60	mg/L		10/24/25 09:00	10/30/25 16:16	4
Strontium	3.48		0.00400	0.00212	mg/L		10/24/25 09:00	10/30/25 16:16	4

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	0.624		0.500	0.120	mg/L			10/23/25 14:20	1
Chemical Oxygen Demand (SM 5220D LL)	7.94		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	<0.231		1.00	0.231	mg/L		10/22/25 18:27	10/23/25 05:02	1

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: Pond

Lab Sample ID: 310-318382-8

Date Collected: 10/16/25 13:30

Matrix: Ground Water

Date Received: 10/17/25 14:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	221		5.00	2.25	mg/L			10/31/25 16:45	5
Fluoride	1.55		1.00	0.375	mg/L			10/31/25 16:45	5
Sulfate	67.3		5.00	2.10	mg/L			10/31/25 16:45	5

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		10/24/25 09:00	10/25/25 18:31	1
Arsenic	0.00179	J	0.00200	0.000530	mg/L		10/24/25 09:00	10/25/25 18:31	1
Barium	0.0649		0.00200	0.000660	mg/L		10/24/25 09:00	10/25/25 18:31	1
Boron	0.341		0.100	0.0820	mg/L		10/24/25 09:00	10/28/25 14:47	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/24/25 09:00	10/25/25 18:31	1
Chromium	<0.00180		0.00500	0.00180	mg/L		10/24/25 09:00	10/25/25 18:31	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/24/25 09:00	10/25/25 18:31	1
Iron	0.0969	J	0.100	0.0500	mg/L		10/24/25 09:00	10/28/25 14:47	1
Lead	<0.000330		0.000500	0.000330	mg/L		10/24/25 09:00	10/25/25 18:31	1
Lithium	0.356		0.0100	0.00290	mg/L		10/24/25 09:00	10/25/25 18:31	1
Molybdenum	<0.00130		0.00200	0.00130	mg/L		10/24/25 09:00	10/27/25 13:50	1
Nickel	<0.00230		0.00500	0.00230	mg/L		10/24/25 09:00	10/25/25 18:31	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/24/25 09:00	10/25/25 18:31	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/24/25 09:00	10/25/25 18:31	1
Sodium	94.1		1.00	0.650	mg/L		10/24/25 09:00	10/25/25 18:31	1
Strontium	0.925		0.00100	0.000530	mg/L		10/24/25 09:00	10/25/25 18:31	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/24/25 09:00	10/27/25 13:50	1

Method: EPA 245.2 - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000110		0.000200	0.000110	mg/L		10/27/25 14:15	10/28/25 10:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil and Grease) (40CFR136A 1664A)	3.5	J	4.7	2.9	mg/L		10/21/25 13:59	10/21/25 13:59	1
SGT-HEM (Oil and Grease - Nonpolar) (40CFR136A 1664A)	<2.9		4.7	2.9	mg/L		10/21/25 13:59	10/21/25 13:59	1
Cyanide, Total (EPA 335.4)	<0.00350		0.0100	0.00350	mg/L		10/21/25 10:54	10/22/25 20:51	1
Ammonia as N (EPA 350.1)	<0.120		0.500	0.120	mg/L			10/24/25 14:05	1
Total Kjeldahl Nitrogen (EPA 351.2)	0.650	J	1.00	0.620	mg/L		10/21/25 05:22	10/21/25 18:29	1
Nitrate Nitrite as N (EPA 353.2)	<0.0800		0.100	0.0800	mg/L			10/28/25 02:13	1
Total Phosphorus as P (EPA 365.1)	<0.0680		0.100	0.0680	mg/L		10/21/25 18:23	10/23/25 00:19	1
Phosphorus as PO4 (EPA 365.1)	<0.210		0.310	0.210	mg/L		10/21/25 18:23	10/23/25 00:19	1
Chemical Oxygen Demand (SM 5220D LL)	25.5		5.00	4.60	mg/L			10/22/25 09:22	1
Sulfide (SW846 9034)	1.96	H3 B	1.00	0.231	mg/L		10/27/25 09:17	10/27/25 09:20	1
Total Suspended Solids (USGS I-3765-85)	4.00	J	5.00	3.50	mg/L			10/21/25 10:42	1
Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrogen, Total (EPA Total Nitrogen)	0.650	J	1.00	0.620	mg/L			10/28/25 02:13	1

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Definitions/Glossary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

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
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
B	Compound was found in the blank and sample.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-472256/3
Matrix: Water
Analysis Batch: 472256

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			10/31/25 09:05	1
Fluoride	<0.0750		0.200	0.0750	mg/L			10/31/25 09:05	1
Sulfate	<0.420		1.00	0.420	mg/L			10/31/25 09:05	1

Lab Sample ID: LCS 310-472256/4
Matrix: Water
Analysis Batch: 472256

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	9.605		mg/L		96	90 - 110
Fluoride	2.00	1.972		mg/L		99	90 - 110
Sulfate	10.0	9.563		mg/L		96	90 - 110

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 310-471153/1-A
Matrix: Water
Analysis Batch: 471367

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471153

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		10/24/25 09:00	10/25/25 18:08	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/24/25 09:00	10/25/25 18:08	1
Barium	<0.000660		0.00200	0.000660	mg/L		10/24/25 09:00	10/25/25 18:08	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/24/25 09:00	10/25/25 18:08	1
Chromium	<0.00180		0.00500	0.00180	mg/L		10/24/25 09:00	10/25/25 18:08	1
Copper	<0.00320		0.00500	0.00320	mg/L		10/24/25 09:00	10/25/25 18:08	1
Lead	<0.000330		0.000500	0.000330	mg/L		10/24/25 09:00	10/25/25 18:08	1
Lithium	<0.00290		0.0100	0.00290	mg/L		10/24/25 09:00	10/25/25 18:08	1
Molybdenum	<0.00130		0.00200	0.00130	mg/L		10/24/25 09:00	10/25/25 18:08	1
Nickel	<0.00230		0.00500	0.00230	mg/L		10/24/25 09:00	10/25/25 18:08	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/24/25 09:00	10/25/25 18:08	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/24/25 09:00	10/25/25 18:08	1
Sodium	<0.650		1.00	0.650	mg/L		10/24/25 09:00	10/25/25 18:08	1
Strontium	<0.000530		0.00100	0.000530	mg/L		10/24/25 09:00	10/25/25 18:08	1

Lab Sample ID: MB 310-471153/1-A
Matrix: Water
Analysis Batch: 471467

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471153

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	0.08368	J	0.100	0.0820	mg/L		10/24/25 09:00	10/27/25 13:25	1
Iron	<0.0500		0.100	0.0500	mg/L		10/24/25 09:00	10/27/25 13:25	1
Zinc	<0.0130		0.0200	0.0130	mg/L		10/24/25 09:00	10/27/25 13:25	1

Lab Sample ID: MB 310-471153/1-A
Matrix: Water
Analysis Batch: 471614

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471153

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.0820		0.100	0.0820	mg/L		10/24/25 09:00	10/28/25 14:22	1

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QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 310-471153/1-A
Matrix: Water
Analysis Batch: 471614

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471153

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.0500		0.100	0.0500	mg/L		10/24/25 09:00	10/28/25 14:22	1

Lab Sample ID: LCS 310-471153/2-A
Matrix: Water
Analysis Batch: 471367

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 471153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.1868		mg/L		93	85 - 115
Arsenic	0.200	0.1829		mg/L		91	85 - 115
Barium	0.100	0.09107		mg/L		91	85 - 115
Beryllium	0.100	0.09256		mg/L		93	85 - 115
Cadmium	0.100	0.09210		mg/L		92	85 - 115
Chromium	0.100	0.1112		mg/L		111	85 - 115
Copper	0.200	0.1847		mg/L		92	85 - 115
Lead	0.200	0.1924		mg/L		96	85 - 115
Lithium	0.200	0.1899		mg/L		95	85 - 115
Manganese	0.100	0.09143		mg/L		91	85 - 115
Molybdenum	0.200	0.1744		mg/L		87	85 - 115
Nickel	0.200	0.1892		mg/L		95	85 - 115
Calcium	2.00	1.856		mg/L		93	85 - 115
Selenium	0.400	0.3545		mg/L		89	85 - 115
Silver	0.100	0.1081		mg/L		108	85 - 115
Sodium	2.00	1.879		mg/L		94	85 - 115
Strontium	0.200	0.1691		mg/L		85	85 - 115
Thallium	0.100	0.09748		mg/L		97	85 - 115
Magnesium	2.00	1.821		mg/L		91	85 - 115

