

2025
ANNUAL GROUNDWATER QUALITY REPORT
OF
THE AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91C
AMES, IOWA

by:
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November, 2025



6004-25A.320

Certification

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Certification

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.	
		
	DOUGLAS J. LUZBETAK, P.E.	DATE
	License number 12654	
	My license renewal date is December 31, 2026.	
	Pages or sheets covered by this seal: 	

Section 1.0 Background Information

1.1 Report Format

Table 1 through Table 13 are attached to this report and satisfy the IDNR requirement to provide the tables to meet the IDNR format requirements included in the February 7, 2023, Letter from IDNR (Doc #105774).

1.2 Report Priority

No requests are made herein for priority review of this document.

1.3 Period of Report Coverage

Water quality data evaluation is based on a running compilation of data beginning in April 1991. Statistical evaluations herein are based on the most recent water quality data collected through August 28, 2025.

1.4 Current Site Maps

Figure 1 is attached illustrating the current site features, monitoring well locations, and subsurface gas probe locations.

Figure 2 represents the shallow groundwater contour map. This map has been updated to include the groundwater diversion lines (9 lines total) below the fill areas. This update was requested February 7, 2023 (IDNR Comment Letter - Doc #105774).

Figure 3 represents the Potentiometric Map of the Deep Sand Layer. This map has been updated to include the groundwater diversion lines (9 lines total) below the fill areas. This update was requested February 7, 2023 (IDNR Comment Letter - Doc #105774).

1.5 Site Status and Applicable Rules

Site Location

The Ames-Story Environmental Landfill is located in a portion of the E½ of Section 1, T83N, R24W, Story County, Iowa. The site is within the Corporate Limits of Ames, Iowa and is described as parcels and lots and is situated at the west end of Watt Street, Ames, Iowa. The facility operates under the Iowa Department of Natural Resources (IDNR) Permit Number 85-SDP-13-91C.

Landfill Layout

The geology and hydrogeology are described in the 1996 HIR/HMSP (Doc #36043). Previous land use is undeveloped land within an industrial portion of Ames. The solid waste stream included construction and demolition waste from May 1, 1991 through June 30, 2011.

Trenches 1 through 4 are located within the north portion of the site and were constructed between 1990 and 1996. Trenches 5 & 6 are located within the south portion of the site. Trench 5 construction was completed and approved for waste acceptance June 16, 1999. Trench 6 construction was completed and approved for waste acceptance May 26, 2000.

Landfilling in all trenches ceased prior to June 30, 2011. Figure 1 illustrates the site layout.

Groundwater collection and diversion piping exists below the liner at this facility. The groundwater collection and diversion piping on the north side of the site (Trenches 1-4) discharges to the stream along the north side of the site. The groundwater collection and diversion piping on the north side is monitored at the end of the discharge piping at sampling point SW-3. The groundwater collection and diversion piping on the south side of the site (Trenches 5-6) discharges to the City of Ames Sanitary sewer and is conveyed to the City of Ames WWTP. There is no sampling point in the groundwater collection and diversion piping on the south side of the site. The Water Table Contour Map (Figure 2) and the Potentiometric Map of the Deep Sand Layer (Figure 3) are attached illustrating the groundwater collection system effects.

Applicable Rules

Iowa Administrative Code (IAC) 567-114 is applicable to the site.

MONITORING WELL MAINTENANCE PERFORMANCE REEVALUATION

Monitoring Well Maintenance Performance Reevaluation Reports (MWMPR) dated June 10, 1993; March 30, 1998; June, 2003; December, 2010; April, 2015; April, 2020; and April, 2025 were prepared and submitted in accordance with IAC 567-114.21. The 2025 MWMPR (most recent) concluded that the integrity of all MW's was intact, and that no changes in the HMSP monitoring wells were recommended. The Monitoring Well Maintenance Performance Reevaluation is due in 2030, unless a variance to IAC 114.21 is requested. Table 3 outlines the status of well performance and maintenance activities performed as required by IAC 567-114.21(2). Water elevation information is summarized in Table 4 and Table 4A.

Monitoring Well Redevelopment – MW-35

The Spring (3/24/2023) water quality results indicated an intermittent pattern of elevated arsenic concentrations at monitoring well MW-35, with the March 24, 2023 concentration reported at 102.0 ug/L.

MW-35 was redeveloped on June 13, 2023 in response to the March 24, 2023 arsenic result at MW-35. Redevelopment was accomplished by installing a surge disk on waterra tubing and pumping the well for several minutes while 3 gallons of water heavily laden with silt and fines was removed from well and the well pack. Following surging activities the well was pumped at a rate of 1.0 gpm using an electric submersible pump for 354 minutes (7:28 am to 1:22 pm). Approximately 354 gallons were pumped from MW-35. A sample was collected from the discharge of the electric pump at completion of pumping and was submitted to Keystone Labs for arsenic analysis. Testing indicates that the detected concentration of arsenic on June 13, 2023 (5.1 ug/L) following redevelopment and pumping of MW-35 was considerably lower than on March 24, 2023 (102.0 ug/L). Further the detected concentration of arsenic on September 13, 2023 (6.9 ug/L) was considerably lower than on March 24, 2023.

In 2024 the same pattern of reported “elevated” and “normal” arsenic concentrations are documented. The 3/5/2024 sample result for arsenic at MW-35 is reported at 194 ug/L, while the 9/3/2024 sample result for arsenic at MW-35 is reported at 21.6 ug/L.

In 2025 the same pattern of reported “elevated” and “normal” arsenic concentrations are documented. The 3/7/2025 sample result for arsenic at MW-35 is reported at 174 ug/L, while the 8/28/2025 sample result for arsenic at MW-35 is reported at 36.4 ug/L.

There were no redevelopment activities performed at MW-35 in 2024 or 2025.

It appears that the elevated arsenic at MW-35 may be tied to a condition within the well itself or within the formation at MW-35, rather than from the landfill. Of the eight (8) recorded instances of elevated arsenic in MW-35, six (6) occur in March of each year (see Table 9).

High & Low Water Levels

Current year water elevation data is included on Table 4. Historic water elevation data (1991-2025) is included in the Table 4 Supplement. A Water Table Contour Map (Figure 2) and A Potentiometric Map of the Deep Sand layer (Figure 3) dated August 28, 2025 are included with this report and illustrate the water surfaces and the effects of the topography. Also, the groundwater underdrain flowline elevations are included on Figure 2 and Figure 3 as requested in the February 7, 2023 Letter from IDNR (Doc #105774). Review of the maps confirms control of the water table and sand seam aquifers at this site.

Review of the 2025 water elevation data does not indicate any remarkable water elevation conditions.

Well Depth & Sedimentation

Well depth measurements were made August 28, 2025. Review of the well depth data included on Table 4 indicates that well sedimentation is estimated to be less than one (1) foot at all site monitoring wells, with the exception of MW-34 (1.20 feet sediment).