Lab Sample ID: LCS 310-471153/2-A
Matrix: Water
Analysis Batch: 471467

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 471153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Zinc	0.200	0.1907		mg/L		95	85 - 115

Lab Sample ID: LCS 310-471153/2-A
Matrix: Water
Analysis Batch: 471614

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 471153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.2205		mg/L		110	85 - 115
Iron	0.200	0.2088		mg/L		104	85 - 115

Method: 245.2 - Mercury (CVAA)

Lab Sample ID: MB 310-471414/1-A
Matrix: Water
Analysis Batch: 471599

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471414

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000110		0.000200	0.000110	mg/L		10/27/25 14:15	10/28/25 09:13	1

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QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method: 245.2 - Mercury (CVAA)

Lab Sample ID: LCS 310-471414/2-A
Matrix: Water
Analysis Batch: 471599

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 471414

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.00167	0.001659		mg/L		100	85 - 115

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-471148/1-A
Matrix: Water
Analysis Batch: 471821

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471148

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.000660		0.00200	0.000660	mg/L		10/24/25 09:00	10/29/25 13:48	1

Lab Sample ID: MB 310-471148/1-A
Matrix: Water
Analysis Batch: 471990

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471148

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	<0.0290		0.0500	0.0290	mg/L		10/24/25 09:00	10/30/25 15:12	1
Lithium	<0.00290		0.0100	0.00290	mg/L		10/24/25 09:00	10/30/25 15:12	1
Sodium	<0.650		1.00	0.650	mg/L		10/24/25 09:00	10/30/25 15:12	1
Strontium	<0.000530		0.00100	0.000530	mg/L		10/24/25 09:00	10/30/25 15:12	1

Lab Sample ID: MB 310-471148/1-A
Matrix: Water
Analysis Batch: 472103

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 471148

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.0820		0.100	0.0820	mg/L		10/24/25 09:00	10/31/25 13:20	1
Iron	<0.0500		0.100	0.0500	mg/L		10/24/25 09:00	10/31/25 13:20	1

Lab Sample ID: LCS 310-471148/2-A
Matrix: Water
Analysis Batch: 471821

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 471148

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.2090		mg/L		104	80 - 120
Barium	0.100	0.1058		mg/L		106	80 - 120
Cadmium	0.100	0.1067		mg/L		107	80 - 120
Copper	0.200	0.2094		mg/L		105	80 - 120
Lead	0.200	0.2127		mg/L		106	80 - 120
Molybdenum	0.200	0.2241		mg/L		112	80 - 120
Selenium	0.400	0.4220		mg/L		106	80 - 120
Zinc	0.200	0.2073		mg/L		104	80 - 120

Lab Sample ID: LCS 310-471148/2-A
Matrix: Water
Analysis Batch: 471990

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 471148

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	0.200	0.2193		mg/L		110	80 - 120
Calcium	2.00	2.241		mg/L		112	80 - 120

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QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

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

Lab Sample ID: LCS 310-471148/2-A

Matrix: Water

Analysis Batch: 471990

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 471148

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lithium	0.200	0.1989		mg/L		99	80 - 120
Magnesium	2.00	2.296		mg/L		115	80 - 120
Nickel	0.200	0.2092		mg/L		105	80 - 120
Sodium	2.00	2.369		mg/L		118	80 - 120
Strontium	0.200	0.2131		mg/L		107	80 - 120

Lab Sample ID: LCS 310-471148/2-A

Matrix: Water

Analysis Batch: 472103

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 471148

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Boron	0.200	0.1985		mg/L		99	80 - 120
Iron	0.200	0.2116		mg/L		106	80 - 120

Method: 1664A - HEM and SGT-HEM by Extraction and Gravimetry

Lab Sample ID: MB 310-470703/1-A

Matrix: Water

Analysis Batch: 470797

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 470703

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM (Oil and Grease)	<3.1		5.0	3.1	mg/L		10/21/25 13:59	10/21/25 13:59	1
SGT-HEM (Oil and Grease - Nonpolar)	<3.1		5.0	3.1	mg/L		10/21/25 13:59	10/21/25 13:59	1

Lab Sample ID: LCS 310-470703/2-A

Matrix: Water

Analysis Batch: 470797

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 470703

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
HEM (Oil and Grease)	40.0	39.70		mg/L		99	78 - 114
SGT-HEM (Oil and Grease - Nonpolar)	20.0	18.70		mg/L		93	64 - 132

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 310-470796/1-A

Matrix: Water

Analysis Batch: 471032

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 470796

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	<0.00350		0.0100	0.00350	mg/L		10/21/25 10:54	10/22/25 20:48	1

Lab Sample ID: LCS 310-470796/2-A

Matrix: Water

Analysis Batch: 471032

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 470796

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	0.200	0.1922		mg/L		96	90 - 110

Eurofins Cedar Falls

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method: 335.4 - Cyanide, Total (Continued)

Lab Sample ID: 310-318382-8 MS
Matrix: Ground Water
Analysis Batch: 471032

Client Sample ID: Pond
Prep Type: Total/NA
Prep Batch: 470796

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	<0.00350		0.200	0.1954		mg/L		98	90 - 110

Lab Sample ID: 310-318382-8 MSD
Matrix: Ground Water
Analysis Batch: 471032

Client Sample ID: Pond
Prep Type: Total/NA
Prep Batch: 470796

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cyanide, Total	<0.00350		0.200	0.2001		mg/L		100	90 - 110	2	35

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-471181/16
Matrix: Water
Analysis Batch: 471181

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.120		0.500	0.120	mg/L			10/23/25 12:27	1

Lab Sample ID: MB 310-471181/84
Matrix: Water
Analysis Batch: 471181

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.120		0.500	0.120	mg/L			10/23/25 16:36	1

Lab Sample ID: LCS 310-471181/17
Matrix: Water
Analysis Batch: 471181

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	2.26	2.056		mg/L		91	90 - 110

Lab Sample ID: LCS 310-471181/85
Matrix: Water
Analysis Batch: 471181

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	2.26	2.047		mg/L		91	90 - 110

Lab Sample ID: MB 310-471341/16
Matrix: Water
Analysis Batch: 471341

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.120		0.500	0.120	mg/L			10/24/25 12:30	1

Eurofins Cedar Falls

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 310-471341/17
Matrix: Water
Analysis Batch: 471341

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	2.26	2.086		mg/L		92	90 - 110

Method: 351.2 - Nitrogen, Total Kjeldahl

Lab Sample ID: MB 310-470744/1-A
Matrix: Water
Analysis Batch: 470884

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470744

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Kjeldahl Nitrogen	<0.620		1.00	0.620	mg/L		10/21/25 05:22	10/21/25 18:23	1

Lab Sample ID: LCS 310-470744/2-A
Matrix: Water
Analysis Batch: 470884

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470744

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Kjeldahl Nitrogen	4.01	4.011		mg/L		100	90 - 110

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 310-471549/16
Matrix: Water
Analysis Batch: 471549

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.0800		0.100	0.0800	mg/L			10/28/25 00:57	1

Lab Sample ID: MB 310-471549/52
Matrix: Water
Analysis Batch: 471549

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	<0.0800		0.100	0.0800	mg/L			10/28/25 02:56	1

Lab Sample ID: LCS 310-471549/17
Matrix: Water
Analysis Batch: 471549

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	2.19	1.994		mg/L		91	90 - 110