Well Recharge Rates & Chemistry

The baseline measured horizontal hydraulic conductivity testing results (1991 to 2003) for each site monitoring well is included on Table 4. Horizontal hydraulic conductivities ranged between 10^{-3} cm/sec and 10^{-6} cm/sec.

Field recovery data recorded on March 7, 2025 and March 31, 2025 (also on Table 4) indicates that the monitoring well hydraulic conductivities across the site demonstrate the same range (10^{-3} cm/sec and 10^{-6} cm/sec) and that the recorded 2025 conductivities at each well fall within one order of magnitude of the baseline hydraulic conductivity. Hydraulic conductivity information indicates that recharge to the individual wells remains sufficient to promote collection of representative water quality samples and the wells were functioning as intended. Monitoring well recharge reevaluation is due every five (5) years according to 114.21(2)(d), and should be evaluated again in 2030.

Based on the apparent static condition of the water surfaces across the site, it appears that the semi-annual water elevation data is sufficient to adequately monitor the hydrologic condition of the site. Review of the water elevation data for 2025 does not indicate excessive variability compared to historic water elevation data. The wells are interpreted to be appropriately located to detect any impact, should it occur. Water elevation data is summarized in Table 4 and Table 4A.

Section 2.0 Reporting Period Monitoring Activities

The Hydrologic Monitoring for the site is approved by Permit Revision #1 (dated June 30, 2023 (Doc# 107098)) including the approved Waiver dated June 1, 2023. The current HMSP is summarized in the Table 1. The HMSP Implementation Schedule for 2026 is itemized in Table 2.

The site (both the north and south fill areas) is characterized as having two (2) groundwater systems that are monitored as part of the HMSP, the Water Table system and the Deep Sand Layer System. Background monitoring wells include MW-6, MW-7, MW-8, MW-22 (plugged), MW-27 (plugged), MW-28, MW-29, MW-36, and MW-37. The approved Waiver dated June 1, 2023, allows four (4) of the seven (7) background wells to be sampled each year according to the semi-annual schedule included in the waiver. The background monitoring wells are functioning effectively as valid sampling points based on the hydrogeology and the water quality results.

Downgradient monitoring points include MW-25, MW-33, MW-34, MW-35, MW-39, MW-40, and SW-3 (tile). Provision 5e of the Permit requires semi-annual sampling for indicator compounds to be performed at the designated monitoring wells at the site. The TOX and phenol testing requirements included in IAC 114.26(4)"f" are reduced to once per five (5) years in the approved Waiver dated June 1, 2023.

Supplemental compounds arsenic, total; boron, total; sulfate; and turbidity are also required to be sampled semi-annually in Provision 5e of the Permit.

A summary of the planned 2026 sample collection events at each well is included on Table 2.

Field sampling information for the March 7, 2025 and August 28, 2025 sampling episodes is included on the field forms (IDNR Form 542-1322) in Appendix A.

A comprehensive summary of Analytical Data for the episodes between April 23, 1991 and August 28, 2025 is included on Table 9.

2.1 Current Detection Monitoring Activities

Background wells are currently MW-6, MW-7, MW-8, MW-22 (plugged), MW-27 (plugged), MW-28, MW-29, MW-36, and MW-37.

Downgradient monitoring points include MW-25, MW-33, MW-34, MW-35, MW-39, MW-40, and SW-3 (south underdrain tile).

2.2 Current Assessment Monitoring Activities

There are no assessment monitoring activities at the site.

A Site-Wide Arsenic Source and Speciation Study was completed in September, 2017, (Doc # 90322) and identified both natural arsenic sources and natural reducing conditions at the site.

2.3 Current Corrective Action Activities

There are no corrective actions or corrective action monitoring activities at the site.

Section 3.0 Data Evaluation and Summary

Field Sampling Forms for March 7, 2025 and August 28, 2025 sample collection episodes are included in Appendix A. Chemical analytical results for the March 7, 2025 and August 28, 2025 sample collection episodes are included in Appendix B. The chemical analytical data is also presented in tabular and graphical form by chemical compound over time in Table 9/10. The Summary Tables and statistical computations of background are included in Table 5. The graphs of the concentration versus time for the downgradient sampling points illustrate those compounds that exceed statistical limits and are incorporated in Table 10. Groundwater Protection Standards have also been included on Tables 5-10. Review of Tables 5-10 indicate the following observations.

QUALITY ASSURANCE/QUALITY CONTROL

A blind duplicate sample was collected at MW-7 during the March 7, 2025, sampling episode. A blind duplicate sample was collected at MW-40 during the August 28, 2025, sampling episode.

The purpose of the field duplicate is to evaluate the precision of sample collection and analysis process from the field through the laboratory. The calculation of the Relative Percent Difference (RPD) for duplicate pair results is used to evaluate the precision.

The Quality Control (QC) limit for the RPD on field duplicates is established at thirty percent (30%) for duplicate pairs that have reported concentrations five (5) times greater than the laboratory Reporting Limit. For samples and respective duplicates with reported analyte concentrations nearer the Reporting Limit, the RPD calculations demonstrate greater variability and the RPD can be very large. RPD values are considered non-representative in the following conditions:

- a) Both the original and the duplicate results are less than five (5) times the Reporting Limit.
- b) One or both results are qualified, flagged, or estimated.
- c) One or both results are non-detected.

The results of the blind duplicate and monitoring well results on March 7, 2025 indicate that arsenic did not correlate between the sample split. The arsenic reported for MW-7 (0.0664 mg/L) was a fraction of the reported arsenic for the duplicate (0.278 mg/L). Review of the

reported arsenic in the duplicate indicates that the arsenic is an order of far greater than all arsenic concentrations reported for site monitoring wells on March 7, 2025.

Based on the exceptional value for arsenic in the duplicate sample, the laboratory was asked to review the data. The laboratory reported that the reported concentrations in both the well (MW-7) and in the duplicate were confirmed by reanalysis. Since the reported concentrations in the duplicate are far greater than the sample (and all site samples on March 7, 2025) the duplicate is dismissed as an error (lab or field error). Therefore, the March 7, 2025, results for MW-7 are utilized for this evaluation.

The results of the blind duplicate and the monitoring well results August 28, 2025, were within the limits established and indicate that the data quality is acceptable without restriction.

BACKGROUND DATA VALIDATION

A summary table of field measured turbidity is included in Table 9.

The background data for total metals utilized herein has been restricted to include only sample results that have been collected by “No Purge” methods in order to avoid turbidity related issues that may have been associated with historic sample collection methods. Total metals using no-purge sampling techniques have been performed at the facility since the September 9, 2014 sampling episode.

SITE SPECIFIC GWPS

Review of the control limit calculated for arsenic indicates that the normal background concentration for arsenic (0.0376 mg/L) exceeds the Statewide Standard (0.01 mg/L) published in Iowa Administrative Code (IAC) 567, Chapter 137. In instances where the natural background concentrations for a compound exceed the Statewide Standard, site-specific GWPS should be calculated using site-specific information. In this instance, the calculated control limit for arsenic (0.0376 mg/L) is utilized as the Site-Specific GWPS for the facility. For many compounds tested, GWPS do not exist (Table 5). For compounds that do have GWPS (beyond arsenic), the published IAC 567, Chapter 137 GWPS are utilized.

STATISTICALLY SIGNIFICANT INCREASES (SSI)

Test results from background monitoring wells (Table 5) are utilized to establish background conditions of site groundwater.

The current HMSP and sample collection methods have been in-place since September 9, 2014. All downgradient well data collected since September 9, 2014 is evaluated herein. In the downgradient wells, compounds that have exceeded a calculated control limit in 2025 are summarized in Table 6.

The water quality data at each downgradient well is also evaluated over time in Table 7 which summarizes compounds in downgradient wells that have exceeded a control limit at some point since September 9, 2014.

Note that in wells where compounds have been detected that exceed a control limit in 2019 - 2025, supplemental sampling has not been implemented. Prior to February 18, 2019 the compounds tested in water were extensive. The testing of barium, cobalt, lithium, manganese, strontium, and vanadium was discontinued following the September, 2018 sample collection event based on the undetected or insignificant concentrations of the supplemental compounds (Doc #94402 and Doc #94423). The supplemental sampling for arsenic, boron, and sulfate has been on-going to gauge water quality and water quality changes over time at this site in accordance with Permit Revision #1 (dated June 30, 2023 (Doc# 107098)).

Table 8 summarizes compounds in downgradient wells that exceed a GWPS. It is noted that the only compound detected that exceeds a GWPS is arsenic at MW-34 (intermittently over 3.0 years ago), MW-35 (intermittently, typically in the Spring), and MW-39 (intermittently – over 4.0 years ago). There are no other compounds recorded that exceed the GWPS.

As discussed in the Arsenic Source and Speciation Study, dated September, 2017, (Doc # 90322) the oxidation-reduction potential (ORP) in the vicinity of MW-34 and MW-35 is anticipated to vary in the alluvial sands along the stream. The variable ORP is anticipated to be the cause of the highly variable arsenic concentrations detected at MW-34 and MW-35 over time.

The regional land use is industrial, and the City of Ames trunk sewer lines are present along the creek along the north side of the facility (near MW-25, MW-33, MW-34, and MW-35) and along the creek southwest of the facility.

The comprehensive summary of all water quality data over time is included in Table 9/10. Exceedances of the control limits for each respective compound in the downgradient wells are highlighted in yellow. Where a compound concentration exceeds a GWPS (arsenic only), the text is included in bold red.

The highlights (in yellow and in red text) are added to Table 9 & Table 10 to aid in visual tracking of exceedances over time.

No additional supplemental sampling is recommended.

ASSESSMENT MONITORING SUMMARY

Not Applicable.

STATISTICALLY SIGNIFICANT LEVELS (SSL)

Not Applicable.

ASSESSMENT OF CORRECTIVE MEASURES (ACM)

Not Applicable.

CORRECTIVE MEASURES MONITORING PLAN (CAMP)

Not Applicable.

Section 4.0 Leachate Collection System Performance Evaluation

General - The leachate control system (LCS) consists of a series of gravity collection pipes that underlie the trench fills. Trenches 1 through 4 are located north of a topographic divide and the LCS drain north to a City of Ames interceptor sanitary sewer located along the stream to the north. The LCS in Trenches 5 and 6 are located south of the topographic divide and drains south to a City of Ames interceptor sanitary sewer located along the railroad to the south-southwest.

The leachate collection layer and leachate collection piping exist above the liner at this facility and controls the head on the liner. Four (4) leachate piezometers exist in the north portion of the site to monitor leachate head. Two (2) leachate piezometers exist in the south portion of the site to monitor leachate head. Leachate well numbering (LPZ-1, LPZ-2, LPZ-3, LPZ-4R, LPZ-5R, and LPZ-6R) corresponds directly to the trench in which the leachate piezometer is located.

Filling and capping of the entire site is complete (completed 2011). As required by the approved Development and Operational Plans (DOPS), leachate head monitoring wells have been installed within each Trench. The four (4) leachate piezometers in the north trenches (Trenches 1-4) were installed in May, 2003. Leachate piezometer LPZ-4 was replaced on November 23, 2016 with LPZ-4R. The two (2) leachate piezometers in the south trenches (Trenches 5 & 6) were installed between November 16, 2007 and November 27, 2007. The wellheads in Trench 5 and 6 were modified in October, 2011 during site closure. Leachate piezometer LPZ-5 was replaced on December 17, 2014 with LPZ-5R. Leachate piezometer LPZ-6 was replaced on June 13, 2023 with LPZ-6R (Doc #107015).

Leachate Line Cleaning - The leachate lines were cleaned on the following dates in 2020, 2021, 2022, 2023, and 2025:

January 28, 2020 to February 1, 2020
November 6, 2020 to November 9, 2020
May 20, 2021
November 24, 2021
November 1, 2022 to November 2, 2022
October 26, 2023 to October 27, 2023
October 13, 2025 to October 14, 2025

In accordance with the IDNR Letter dated January 12, 2022 (Doc #102010), the leachate line in Phase 5 was cleaned annually in 2022 and 2023. Due to the consistency of the measurements in the leachate piezometers in Phase 5 over time, the 2023 AWQR recommended that the cleaning schedule be returned to the standard 3-year frequency. IDNR approved this request on June 4, 2024 (Doc #110203). The next leachate line cleaning is tentatively scheduled to occur in 2028.

Leachate Head Measurements - Leachate liquid elevations at the six (6) leachate piezometers have been recorded routinely (quarterly at a minimum) since installation and are summarized in Table 12.

The leachate thickness in Trench 1 (LPZ-1) has been recorded as ranging from dry to 0.50 feet over the last four (4) quarters. The leachate thickness in Trench 1 was recorded as 0.50 feet on September 3, 2025.

The leachate thickness in Trench 2 (LPZ-2) has been recorded as dry over the last four (4) quarters.

The leachate thickness in Trench 3 (LPZ-3) has been recorded as ranging from 0.15 to 0.80 feet over the last four (4) quarters. The leachate thickness in Trench 3 was recorded as 0.80 feet on September 3, 2025.

The leachate thickness in Trench 4 (LPZ-4R) has been recorded as dry over the last four (4) quarters.

Since installation of LPZ-5R in late 2014, the leachate thickness in Trench 5 has ranged from *dry* to 2.46 ft. Over the last four (4) quarters, the leachate thickness has ranged from 1.74 to 2.46 feet. The leachate thickness in Trench 5 was recorded as 2.46 ft. on September 3, 2025.