Lab Sample ID: LCS 310-471549/53
Matrix: Water
Analysis Batch: 471549

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	2.19	2.050		mg/L		94	90 - 110

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method: 365.1 - Phosphorus, Total

Lab Sample ID: MB 310-470877/1-A
Matrix: Water
Analysis Batch: 471036

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470877

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	<0.0680		0.100	0.0680	mg/L		10/21/25 18:23	10/23/25 00:11	1
Phosphorus as PO4	<0.210		0.310	0.210	mg/L		10/21/25 18:23	10/23/25 00:11	1

Lab Sample ID: LCS 310-470877/2-A
Matrix: Water
Analysis Batch: 471036

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Phosphorus as P	0.999	0.9900		mg/L		99	90 - 110

Method: 5220D LL - COD

Lab Sample ID: MB 310-470929/32
Matrix: Water
Analysis Batch: 470929

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<4.60		5.00	4.60	mg/L			10/22/25 09:22	1

Lab Sample ID: LCS 310-470929/33
Matrix: Water
Analysis Batch: 470929

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	62.7	61.50		mg/L		98	85 - 115

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 500-839576/1-A
Matrix: Water
Analysis Batch: 839577

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 839576

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	<0.231		1.00	0.231	mg/L		10/22/25 18:00	10/23/25 03:38	1

Lab Sample ID: LCS 500-839576/2-A
Matrix: Water
Analysis Batch: 839577

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 839576

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	3.32	3.570		mg/L		107	80 - 120

Lab Sample ID: 310-318382-4 MS
Matrix: Ground Water
Analysis Batch: 839577

Client Sample ID: MW-12
Prep Type: Total/NA
Prep Batch: 839576

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	<0.231		8.31	9.123		mg/L		110	75 - 125

Eurofins Cedar Falls

QC Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric) (Continued)

Lab Sample ID: 310-318382-4 MSD
Matrix: Ground Water
Analysis Batch: 839577

Client Sample ID: MW-12
Prep Type: Total/NA
Prep Batch: 839576

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Sulfide	<0.231		8.31	9.681		mg/L		116	75 - 125	6	20

Lab Sample ID: MB 500-840206/1-A
Matrix: Water
Analysis Batch: 840208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 840206

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	0.3523	J	1.00	0.231	mg/L		10/27/25 09:17	10/27/25 09:20	1

Lab Sample ID: LCS 500-840206/2-A
Matrix: Water
Analysis Batch: 840208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 840206

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	3.32	3.763		mg/L		113	80 - 120

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

Lab Sample ID: MB 310-470790/1
Matrix: Water
Analysis Batch: 470790

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<3.50		5.00	3.50	mg/L			10/21/25 10:42	1

Lab Sample ID: LCS 310-470790/2
Matrix: Water
Analysis Batch: 470790

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	103.0		mg/L		103	82 - 117

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

HPLC/IC

Analysis Batch: 472256

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	9056A	
310-318382-2	MW-7	Total/NA	Ground Water	9056A	
310-318382-3	MW-8	Total/NA	Ground Water	9056A	
310-318382-3	MW-8	Total/NA	Ground Water	9056A	
310-318382-4	MW-12	Total/NA	Ground Water	9056A	
310-318382-5	MW-14	Total/NA	Ground Water	9056A	
310-318382-5	MW-14	Total/NA	Ground Water	9056A	
310-318382-6	MW-15	Total/NA	Ground Water	9056A	
310-318382-6	MW-15	Total/NA	Ground Water	9056A	
310-318382-7	MW-16	Total/NA	Ground Water	9056A	
310-318382-7	MW-16	Total/NA	Ground Water	9056A	
310-318382-8	Pond	Total/NA	Ground Water	9056A	
MB 310-472256/3	Method Blank	Total/NA	Water	9056A	
LCS 310-472256/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 471148

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	3005A	
310-318382-2	MW-7	Total/NA	Ground Water	3005A	
310-318382-3	MW-8	Total/NA	Ground Water	3005A	
310-318382-4	MW-12	Total/NA	Ground Water	3005A	
310-318382-5	MW-14	Total/NA	Ground Water	3005A	
310-318382-6	MW-15	Total/NA	Ground Water	3005A	
310-318382-7	MW-16	Total/NA	Ground Water	3005A	
MB 310-471148/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-471148/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 471153

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	200.8	
MB 310-471153/1-A	Method Blank	Total/NA	Water	200.8	
LCS 310-471153/2-A	Lab Control Sample	Total/NA	Water	200.8	

Analysis Batch: 471367

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	200.8	471153
MB 310-471153/1-A	Method Blank	Total/NA	Water	200.8	471153
LCS 310-471153/2-A	Lab Control Sample	Total/NA	Water	200.8	471153

Prep Batch: 471414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	245.1	
MB 310-471414/1-A	Method Blank	Total/NA	Water	245.1	
LCS 310-471414/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 471467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	200.8	471153
MB 310-471153/1-A	Method Blank	Total/NA	Water	200.8	471153

Eurofins Cedar Falls

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Metals (Continued)

Analysis Batch: 471467 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-471153/2-A	Lab Control Sample	Total/NA	Water	200.8	471153

Analysis Batch: 471599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	245.2	471414
MB 310-471414/1-A	Method Blank	Total/NA	Water	245.2	471414
LCS 310-471414/2-A	Lab Control Sample	Total/NA	Water	245.2	471414

Analysis Batch: 471614

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	200.8	471153
MB 310-471153/1-A	Method Blank	Total/NA	Water	200.8	471153
LCS 310-471153/2-A	Lab Control Sample	Total/NA	Water	200.8	471153

Analysis Batch: 471821

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	6020B	471148
310-318382-2	MW-7	Total/NA	Ground Water	6020B	471148
310-318382-3	MW-8	Total/NA	Ground Water	6020B	471148
310-318382-4	MW-12	Total/NA	Ground Water	6020B	471148
310-318382-5	MW-14	Total/NA	Ground Water	6020B	471148
310-318382-6	MW-15	Total/NA	Ground Water	6020B	471148
MB 310-471148/1-A	Method Blank	Total/NA	Water	6020B	471148
LCS 310-471148/2-A	Lab Control Sample	Total/NA	Water	6020B	471148

Analysis Batch: 471990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	6020B	471148
310-318382-2	MW-7	Total/NA	Ground Water	6020B	471148
310-318382-3	MW-8	Total/NA	Ground Water	6020B	471148
310-318382-4	MW-12	Total/NA	Ground Water	6020B	471148
310-318382-5	MW-14	Total/NA	Ground Water	6020B	471148
310-318382-6	MW-15	Total/NA	Ground Water	6020B	471148
310-318382-7	MW-16	Total/NA	Ground Water	6020B	471148
MB 310-471148/1-A	Method Blank	Total/NA	Water	6020B	471148
LCS 310-471148/2-A	Lab Control Sample	Total/NA	Water	6020B	471148

Analysis Batch: 472103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	6020B	471148
310-318382-2	MW-7	Total/NA	Ground Water	6020B	471148
310-318382-3	MW-8	Total/NA	Ground Water	6020B	471148
310-318382-4	MW-12	Total/NA	Ground Water	6020B	471148
310-318382-5	MW-14	Total/NA	Ground Water	6020B	471148
310-318382-6	MW-15	Total/NA	Ground Water	6020B	471148
310-318382-7	MW-16	Total/NA	Ground Water	6020B	471148
MB 310-471148/1-A	Method Blank	Total/NA	Water	6020B	471148
LCS 310-471148/2-A	Lab Control Sample	Total/NA	Water	6020B	471148

Eurofins Cedar Falls

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

General Chemistry

Analysis Batch: 470666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	Total Nitrogen	

Prep Batch: 470703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	1664A	
MB 310-470703/1-A	Method Blank	Total/NA	Water	1664A	
LCS 310-470703/2-A	Lab Control Sample	Total/NA	Water	1664A	

Prep Batch: 470744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	351.2	
MB 310-470744/1-A	Method Blank	Total/NA	Water	351.2	
LCS 310-470744/2-A	Lab Control Sample	Total/NA	Water	351.2	