Since installation of LPZ-6R on June 13, 2023, the leachate thickness in Trench 6 has ranged from 0.65 to 7.80 feet. The leachate thickness in Trench 6 was recorded as 7.80 ft. on September 3, 2025.

Response to the Leachate Thicknesses recorded at LPZ-5R & LPZ-6R - To address concerns included in the IDNR letters dated January 2, 2020 (Doc #96684) and February 4, 2021 (Doc #99703), multiple leachate line cleanings in Trench 5 were performed in 2020 and 2021 (summarized above) in accordance with 114.26(11)"a"(8). In accordance with the IDNR Letter dated January 12, 2022 (Doc #102010), the leachate line in Phase 5R was cleaned annually in 2022 (completed November 2, 2022) and 2023 (completed October 27, 2023). Leachate lines were also proactively cleaned in both Phase 5R and Phase 6R in October, 2025.

The quarterly leachate thickness measurements are utilized to ascertain whether the multiple leachate line cleanings had a positive effect on the observed leachate head. Accelerated line cleaning frequency does not appear to have any appreciable effect on leachate head in Trench 5 or Trench 6.

In 2020 and 2021, the leachate thickness at LPZ-5R ranged from 1.41 feet to 2.18 feet, with an average thickness of 1.89 feet. In 2022, the leachate thickness at LPZ-5R ranged from 1.56 feet to 2.39 feet, with an average thickness of 1.72 feet. In 2023, the leachate thickness at LPZ-5R ranged from 2.16 feet to 2.26 feet, with an average thickness of 2.21 feet. In 2024, the leachate thickness at LPZ-5R ranged from 1.70 feet to 2.43 feet, with an average thickness of 1.99 feet. In 2025, the leachate thickness at LPZ-5R ranged from 1.74 feet to 2.46 feet, with an average thickness of 2.05 feet. The leachate thickness is approximately 2.0 feet on average and no further remedy appears warranted.

In 2007 through 2009 (prior to breaking), the leachate thickness at LPZ-6 ranged from 3.3 feet to 7.08 feet, with an average thickness of 4.73 feet. Following replacement, the leachate thickness at LPZ-6R ranges from 0.65 feet to 7.80 feet, with an average thickness of 5.01 feet. No further remedy appears warranted.

It is recognized that the average thickness of leachate on the liner in Trench 5 and Trench 6 consistently exceeds 12 inches (the intent of the design), even though the landfill was designed and constructed in accordance with requirements of IAC 567, Chapter 114.26(11)"a"(1) through (7).

Although the average recorded leachate thickness is greater than anticipated by design and construction (12 inches), the leachate collection system demonstrates highly consistent performance and is functionally successful in maintaining a lowered leachate head on the liner. Further, the

recorded performance in Trench 5 and 6 is appropriate to protect the soils, the surface water, and the groundwater from leachate contamination as per rule (114.26(1)“g”).

The leachate collection system drainage layer situated above the liner in Trench 5 and Trench 6 is connected to the Ames sanitary sewer system as a method of **primary** containment (Trench 5 completed June 16, 1999 and Trench 6 completed May 26, 2000). The groundwater diversion layer situated below the liner in Trench 5 and Trench 6 is connected to the Ames sanitary sewer system as a method of **secondary** containment (completed February 7, 2012 (Doc #68508)).

It is also noted that the top of liner in Trench 5 (903.52) is constructed lower than the liner bottom of Trench 6 (906.52) and leachate conveyance is designed to move from Trench 6 to Trench 5, then out to the sanitary sewer. The observed leachate elevations in Trench 5 and Trench 6 (all available readings over time) support that the leachate capture, and conveyance perform as designed.

Aside from the slightly elevated leachate thickness recorded at LPZ-5R and LPZ-6R available data suggest that closure and capping of the landfill is effective in controlling surges in leachate head during periods of wet weather, while the existing Leachate Collection System and Groundwater Diversion System successfully controls fluctuation in the leachate surface across the site by actively conveying leachate out of the closed fill system and dewatering groundwater below the landfill cells. The leachate control system generally appears to be functioning as intended (capturing leachate and lowering leachate head). The groundwater diversion system for Trench 5 and Trench 6 generally appears to be functioning as intended (capturing groundwater below the liner and conveying it to the sanitary sewer). Based on available data, it is interpreted that the existing Leachate Collection System and groundwater diversion system are effective in achieving and controlling a lowered leachate head elevation and maintaining groundwater quality standards at compliance monitoring points. It is also obvious the lowered leachate head is not 12 inches, or less, rather it is a value greater than 12 inches.

Leachate Analyses - Ames-Story Environmental Landfill was removed from the City of Ames Pretreatment Program by the City of Ames Water and Pollution Control Department effective August 25, 2015. Leachate was last sampled from the south manhole on March 27, 2017.

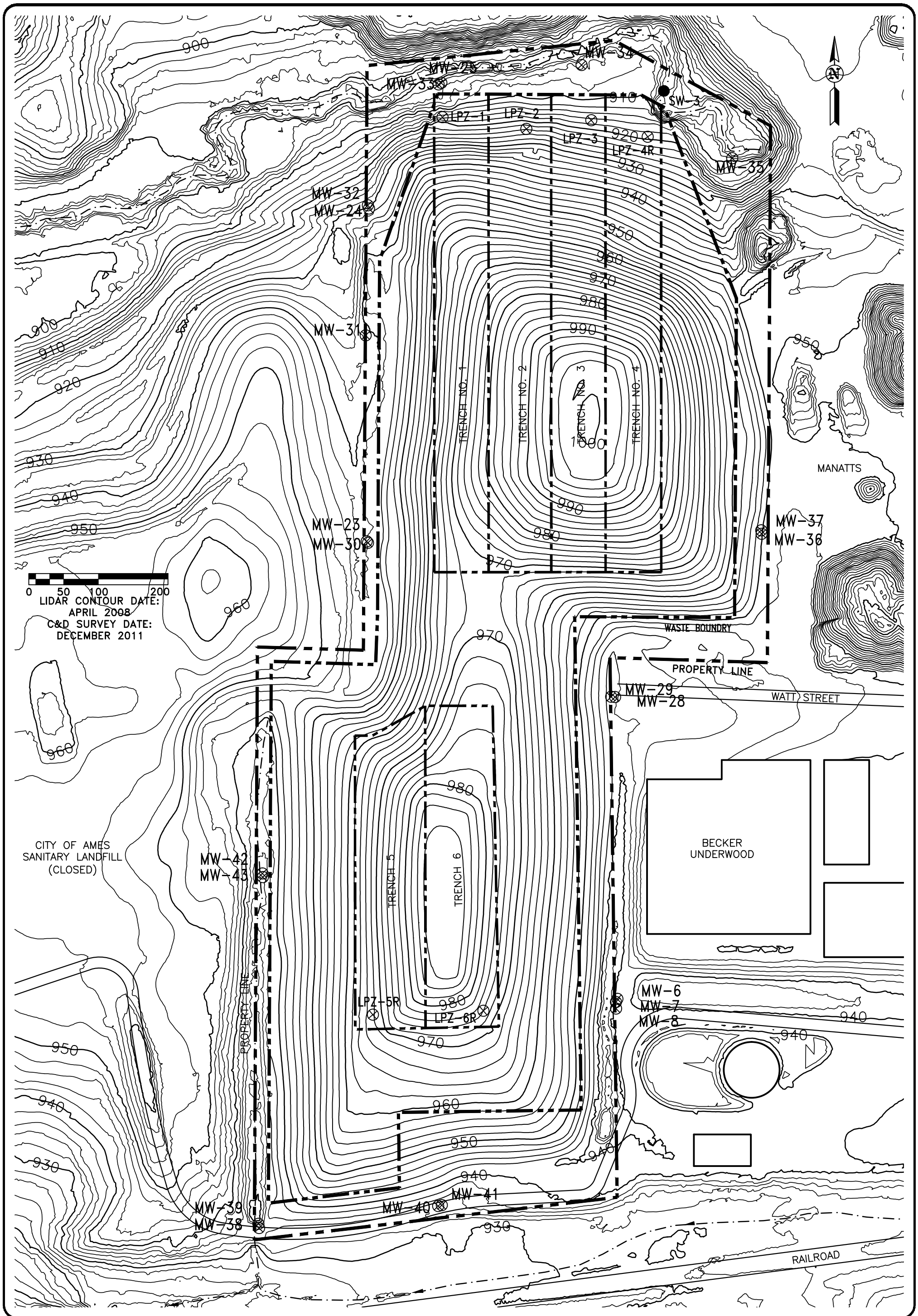
The historic chemical analysis of the leachate indicated that all parameters were within permit limits in effect at the time. The volume of leachate conveyed to the Ames Water Pollution Control Plant is reported as 2,244 gallons per month (approximately 26,932 gpy).

Section 5.0 Gas Monitoring

Explosive gas monitoring was performed quarterly through September 3, 2025, per IAC 567-114.26(15). Results of the explosive gas monitoring indicate that explosive gases were within applicable limits along the entire site perimeter. Gas monitoring results are summarized in Table 13. Note that no structures remain on the site.

Section 6.0 Recommendations

- a. Continue to perform sampling in accordance with Special Provision X.5 of the Revised Permit #1. Supplemental analyses are not recommended.
- b. Sample collected in September 2027 should include analyses for TOX and Phenol in accordance with IAC 114.26(4)“f” and the approved waiver dated June 1, 2023.
- c. Continue to evaluate water quality in the Annual Water Quality Report, due November 30 of each year.
- d. Continue to perform semi-annual water level measurements in March and September of each year and reevaluate the data in the Annual Water Quality Report due November 30 of each year.
- e. The Monitoring Well Maintenance Performance Reevaluation Report (MWMPR) should be performed in 2030, unless a request for a variance to rule is approved by IDNR.
- f. The leachate collection lines cleaning should return to the 3-year frequency per rule (next cleaning event in, or before the end of 2028).
- g. Continue to perform quarterly leachate level measurements and continue to re-evaluate in the Annual Groundwater Quality Report/Leachate Control System Performance Evaluation due November 30 of each year.
- h. Continue to perform quarterly explosive gas monitoring and report the results in the Annual Groundwater Quality Report.