Analysis Batch: 470790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	I-3765-85	
MB 310-470790/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-470790/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Prep Batch: 470796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	Distill/CN	
MB 310-470796/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 310-470796/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
310-318382-8 MS	Pond	Total/NA	Ground Water	Distill/CN	
310-318382-8 MSD	Pond	Total/NA	Ground Water	Distill/CN	

Analysis Batch: 470797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	1664A	470703
MB 310-470703/1-A	Method Blank	Total/NA	Water	1664A	470703
LCS 310-470703/2-A	Lab Control Sample	Total/NA	Water	1664A	470703

Prep Batch: 470877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	365.1	
MB 310-470877/1-A	Method Blank	Total/NA	Water	365.1	
LCS 310-470877/2-A	Lab Control Sample	Total/NA	Water	365.1	

Analysis Batch: 470884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	351.2	470744
MB 310-470744/1-A	Method Blank	Total/NA	Water	351.2	470744
LCS 310-470744/2-A	Lab Control Sample	Total/NA	Water	351.2	470744

Analysis Batch: 470929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	5220D LL	
310-318382-2	MW-7	Total/NA	Ground Water	5220D LL	
310-318382-3	MW-8	Total/NA	Ground Water	5220D LL	

Eurofins Cedar Falls

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

General Chemistry (Continued)

Analysis Batch: 470929 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-4	MW-12	Total/NA	Ground Water	5220D LL	
310-318382-5	MW-14	Total/NA	Ground Water	5220D LL	
310-318382-6	MW-15	Total/NA	Ground Water	5220D LL	
310-318382-7	MW-16	Total/NA	Ground Water	5220D LL	
310-318382-8	Pond	Total/NA	Ground Water	5220D LL	
MB 310-470929/32	Method Blank	Total/NA	Water	5220D LL	
LCS 310-470929/33	Lab Control Sample	Total/NA	Water	5220D LL	

Analysis Batch: 471032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	335.4	470796
MB 310-470796/1-A	Method Blank	Total/NA	Water	335.4	470796
LCS 310-470796/2-A	Lab Control Sample	Total/NA	Water	335.4	470796
310-318382-8 MS	Pond	Total/NA	Ground Water	335.4	470796
310-318382-8 MSD	Pond	Total/NA	Ground Water	335.4	470796

Analysis Batch: 471036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	365.1	470877
MB 310-470877/1-A	Method Blank	Total/NA	Water	365.1	470877
LCS 310-470877/2-A	Lab Control Sample	Total/NA	Water	365.1	470877

Analysis Batch: 471181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	350.1	
310-318382-2	MW-7	Total/NA	Ground Water	350.1	
310-318382-3	MW-8	Total/NA	Ground Water	350.1	
310-318382-4	MW-12	Total/NA	Ground Water	350.1	
310-318382-5	MW-14	Total/NA	Ground Water	350.1	
310-318382-6	MW-15	Total/NA	Ground Water	350.1	
310-318382-7	MW-16	Total/NA	Ground Water	350.1	
MB 310-471181/16	Method Blank	Total/NA	Water	350.1	
MB 310-471181/84	Method Blank	Total/NA	Water	350.1	
LCS 310-471181/17	Lab Control Sample	Total/NA	Water	350.1	
LCS 310-471181/85	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 471341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	350.1	
MB 310-471341/16	Method Blank	Total/NA	Water	350.1	
LCS 310-471341/17	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 471549

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	353.2	
MB 310-471549/16	Method Blank	Total/NA	Water	353.2	
MB 310-471549/52	Method Blank	Total/NA	Water	353.2	
LCS 310-471549/17	Lab Control Sample	Total/NA	Water	353.2	
LCS 310-471549/53	Lab Control Sample	Total/NA	Water	353.2	

Eurofins Cedar Falls

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

General Chemistry

Prep Batch: 839576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	9030B	
310-318382-2	MW-7	Total/NA	Ground Water	9030B	
310-318382-3	MW-8	Total/NA	Ground Water	9030B	
310-318382-4	MW-12	Total/NA	Ground Water	9030B	
310-318382-5	MW-14	Total/NA	Ground Water	9030B	
310-318382-6	MW-15	Total/NA	Ground Water	9030B	
310-318382-7	MW-16	Total/NA	Ground Water	9030B	
MB 500-839576/1-A	Method Blank	Total/NA	Water	9030B	
LCS 500-839576/2-A	Lab Control Sample	Total/NA	Water	9030B	
310-318382-4 MS	MW-12	Total/NA	Ground Water	9030B	
310-318382-4 MSD	MW-12	Total/NA	Ground Water	9030B	

Analysis Batch: 839577

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-1	MW-5	Total/NA	Ground Water	9034	839576
310-318382-2	MW-7	Total/NA	Ground Water	9034	839576
310-318382-3	MW-8	Total/NA	Ground Water	9034	839576
310-318382-4	MW-12	Total/NA	Ground Water	9034	839576
310-318382-5	MW-14	Total/NA	Ground Water	9034	839576
310-318382-6	MW-15	Total/NA	Ground Water	9034	839576
310-318382-7	MW-16	Total/NA	Ground Water	9034	839576
MB 500-839576/1-A	Method Blank	Total/NA	Water	9034	839576
LCS 500-839576/2-A	Lab Control Sample	Total/NA	Water	9034	839576
310-318382-4 MS	MW-12	Total/NA	Ground Water	9034	839576
310-318382-4 MSD	MW-12	Total/NA	Ground Water	9034	839576

Prep Batch: 840206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	9030B	
MB 500-840206/1-A	Method Blank	Total/NA	Water	9030B	
LCS 500-840206/2-A	Lab Control Sample	Total/NA	Water	9030B	

Analysis Batch: 840208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318382-8	Pond	Total/NA	Ground Water	9034	840206
MB 500-840206/1-A	Method Blank	Total/NA	Water	9034	840206
LCS 500-840206/2-A	Lab Control Sample	Total/NA	Water	9034	840206

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-5

Date Collected: 10/16/25 10:30

Date Received: 10/17/25 14:40

Lab Sample ID: 310-318382-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 14:24
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	471990	NFT2	EET CF	10/30/25 15:56
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471821	NFT2	EET CF	10/29/25 14:52
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	472103	NFT2	EET CF	10/31/25 14:00
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 18:30
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	9030B			839576	CLB	EET CHI	10/22/25 18:05 - 10/22/25 18:08 ¹
Total/NA	Analysis	9034		1	839577	CLB	EET CHI	10/23/25 03:54 - 10/23/25 04:03 ¹

Client Sample ID: MW-7

Date Collected: 10/16/25 11:00

Date Received: 10/17/25 14:40

Lab Sample ID: 310-318382-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 14:40
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471990	NFT2	EET CF	10/30/25 15:58
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471821	NFT2	EET CF	10/29/25 14:55
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	472103	NFT2	EET CF	10/31/25 14:03
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 18:26
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	9030B			839576	CLB	EET CHI	10/22/25 18:08 - 10/22/25 18:10 ¹
Total/NA	Analysis	9034		1	839577	CLB	EET CHI	10/23/25 04:03 - 10/23/25 04:11 ¹

Client Sample ID: MW-8

Date Collected: 10/16/25 11:30

Date Received: 10/17/25 14:40

Lab Sample ID: 310-318382-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 14:56
Total/NA	Analysis	9056A		20	472256	ZRI4	EET CF	10/31/25 19:21
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	471990	NFT2	EET CF	10/30/25 16:01
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471821	NFT2	EET CF	10/29/25 15:03
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	472103	NFT2	EET CF	10/31/25 14:06
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 14:06
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22

Eurofins Cedar Falls

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-8

Date Collected: 10/16/25 11:30

Date Received: 10/17/25 14:40

Lab Sample ID: 310-318382-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	9030B			839576	CLB	EET CHI	10/22/25 18:10 - 10/22/25 18:13 ¹
Total/NA	Analysis	9034		1	839577	CLB	EET CHI	10/23/25 04:11 - 10/23/25 04:20 ¹