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SITE PLAN

AMES-STORY ENVIRONMENTAL LANDFILL
AMES, IOWA

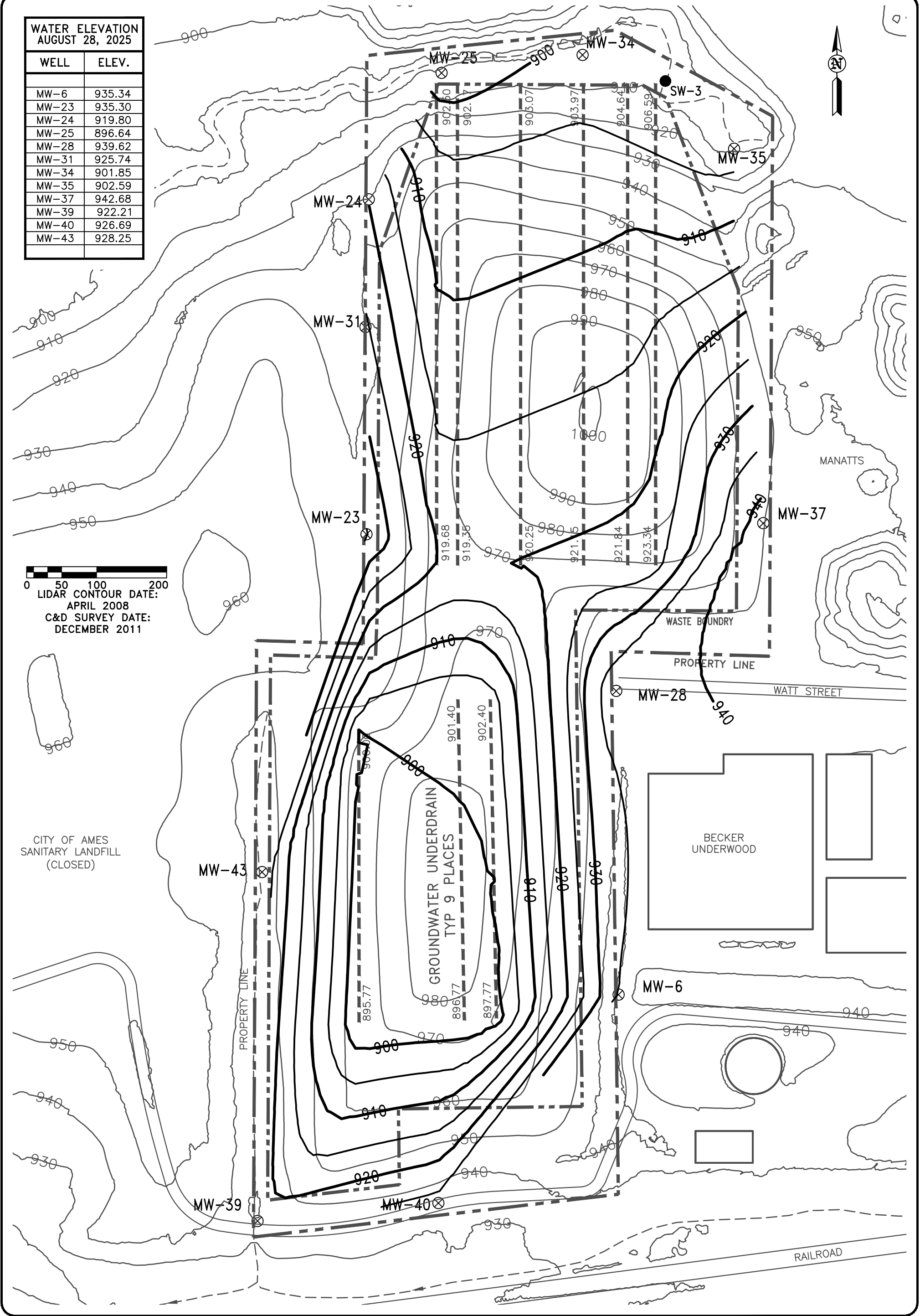
FIGURE: 1

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6004	DATE 9-16-25

WATER ELEVATION AUGUST 28, 2025	
WELL	ELEV.
MW-6	935.34
MW-23	935.30
MW-24	919.80
MW-25	896.64
MW-28	939.62
MW-31	925.74
MW-34	901.85
MW-35	902.59
MW-37	942.68
MW-39	922.21
MW-40	926.69
MW-43	928.25

0 50 100 200
LIDAR CONTOUR DATE:
APRIL 2008
C&D SURVEY DATE:
DECEMBER 2011

CITY OF AMES
SANITARY LANDFILL
(CLOSED)

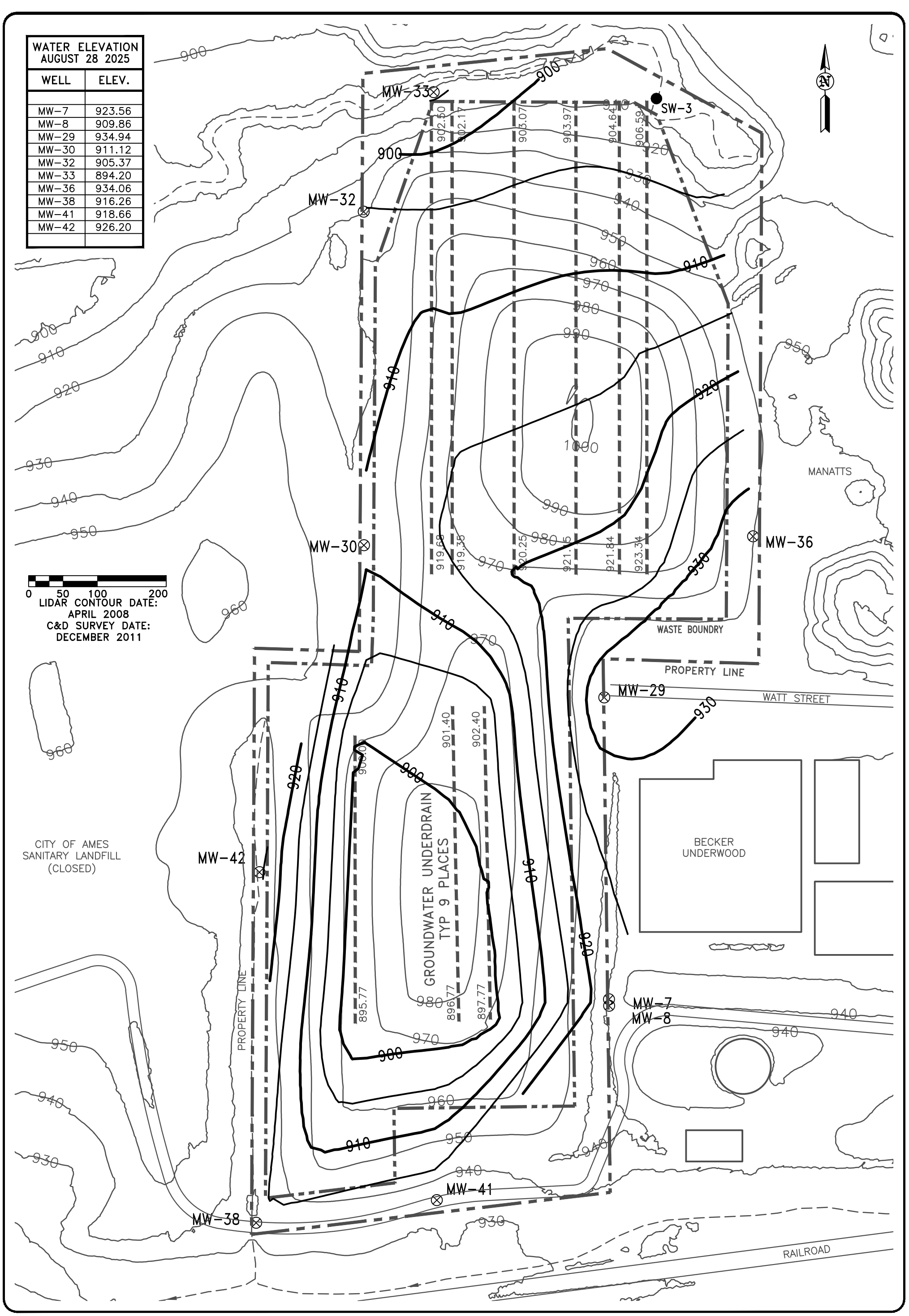


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WATER TABLE CONTOUR MAP
AMES-STORY ENVIRONMENTAL LANDFILL
AMES, IOWA

FIGURE:		2
REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6004	DATE 9-16-25

WATER ELEVATION AUGUST 28 2025	
WELL	ELEV.
MW-7	923.56
MW-8	909.86
MW-29	934.94
MW-30	911.12
MW-32	905.37
MW-33	894.20
MW-36	934.06
MW-38	916.26
MW-41	918.66
MW-42	926.20



0 50 100 200
LIDAR CONTOUR DATE:
APRIL 2008
C&D SURVEY DATE:
DECEMBER 2011

CITY OF AMES
SANITARY LANDFILL
(CLOSED)



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POTENTIOMETRIC SURFACE
OF DEEP AQUIFER
AMES-STORY ENVIRONMENTAL LANDFILL
AMES, IOWA

FIGURE: 3

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6004	DATE 9-16-25

Table 1 – Monitoring Program Summary

Table 1
Monitoring Program Summary
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

Monitoring Well	Formation	Current Monitoring Program	Change for next sampling event	Historic - Constituents that exceed a control limit	Current Spring - Constituents that exceed a control limit	Current Fall - Constituents that exceed a control limit	Historic - Constituents that exceed a GWPS	Current - Constituents that exceed a GWPS	Total # of Samples in each monitoring program since September 9, 2014		
									Detection	Assessment	Corrective Action
MW-6	Glacial Till	Background	NC	None	None	None	None	None	18	0	0
MW-7	Glacial Till	Background	NC	None	None	None	None	None	19	0	0
MW-8	Glacial Till	Background	NC	None	None	None	None	None	19	0	0
MW-28	Glacial Till	Background	NC	None	None	None	None	None	18	0	0
MW-29	Glacial Till	Background	NC	None	None	None	None	None	19	0	0
MW-36	Glacial Till	Background	NC	None	None	None	None	None	17	0	0
MW-37	Glacial Till	Background	NC	None	None	None	None	None	16	0	0
SW-3	Glacial Till	Detection	NC	None	None	None	None	None	16	0	0
MW-25	Glacial Till	Detection	NC	Boron, Conductivity	Boron	Boron	None	None	19	0	0
MW-33	Glacial Till	Detection	NC	Iron, Nitrogen as Ammonia, Boron	Iron, Nitrogen as Ammonia, Boron	Iron, Nitrogen as Ammonia, Boron	None	None	19	0	0
MW-34	Glacial Till	Detection	NC	Arsenic, Iron, Nitrogen as Ammonia, Boron	None	Iron	Arsenic	None	18	0	0
MW-35	Glacial Till	Detection	NC	Arsenic, COD, Chloride, Conductivity, Temperature	Arsenic, Chloride, Conductivity	None	Arsenic	Arsenic (March)	21	0	0
MW-39	Glacial Till	Detection	NC	Arsenic, Conductivity, Sulfate	Sulfate, Conductivity	Conductivity	Arsenic	None	20	0	0
MW-40	Glacial Till	Detection	NC	Chloride, Temperature	None	None	None	None	20	0	0

Table 2 – Monitoring Program Implementation Schedule

Table 2
Monitoring Program Implementation Schedule
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

Monitoring Well	Recent Sampling Dates and Constituents	Upcoming Sampling Dates and Constituents		Supplemental Sampling	
		March, 2026	September, 2026**	Previously Collected	Next Event
MW-6*	Note 1 (7 year cycle) & Note 2 (next = 2027)	---	Note 1	Not Required by 114.26(7)	N/A
MW-7*	Note 1 (7 year cycle) & Note 2 (next = 2027)	---	Note 1	Not Required by 114.26(7)	N/A
MW-8*	Note 1 (7 year cycle) & Note 2 (next = 2027)	---	---	Not Required by 114.26(7)	N/A
MW-28*	Note 1 (7 year cycle) & Note 2 (next = 2027)	---	---	Not Required by 114.26(7)	N/A
MW-29*	Note 1 (7 year cycle) & Note 2 (next = 2027)	---	---	Not Required by 114.26(7)	N/A
MW-36*	Note 1 (7 year cycle) & Note 2 (next = 2027)	Note 1	---	Not Required by 114.26(7)	N/A
MW-37*	Note 1 (7 year cycle) & Note 2 (next = 2027)	Note 1	---	Not Required by 114.26(7)	N/A
SW-3	Note 1 (semi-annual) & Note 2 (next = 2027)	Note 1	Note 1	Not Required by 114.26(7)	N/A
MW-25	Note 1 (semi-annual) & Note 2 (next = 2027)	Note 1	Note 1	Not Required by 114.26(7)	N/A
MW-33	Note 1 (semi-annual) & Note 2 (next = 2027)	Note 1	Note 1	Not Required by 114.26(7)	N/A
MW-34	Note 1 (semi-annual) & Note 2 (next = 2027)	Note 1	Note 1	Not Required by 114.26(7)	N/A
MW-35	Note 1 (semi-annual) & Note 2 (next = 2027)	Note 1	Note 1	Not Required by 114.26(7)	N/A
MW-39	Note 1 (semi-annual) & Note 2 (next = 2027)	Note 1	Note 1	Not Required by 114.26(7)	N/A
MW-40	Note 1 (semi-annual) & Note 2 (next = 2027)	Note 1	Note 1	Not Required by 114.26(7)	N/A

Background Well Sampling Schedule (Seven Year Cycle)								
		MW-6	MW-7	MW-8	MW-28	MW-29	MW-36	MW-37
Year 1	Spring	2023	2023					
Year 1	Fall			2023	2023			
Year 2	Spring					2024	2024	
Year 2	Fall	2024						2024
Year 3	Spring		2025	2025				
Year 3	Fall				2025	2025		
Year 4	Spring						2026	2026
Year 4	Fall	2026	2026					
Year 5	Spring			2027	2027			
Year 5	Fall					2027	2027	
Year 6	Spring	2028						2028
Year 6	Fall		2028	2028				
Year 7	Spring				2029	2029		
Year 7	Fall						2029	2029
Year 1	Spring	2030	2030					
Year 1	Fall			2030	2030			

Note 1 Semi-annually for 114.26(4)"e" and Arsenic (total), sulfate, and boron
Note 2 1 time per each 5 years* for 114.26(4)"f"
* - The frequency of Background Well sample collection is reduced as per the Waiver Approval (Doc #106906) and per the Seven Year Cycle Table above.
** - The frequency of the "annual parameters (TOX & Phenol)" are reduced to 1 time per 5 years as per the Waiver Approval (Doc #106906). Due again in 2027.

Table 3 – Monitoring Well Maintenance Performance Reevaluation Schedule

Table 3
Monitoring Well Maintenance and Performance Revaluation Schedule
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

Compliance with:	Monitoring Calendar Years									
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
567 IAC 115.21(2)"a" high and low water levels (biennial)	X		X		X		X		X	
567 IAC 115.21(2)"b" changes in the hydrologic setting and flow paths (biennial)	X		X		X		X		X	
567 IAC 115.21(2)"c" well depths (annual)	X	X	X	X	X	X	X	X	X	X
567 IAC 115.21(2)"c" insitu permeability testing (every 5 years)	X					X				

Compliance with:	Monitoring Calendar Years									
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
567 IAC 115.21(2)"a" high and low water levels (biennial)	X		X		X		X		X	
567 IAC 115.21(2)"b" changes in the hydrologic setting and flow paths (biennial)	X		X		X		X		X	
567 IAC 115.21(2)"c" well depths (annual)	X	X	X	X	X	X	X	X	X	X
567 IAC 115.21(2)"c" insitu permeability testing (every 5 years)			X					X		

Compliance with:	Monitoring Calendar Years									
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
567 IAC 115.21(2)"a" high and low water levels (biennial)	X		X		X		X		P	
567 IAC 115.21(2)"b" changes in the hydrologic setting and flow paths (biennial)	X		X		X		X		P	
567 IAC 115.21(2)"c" well depths (annual)	X	X	X	X	X	X	X	X	P	P
567 IAC 115.21(2)"c" insitu permeability testing (every 5 years)			X					X		

X = completed
P = Planned
N/A = Not Applicable

Table 4 – Monitoring Well Maintenance Performance Summary

Table 4
Monitoring Well Maintenance and Performance Summary
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