Client Sample ID: MW-12

Date Collected: 10/16/25 10:00

Date Received: 10/17/25 14:40

Lab Sample ID: 310-318382-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 15:42
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471990	NFT2	EET CF	10/30/25 16:03
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471821	NFT2	EET CF	10/29/25 15:06
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	472103	NFT2	EET CF	10/31/25 14:09
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 14:09
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	9030B			839576	CLB	EET CHI	10/22/25 18:13 - 10/22/25 18:16 ¹
Total/NA	Analysis	9034		1	839577	CLB	EET CHI	10/23/25 04:20 - 10/23/25 04:28 ¹

Client Sample ID: MW-14

Date Collected: 10/16/25 12:30

Date Received: 10/17/25 14:40

Lab Sample ID: 310-318382-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 15:58
Total/NA	Analysis	9056A		20	472256	ZRI4	EET CF	11/03/25 09:03
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	471990	NFT2	EET CF	10/30/25 16:06
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471821	NFT2	EET CF	10/29/25 15:09
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	472103	NFT2	EET CF	10/31/25 14:11
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 14:13
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	9030B			839576	CLB	EET CHI	10/22/25 18:21 - 10/22/25 18:24 ¹
Total/NA	Analysis	9034		1	839577	CLB	EET CHI	10/23/25 04:45 - 10/23/25 04:54 ¹

Client Sample ID: MW-15

Date Collected: 10/16/25 12:00

Date Received: 10/17/25 14:40

Lab Sample ID: 310-318382-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 16:14

Eurofins Cedar Falls

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: MW-15

Lab Sample ID: 310-318382-6

Date Collected: 10/16/25 12:00

Matrix: Ground Water

Date Received: 10/17/25 14:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		10	472256	ZRI4	EET CF	11/03/25 09:19
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	471990	NFT2	EET CF	10/30/25 16:14
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		1	471821	NFT2	EET CF	10/29/25 15:12
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	472103	NFT2	EET CF	10/31/25 14:14
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 14:17
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	9030B			839576	CLB	EET CHI	10/22/25 18:24 - 10/22/25 18:27 ¹
Total/NA	Analysis	9034		1	839577	CLB	EET CHI	10/23/25 04:54 - 10/23/25 05:02 ¹

Client Sample ID: MW-16

Lab Sample ID: 310-318382-7

Date Collected: 10/16/25 13:00

Matrix: Ground Water

Date Received: 10/17/25 14:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 16:29
Total/NA	Analysis	9056A		20	472256	ZRI4	EET CF	11/03/25 09:35
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	471990	NFT2	EET CF	10/30/25 16:16
Total/NA	Prep	3005A			471148	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	6020B		4	472103	NFT2	EET CF	10/31/25 14:17
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 14:20
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	9030B			839576	CLB	EET CHI	10/22/25 18:27 - 10/22/25 18:30 ¹
Total/NA	Analysis	9034		1	839577	CLB	EET CHI	10/23/25 05:02 - 10/23/25 05:11 ¹

Client Sample ID: Pond

Lab Sample ID: 310-318382-8

Date Collected: 10/16/25 13:30

Matrix: Ground Water

Date Received: 10/17/25 14:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	472256	ZRI4	EET CF	10/31/25 16:45
Total/NA	Prep	200.8			471153	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	200.8		1	471367	ZRI4	EET CF	10/25/25 18:31
Total/NA	Prep	200.8			471153	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	200.8		1	471467	NFT2	EET CF	10/27/25 13:50
Total/NA	Prep	200.8			471153	RLT9	EET CF	10/24/25 09:00
Total/NA	Analysis	200.8		1	471614	NFT2	EET CF	10/28/25 14:47
Total/NA	Prep	245.1			471414	RLT9	EET CF	10/27/25 14:15
Total/NA	Analysis	245.2		1	471599	RLT9	EET CF	10/28/25 10:04
Total/NA	Prep	1664A			470703	HE7K	EET CF	10/21/25 13:59
Total/NA	Analysis	1664A		1	470797	HE7K	EET CF	10/21/25 13:59

Eurofins Cedar Falls

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Client Sample ID: Pond

Lab Sample ID: 310-318382-8

Date Collected: 10/16/25 13:30

Matrix: Ground Water

Date Received: 10/17/25 14:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	Distill/CN			470796	ENB7	EET CF	10/21/25 10:54
Total/NA	Analysis	335.4		1	471032	ZJX4	EET CF	10/22/25 20:51
Total/NA	Analysis	350.1		1	471341	WZC8	EET CF	10/24/25 14:05
Total/NA	Prep	351.2			470744	W9YR	EET CF	10/21/25 05:22
Total/NA	Analysis	351.2		1	470884	ZJX4	EET CF	10/21/25 18:29
Total/NA	Analysis	353.2		1	471549	ZJX4	EET CF	10/28/25 02:13
Total/NA	Prep	365.1			470877	T5AC	EET CF	10/21/25 18:23
Total/NA	Analysis	365.1		1	471036	ZJX4	EET CF	10/23/25 00:19
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	9030B			840206	TR	EET CHI	10/27/25 09:17 - 10/27/25 09:18 ¹
Total/NA	Analysis	9034		1	840208	TR	EET CHI	10/27/25 09:20
Total/NA	Analysis	I-3765-85		1	470790	DGU1	EET CF	10/21/25 10:42
Total/NA	Analysis	Total Nitrogen		1	470666	HE7K	EET CF	10/28/25 02:13

¹ This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

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

EET CHI = Eurofins Chicago, 18410 Crossing Drive, Suite E, Tinley Park, IL 60487, TEL (708)534-5200

Accreditation/Certification Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1664A	1664A	Ground Water	HEM (Oil and Grease)
1664A	1664A	Ground Water	SGT-HEM (Oil and Grease - Nonpolar)
200.8	200.8	Ground Water	Aluminum
200.8	200.8	Ground Water	Arsenic
200.8	200.8	Ground Water	Barium
200.8	200.8	Ground Water	Boron
200.8	200.8	Ground Water	Cadmium
200.8	200.8	Ground Water	Chromium
200.8	200.8	Ground Water	Copper
200.8	200.8	Ground Water	Iron
200.8	200.8	Ground Water	Lead
200.8	200.8	Ground Water	Lithium
200.8	200.8	Ground Water	Molybdenum
200.8	200.8	Ground Water	Nickel
200.8	200.8	Ground Water	Selenium
200.8	200.8	Ground Water	Silver
200.8	200.8	Ground Water	Sodium
200.8	200.8	Ground Water	Strontium
200.8	200.8	Ground Water	Zinc
245.2	245.1	Ground Water	Mercury
335.4	Distill/CN	Ground Water	Cyanide, Total
350.1		Ground Water	Ammonia as N
351.2	351.2	Ground Water	Total Kjeldahl Nitrogen
353.2		Ground Water	Nitrate Nitrite as N
365.1	365.1	Ground Water	Phosphorus as PO ₄
365.1	365.1	Ground Water	Total Phosphorus as P
5220D LL		Ground Water	Chemical Oxygen Demand
6020B	3005A	Ground Water	Aluminum
6020B	3005A	Ground Water	Barium
6020B	3005A	Ground Water	Boron
6020B	3005A	Ground Water	Iron
6020B	3005A	Ground Water	Lithium
6020B	3005A	Ground Water	Sodium
6020B	3005A	Ground Water	Strontium
9056A		Ground Water	Chloride
9056A		Ground Water	Fluoride
9056A		Ground Water	Sulfate
I-3765-85		Ground Water	Total Suspended Solids
Total Nitrogen		Ground Water	Nitrogen, Total

Laboratory: Eurofins Chicago

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

Authority	Program	Identification Number	Expiration Date
Georgia	State	N/A	05-31-26
Georgia (DW)	State	939	05-31-26

Eurofins Cedar Falls

Accreditation/Certification Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Laboratory: Eurofins Chicago (Continued)

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

Authority	Program	Identification Number	Expiration Date
Illinois	NELAP	100201	05-31-26
Indiana	State	C-IL-02	05-31-26
Iowa	State	082	05-01-26
Kansas	NELAP	E-10161	10-31-25
Kentucky (UST)	State	AI # 108083	05-31-26
Kentucky (WW)	State	KY90023	12-31-25
Louisiana (All)	NELAP	02046	06-30-26
Mississippi	State	NA	05-31-26
North Carolina (WW/SW)	State	291	10-28-25
North Dakota	State	R-194	04-29-24 *
Oklahoma	State	8908	12-31-25
South Carolina	State	77001003	05-31-26
USDA	US Federal Programs	P330-18-00018	03-30-26
Wisconsin	State	399172840	08-31-26
Wyoming	State	8TMS-Q	05-31-26

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

Eurofins Cedar Falls

Method Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-318382-1
SDG: 13-024

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
200.8	Metals (ICP/MS)	EPA	EET CF
245.2	Mercury (CVAA)	EPA	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
1664A	HEM and SGT-HEM by Extraction and Gravimetry	40CFR136A	EET CF
335.4	Cyanide, Total	EPA	EET CF
350.1	Nitrogen, Ammonia	EPA	EET CF
351.2	Nitrogen, Total Kjeldahl	EPA	EET CF
353.2	Nitrogen, Nitrate-Nitrite	EPA	EET CF
365.1	Phosphorus, Total	EPA	EET CF
5220D LL	COD	SM	EET CF
9034	Sulfide, Acid soluble and Insoluble (Titrimetric)	SW846	EET CHI
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
Total Nitrogen	Nitrogen, Total	EPA	EET CF
1664A	HEM and SGT-HEM (SPE)	1664A	EET CF
200.8	Preparation, Total Metals	EPA	EET CF
245.1	Preparation, Mercury	EPA	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
351.2	Nitrogen, Total Kjeldahl	EPA	EET CF
365.1	Sample Digestion for Total Phosphorus	MCAWW	EET CF
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	EET CHI
Distill/CN	Distillation, Cyanide	None	EET CF

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

None = None

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

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

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

Laboratory References:

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

EET CHI = Eurofins Chicago, 18410 Crossing Drive, Suite E, Tinley Park, IL 60487, TEL (708)534-5200



Environment Testing
America



310-318382 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client <u>Glencore</u>			
City/State	CITY	STATE	Project
Receipt Information			
Date/Time Received.	DATE	TIME	Received By
	<u>10-17-25</u>	<u>1440</u>	<u>EH</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>B3</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):		Corrected Temp (°C):	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
	<u>Plastic 250ml</u>		
Uncorrected Temp (°C).	<u>5.7</u>		
Corrected Temp (°C).	<u>5.7</u>		
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			

Eurofins Environment Testing

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- 14

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

Chain of Custody Record



eurolins

Phone 319 277-2401 Fax 319-277-2425		Sampler N/A		Lab PM Dietz Hannah E		Carrier Tracking No(s) N/A		COC No 310-88099 1							
Client Information (Sub Contract Lab)		Phone N/A		E-Mail Hannah.Dietz@et.eurofinsus.com		State of Origin Iowa		Page Page 1 of 1							
Shipping/Receiving				Accreditations Required (See note) State Program - Iowa				Job # 310 318382 1							
Company Eurofins Environment Testing North Centr				Analysis Requested				Preservation Codes							
Address 18410 Crossing Drive, Suite E		Due Date Requested 10/30/2025		Total Number of containers				Other N/A							
City Tinley Park		TAT Requested (days) N/A													
State Zip IL 60487		PO # N/A													
Phone 708-534 5200(Tel) 708-534-5211(Fax)		WO # N/A													
Email N/A		Project # 31006401													
Project Name Keokuk Ferro-Sil Landfill		SSOW# N/A		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 9034_Calc/9030B Sulfide				310-318382 COC							
Site N/A		N/A													
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab) BT=Tissue, A=Air	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)									Special Instructions/Note	
				Preservation Code											
MW-5 (310-318382-1)		10/16/25	10 30 Central	G	Water			X							1
MW 7 (310-318382-2)		10/16/25	11 00 Central	G	Water			X							1
MW-8 (310-318382-3)		10/16/25	11 30 Central	G	Water			X							1
MW 12 (310-318382-4)		10/16/25	10 00 Central	G	Water			X							1
MW-14 (310-318382-5)		10/16/25	12 30 Central	G	Water			X							1
MW-15 (310-318382-6)		10/16/25	12 00 Central	G	Water			X							1
MW-16 (310-318382-7)		10/16/25	13 00 Central	G	Water			X							1
Note Since laboratory accreditations are subject to change Eurofins Environment Testing North Central LLC places the ownership of method analyte & accreditation compliance upon our subcontract laboratories This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central LLC laboratory or other instructions will be provided Any changes to accreditation status should be brought to Eurofins Environment Testing North Central LLC attention immediately If all requested accreditations are current to date return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central LLC															
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)									
Unconfirmed						☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months									
Deliverable Requested I II III IV Other (specify)						Primary Deliverable Rank 2									
Special Instructions/QC Requirements															
Empty Kit Relinquished by				Date		Time		Method of Shipment							
Relinquished by				Date/Time 10/21/25 1605		Company		Received by Stephanie Hernandez				Date/Time 10/21/25 0920		Company EEI/A	
Relinquished by				Date/Time		Company		Received by				Date/Time		Company	
Relinquished by				Date/Time		Company		Received by				Date/Time		Company	
Custody Seals Intact Δ Yes Δ No		Custody Seal No				Cooler Temperature(s) °C and Other Remarks 0.9-10.9									

Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-318382-1

SDG Number: 13-024

Login Number: 318382

List Number: 1

Creator: Hirsch, Preston

List Source: Eurofins Cedar Falls

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	

Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-318382-1

SDG Number: 13-024

Login Number: 318382

List Number: 2

Creator: Hernandez, Stephanie

List Source: Eurofins Chicago

List Creation: 10/21/25 02:20 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-318382-1

SDG Number: 13-024

Login Number: 318382

List Number: 3

Creator: Knox, Angel

List Source: Eurofins Chicago

List Creation: 10/24/25 04:21 PM

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.1
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").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ANALYTICAL REPORT

PREPARED FOR

Attn: Steven Demasi
Glencore Ltd
Three Stamford Plaza
301 Trersser Blvd
Stamford, Connecticut 06901

Generated 4/4/2025 1:41:43 PM

JOB DESCRIPTION

Keokuk Ferro-Sil

JOB NUMBER

310-302534-1

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
Hannah Dietz, Project Manager I
Hannah.Dietz@et.eurofinsus.com
(319)277-2401

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Case Narrative

Client: Glencore Ltd
Project: Keokuk Ferro-Sil

Job ID: 310-302534-1

Job ID: 310-302534-1

Eurofins Cedar Falls

Job Narrative 310-302534-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

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

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

Receipt

The sample was received on 3/21/2025 2:10 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.4°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 method blank for preparation batch 310-449942 and analytical batch 310-450313 contained Strontium above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

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: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-302534-1	MW-16	Ground Water	03/20/25 11:00	03/21/25 14:10

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

Client Sample ID: MW-16

Lab Sample ID: 310-302534-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	141		50.0	22.5	mg/L	50		9056A	Total/NA
Sulfate	1500		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	1.84		0.100	0.0360	mg/L	1		6020B	Total/NA
Lithium	0.255		0.0100	0.00250	mg/L	1		6020B	Total/NA
Sodium	197		1.00	0.480	mg/L	1		6020B	Total/NA
Strontium	3.60	B	0.00400	0.00212	mg/L	4		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

Client Sample ID: MW-16

Date Collected: 03/20/25 11:00

Date Received: 03/21/25 14:10

Lab Sample ID: 310-302534-1

Matrix: Ground Water

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	141		50.0	22.5	mg/L			04/04/25 09:39	50
Sulfate	1500		50.0	21.0	mg/L			04/04/25 09:39	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	1.84		0.100	0.0360	mg/L		03/28/25 09:00	03/28/25 18:08	1
Lithium	0.255		0.0100	0.00250	mg/L		03/28/25 09:00	03/28/25 18:08	1
Sodium	197		1.00	0.480	mg/L		03/28/25 09:00	03/28/25 18:08	1
Strontium	3.60	B	0.00400	0.00212	mg/L		03/28/25 09:00	03/31/25 13:49	4

Definitions/Glossary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

Qualifiers

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.

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: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: LCS 310-450731/4

Matrix: Water

Analysis Batch: 450731

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	9.383		mg/L		94	90 - 110
Sulfate	10.0	10.64		mg/L		106	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-449942/1-A

Matrix: Water

Analysis Batch: 450182

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 449942

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.0360		0.100	0.0360	mg/L		03/28/25 09:00	03/28/25 17:01	1
Lithium	<0.00250		0.0100	0.00250	mg/L		03/28/25 09:00	03/28/25 17:01	1
Sodium	<0.480		1.00	0.480	mg/L		03/28/25 09:00	03/28/25 17:01	1

Lab Sample ID: MB 310-449942/1-A

Matrix: Water

Analysis Batch: 450313

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 449942

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Strontium	0.001067		0.00100	0.000530	mg/L		03/28/25 09:00	03/31/25 12:51	1

Lab Sample ID: LCS 310-449942/2-A

Matrix: Water

Analysis Batch: 450182

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 449942

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.200	0.1996		mg/L		100	80 - 120
Lithium	0.200	0.1925		mg/L		96	80 - 120
Sodium	2.00	2.002		mg/L		100	80 - 120

Lab Sample ID: LCS 310-449942/2-A

Matrix: Water

Analysis Batch: 450313

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 449942

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Strontium	0.200	0.1820		mg/L		91	80 - 120

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

HPLC/IC

Analysis Batch: 450731

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-302534-1	MW-16	Total/NA	Ground Water	9056A	
LCS 310-450731/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 449942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-302534-1	MW-16	Total/NA	Ground Water	3005A	
MB 310-449942/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-449942/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 450182

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-302534-1	MW-16	Total/NA	Ground Water	6020B	449942
MB 310-449942/1-A	Method Blank	Total/NA	Water	6020B	449942
LCS 310-449942/2-A	Lab Control Sample	Total/NA	Water	6020B	449942

Analysis Batch: 450313

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-302534-1	MW-16	Total/NA	Ground Water	6020B	449942
MB 310-449942/1-A	Method Blank	Total/NA	Water	6020B	449942
LCS 310-449942/2-A	Lab Control Sample	Total/NA	Water	6020B	449942

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

Client Sample ID: MW-16
Date Collected: 03/20/25 11:00
Date Received: 03/21/25 14:10

Lab Sample ID: 310-302534-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		50	450731	WZC8	EET CF	04/04/25 09:39
Total/NA	Prep	3005A			449942	Y3EC	EET CF	03/28/25 09:00
Total/NA	Analysis	6020B		1	450182	NFT2	EET CF	03/28/25 18:08
Total/NA	Prep	3005A			449942	Y3EC	EET CF	03/28/25 09:00
Total/NA	Analysis	6020B		4	450313	NFT2	EET CF	03/31/25 13:49

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

Accreditation/Certification Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
6020B	3005A	Ground Water	Lithium

Method Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil

Job ID: 310-302534-1

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

Protocol References:

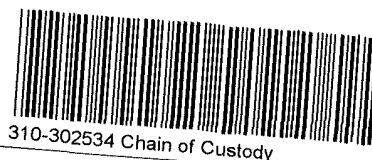
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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



Environment Testing
America



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Chem-Eco</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE <u>3-21-25</u>	TIME <u>1410</u>	Received By: <u>CGC</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>P</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>2.4</u>		Corrected Temp (°C): <u>2.4</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
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			

[illegible]

Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-302534-1

Login Number: 302534

List Number: 1

Creator: Hirsch, Preston

List Source: Eurofins Cedar Falls

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	

ANALYTICAL REPORT

PREPARED FOR

Attn: Steven Demasi
Glencore Ltd
Three Stamford Plaza
301 Trersser Blvd
Stamford, Connecticut 06901

Generated 8/14/2025 4:18:39 PM

JOB DESCRIPTION

Keokuk Ferro-Sil Landfill
13-024

JOB NUMBER

310-312419-1

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
Hannah Dietz, Project Manager I
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Case Narrative

Client: Glencore Ltd
Project: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1

Job ID: 310-312419-1

Eurofins Cedar Falls

Job Narrative 310-312419-1

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 sample was received on 8/1/2025 3:45 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.9°C.

Metals

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: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-312419-1	MW-16	Ground Water	07/30/25 11:30	08/01/25 15:45	Iowa

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

Client Sample ID: MW-16

Lab Sample ID: 310-312419-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	2.23		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.296		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	233		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	3.29		0.00400	0.00212	mg/L	4		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

Client Sample ID: MW-16

Lab Sample ID: 310-312419-1

Date Collected: 07/30/25 11:30

Matrix: Ground Water

Date Received: 08/01/25 15:45

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2.23		0.100	0.0500	mg/L		08/13/25 09:30	08/13/25 17:28	1
Lithium	0.296		0.0100	0.00290	mg/L		08/13/25 09:30	08/13/25 17:28	1
Sodium	233		1.00	0.650	mg/L		08/13/25 09:30	08/13/25 17:28	1
Strontium	3.29		0.00400	0.00212	mg/L		08/13/25 09:30	08/14/25 13:55	4

Definitions/Glossary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

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: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-463426/1-A
Matrix: Water
Analysis Batch: 463607

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 463426

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.0500		0.100	0.0500	mg/L		08/13/25 09:30	08/13/25 17:12	1
Lithium	<0.00290		0.0100	0.00290	mg/L		08/13/25 09:30	08/13/25 17:12	1
Sodium	<0.650		1.00	0.650	mg/L		08/13/25 09:30	08/13/25 17:12	1
Strontium	<0.000530		0.00100	0.000530	mg/L		08/13/25 09:30	08/13/25 17:12	1

Lab Sample ID: LCS 310-463426/2-A
Matrix: Water
Analysis Batch: 463607

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 463426

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.200	0.2180		mg/L		109	80 - 120
Lithium	0.200	0.1944		mg/L		97	80 - 120
Sodium	2.00	2.059		mg/L		103	80 - 120
Strontium	0.200	0.1858		mg/L		93	80 - 120

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

Metals

Prep Batch: 463426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-312419-1	MW-16	Total/NA	Ground Water	3005A	
MB 310-463426/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-463426/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 463607

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-312419-1	MW-16	Total/NA	Ground Water	6020B	463426
MB 310-463426/1-A	Method Blank	Total/NA	Water	6020B	463426
LCS 310-463426/2-A	Lab Control Sample	Total/NA	Water	6020B	463426

Analysis Batch: 463704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-312419-1	MW-16	Total/NA	Ground Water	6020B	463426

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

Client Sample ID: MW-16
Date Collected: 07/30/25 11:30
Date Received: 08/01/25 15:45

Lab Sample ID: 310-312419-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			463426	WK2X	EET CF	08/13/25 09:30
Total/NA	Analysis	6020B		1	463607	NFT2	EET CF	08/13/25 17:28
Total/NA	Prep	3005A			463426	WK2X	EET CF	08/13/25 09:30
Total/NA	Analysis	6020B		4	463704	NFT2	EET CF	08/14/25 13:55

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

Accreditation/Certification Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
6020B	3005A	Ground Water	Lithium

Method Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-312419-1
SDG: 13-024

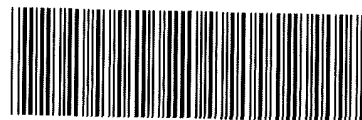
Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

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>Keokuk Ferrosil</u>			
City/State:	CITY	STATE	Project.
Receipt Information			
Date/Time Received:	DATE <u>8-1-25</u>	TIME <u>1545</u>	Received By: <u>EH</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>5.9</u>		Corrected Temp (°C): <u>5.9</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
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			
<u>label on container blank</u>			

[illegible]

Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-312419-1

SDG Number: 13-024

Login Number: 312419

List Number: 1

Creator: Cappi, Sage

List Source: Eurofins Cedar Falls

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.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	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	

ANALYTICAL REPORT

PREPARED FOR

Attn: Steven Demasi
Glencore Ltd
Three Stamford Plaza
301 Trersser Blvd
Stamford, Connecticut 06901

Generated 9/2/2025 4:42:35 PM

JOB DESCRIPTION

Keokuk Ferro-Sil Landfill

JOB NUMBER

310-314034-1

Eurofins Cedar Falls

Job Notes

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Authorization



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Authorized for release by
Hannah Dietz, Project Manager I
Hannah.Dietz@et.eurofinsus.com
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Case Narrative

Client: Glencore Ltd
Project: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

Job ID: 310-314034-1

Eurofins Cedar Falls

Job Narrative 310-314034-1

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 sample was received on 8/22/2025 1:30 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.9°C.

HPLC/IC

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

Metals

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

Eurofins Cedar Falls

Sample Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-314034-1	MW-16	Ground Water	08/21/25 10:00	08/22/25 13:30	Iowa

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Detection Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

Client Sample ID: MW-16

Lab Sample ID: 310-314034-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	247		50.0	22.5	mg/L	50		9056A	Total/NA
Sulfate	2620		50.0	21.0	mg/L	50		9056A	Total/NA
Iron	2.45		0.100	0.0500	mg/L	1		6020B	Total/NA
Lithium	0.278		0.0100	0.00290	mg/L	1		6020B	Total/NA
Sodium	243		1.00	0.650	mg/L	1		6020B	Total/NA
Strontium	3.22		0.00400	0.00212	mg/L	4		6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

Client Sample ID: MW-16

Lab Sample ID: 310-314034-1

Date Collected: 08/21/25 10:00

Matrix: Ground Water

Date Received: 08/22/25 13:30

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	247		50.0	22.5	mg/L			08/26/25 21:35	50
Sulfate	2620		50.0	21.0	mg/L			08/26/25 21:35	50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2.45		0.100	0.0500	mg/L		08/27/25 09:00	08/30/25 17:39	1
Lithium	0.278		0.0100	0.00290	mg/L		08/27/25 09:00	08/30/25 17:39	1
Sodium	243		1.00	0.650	mg/L		08/27/25 09:00	08/30/25 17:39	1
Strontium	3.22		0.00400	0.00212	mg/L		08/27/25 09:00	09/02/25 14:54	4

Definitions/Glossary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

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: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-465048/3

Matrix: Water

Analysis Batch: 465048

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			08/26/25 16:46	1
Sulfate	<0.420		1.00	0.420	mg/L			08/26/25 16:46	1

Lab Sample ID: LCS 310-465048/4

Matrix: Water

Analysis Batch: 465048

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	9.416		mg/L		94	90 - 110
Sulfate	10.0	9.635		mg/L		96	90 - 110

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-464825/1-A

Matrix: Water

Analysis Batch: 465295

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 464825

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<0.0500		0.100	0.0500	mg/L		08/27/25 09:00	08/30/25 16:30	1
Lithium	<0.00290		0.0100	0.00290	mg/L		08/27/25 09:00	08/30/25 16:30	1
Sodium	<0.650		1.00	0.650	mg/L		08/27/25 09:00	08/30/25 16:30	1
Strontium	<0.000530		0.00100	0.000530	mg/L		08/27/25 09:00	08/30/25 16:30	1

Lab Sample ID: LCS 310-464825/2-A

Matrix: Water

Analysis Batch: 465295

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 464825

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	0.200	0.2099		mg/L		105	80 - 120
Lithium	0.200	0.2063		mg/L		103	80 - 120
Sodium	2.00	2.280		mg/L		114	80 - 120
Strontium	0.200	0.1884		mg/L		94	80 - 120

QC Association Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

HPLC/IC

Analysis Batch: 465048

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-314034-1	MW-16	Total/NA	Ground Water	9056A	
MB 310-465048/3	Method Blank	Total/NA	Water	9056A	
LCS 310-465048/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 464825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-314034-1	MW-16	Total/NA	Ground Water	3005A	
MB 310-464825/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-464825/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 465295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-314034-1	MW-16	Total/NA	Ground Water	6020B	464825
MB 310-464825/1-A	Method Blank	Total/NA	Water	6020B	464825
LCS 310-464825/2-A	Lab Control Sample	Total/NA	Water	6020B	464825

Analysis Batch: 465407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-314034-1	MW-16	Total/NA	Ground Water	6020B	464825

Lab Chronicle

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

Client Sample ID: MW-16
Date Collected: 08/21/25 10:00
Date Received: 08/22/25 13:30

Lab Sample ID: 310-314034-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		50	465048	ZRI4	EET CF	08/26/25 21:35
Total/NA	Prep	3005A			464825	QTZ5	EET CF	08/27/25 09:00
Total/NA	Analysis	6020B		4	465407	NFT2	EET CF	09/02/25 14:54
Total/NA	Prep	3005A			464825	QTZ5	EET CF	08/27/25 09:00
Total/NA	Analysis	6020B		1	465295	ZRI4	EET CF	08/30/25 17:39

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

Accreditation/Certification Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

Laboratory: Eurofins Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
6020B	3005A	Ground Water	Lithium

Method Summary

Client: Glencore Ltd
Project/Site: Keokuk Ferro-Sil Landfill

Job ID: 310-314034-1

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

Protocol References:

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



Environment Testing
America



310-314034 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>Keokuk Ferrosil</u>			
City/State:	CITY	STATE	Project
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>06/22/25</u>	<u>1330</u>	<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):		Corrected Temp (°C):	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1	CONTAINER 2	
	<u>plc 250 ml</u>	<u>plc 250 ml</u>	
Uncorrected Temp (°C):	<u>7.3</u>	<u>5.9</u>	
Corrected Temp (°C):	<u>7.3</u>	<u>5.9</u>	
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

604202 eurofins

Environment Testing
TestAmerica

TAL-8210

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☒ Other

Client Contact Company Name: Keotuk Ferras, Ltd. Address: c/o Glenview Ltd. City/State/Zip: Manhattan NY Phone: _____ Fax: _____ Project Name: 13-024 Site: Keotuk Ferras, Ltd. PO #: 13-024		Project Manager: Carol Wilson Tel/Email: chemcarol@netins.net Analysis Turnaround Time: ☐ CALENDAR DAYS ☐ WORKING DAYS TAT if different from Below: ☐ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day		Site Contact: Date: 8/21/25 Carrier: _____ Lab Contact: _____ Perform MS / MSD (Y / N) _____ Filtered Sample (Y / N) _____ Sample Type (C=Comp, G=Grab) _____ Sample Date: 8/21/25 Sample Time: 10:00A Matrix: GUL 2 # of Cont.: 2		COC No 1 of 1 COCs Sampler: Carol Wilson For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No: _____ Sample Specific Notes:	
Sample Identification: MW-16		Chelate Sulfate Total metals: Fe, Pb, Ni, Sr		Sample Specific Notes:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months	
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other		Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample		Special Instructions/QC Requirements & Comments: Total metals = iron, lithium, sodium, strontium		Cooler Temp (°C) Obs'd _____ Cor'd _____ Therm ID No _____	
Relinquished by: Carol E. Wilson		Company: CHEM-ECO		Date/Time: 8/22/25		Received by: _____	
Relinquished by: _____		Company: _____		Date/Time: _____		Received by: _____	
Relinquished by: _____		Company: _____		Date/Time: _____		Received by: _____	



Login Sample Receipt Checklist

Client: Glencore Ltd

Job Number: 310-314034-1

SDG Number:

Login Number: 314034

List Number: 1

Creator: Hirsch, Preston

List Source: Eurofins Cedar Falls

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	