Well	Top of casing	Top of Screen	Total Depth		Date of Measurements		Maximum Depth Discrepancy (ft)	Hydraulic Cond. (cm/sec)/date	Most Recent Recharge Rate	
					3/7/2025	8/28/2025			March 2025	Change
MW-6	942.88	931.05	21.7	Groundwater Level (ft)	6.9	7.54	0.5	6.10E-04 1991	5.96E-04	Not Appreciable
				Groundwater Elevation (Ft MSL)	935.98	935.34				
				Measured Well Depth (ft)	21.2	21.7				
				Submerged (+) or Exposed screen (-)	4.93	4.29				
MW-7	943.21	899.55	53	Groundwater Level (ft)	20.38	19.65	0.2	2.00E-05 1991	9.31E-06	Not Appreciable
				Groundwater Elevation (Ft MSL)	922.83	923.56				
				Measured Well Depth (ft)	52.8	52.8				
				Submerged (+) or Exposed screen (-)	23.28	24.01				
MW-8	942.76	881.05	71.7	Groundwater Level (ft)	34.1	32.9	0.7	8.30E-04 1991	8.75E-04	Not Appreciable
				Groundwater Elevation (Ft MSL)	908.66	909.86				
				Measured Well Depth (ft)	71	71				
				Submerged (+) or Exposed screen (-)	27.61	28.81				
MW-28	946.02	933.55	22.3	Groundwater Level (ft)	5.28	6.4	-0.15	9.30E-04 1991	5.85E-04	Not Appreciable
				Groundwater Elevation (Ft MSL)	940.74	939.62				
				Measured Well Depth (ft)	22.45	22.9				
				Submerged (+) or Exposed screen (-)	7.19	6.07				
MW-29	945.61	902.55	53.5	Groundwater Level (ft)	11.69	10.67	-0.1	2.48E-05 1998	1.45E-05	Not Appreciable
				Groundwater Elevation (Ft MSL)	933.92	934.94				
				Measured Well Depth (ft)	53.6	54.1				
				Submerged (+) or Exposed screen (-)	31.37	32.39				
MW-36	948.97	906.9	53.5	Groundwater Level (ft)	NM	14.91	0.3	4.19E-06 1996	3.64E-06	Not Appreciable
				Groundwater Elevation (Ft MSL)	#VALUE!	934.06				
				Measured Well Depth (ft)	53.2	53.2				
				Submerged (+) or Exposed screen (-)	#VALUE!	27.16				
MW-37	949.49	929.03	30.6	Groundwater Level (ft)	NM	6.81	0.9	3.90E-04 1996	3.79E-05	Not Appreciable
				Groundwater Elevation (Ft MSL)	#VALUE!	942.68				
				Measured Well Depth (ft)	29.7	29.9				
				Submerged (+) or Exposed screen (-)	#VALUE!	13.65				
MW-25	906.34	896.84	19.5	Groundwater Level (ft)	9.43	9.7	0.1	>0.0001 1997	3.67E-03	Not Appreciable
				Groundwater Elevation (Ft MSL)	896.91	896.64				
				Measured Well Depth (ft)	19.4	19.4				
				Submerged (+) or Exposed screen (-)	0.07	-0.2				
MW-33	906.32	880.66	28.2	Groundwater Level (ft)	9.6	12.12	-0.3	4.00E-04 1991	3.03E-03	Not Appreciable
				Groundwater Elevation (Ft MSL)	896.72	894.2				
				Measured Well Depth (ft)	28.5	28.5				
				Submerged (+) or Exposed screen (-)	16.06	13.54				
MW-34	909.5	902.5	17.3	Groundwater Level (ft)	2.88	7.65	1.2	5.17E-04 1998	7.49E-04	Not Appreciable
				Groundwater Elevation (Ft MSL)	906.62	901.85				
				Measured Well Depth (ft)	16.1	16.1				
				Submerged (+) or Exposed screen (-)	4.12	-0.65				
MW-35	916.19	906.19	20.6	Groundwater Level (ft)	12.9	13.6	0.8	7.53E-03 2003	4.88E-03	Not Appreciable
				Groundwater Elevation (Ft MSL)	903.29	902.59				
				Measured Well Depth (ft)	19.8	20.1				
				Submerged (+) or Exposed screen (-)	-2.9	-3.6				
MW-39	935.93	916.16	30.2	Groundwater Level (ft)	21.89	13.72	0.45	6.54E-04 1996	2.15E-05	Not Appreciable
				Groundwater Elevation (Ft MSL)	914.04	922.21				
				Measured Well Depth (ft)	29.75	29.75				
				Submerged (+) or Exposed screen (-)	-2.12	6.05				
MW-40	933.07	923.61	20	Groundwater Level (ft)	6.54	6.38	0.3	5.68E-04 1996	8.49E-05	Not Appreciable
				Groundwater Elevation (Ft MSL)	926.53	926.69				
				Measured Well Depth (ft)	19.7	19.7				
				Submerged (+) or Exposed screen (-)	2.92	3.08				
Groundwater Underdrain SW-3					300 ml/min	120 ml/min				

Table 4A – Routine Water Levels

Table 5 – Background and GWPS Summary

Table 5
Background and GWPS Summary
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

Background Wells (MW-6, MW-7, MW-8, MW-28, MW-29, MW-36, and MW-37)

Inorganics - Appendix I							
Constituent	Units	Model Type	Mean	SD	Limit	GWPS*	Source
Arsenic (As - total)	mg/L	mean+2STD	0.0125	0.0104	0.0376	0.0376	Site
COD	mg/L	mean+2STD	18.4	21.2	61.4	None	IAC 137
Chloride	mg/L	mean+2STD	46.0	67.7	181.4	None	IAC 137
Conductivity	µs/cm	mean+2STD	894	471	1835.0	None	IAC 137
Iron (Fe- dissolved)	mg/L	mean+2STD	1.35	2.16	5.66	None	IAC 137
Nitrogen, as ammonia	mg/L	mean+2STD	0.5	0.2	0.9	30	IAC 137
pH - high		mean+2STD	7.5	0.6	8.60	None	IAC 137
pH - low		mean+2STD	7.5	0.6	6.30	None	IAC 137
Phenol	mg/L	mean+2STD	0.05	0.01	0.07	2	IAC 137
Temperature	C	mean+2STD	13.4	4.6	22.6	None	IAC 137
TOX	mg/L	mean+2STD	0.021	0.031	0.082	None	IAC 137
Boron (B - total)	mg/L	mean+2STD	0.097	0.087	0.288	6	IAC 137
Sulfate	mg/L	mean+2STD	172	189	547.2	None	IAC 137
Turbidity	NTU	mean+2STD	37.13	102.82	238.86	None	IAC 137

= Site Specific Limit exceeds the GWPS. A Site-Specific GWPS equal to the Limit is warranted

* - Groundwater Protection Standards published in Iowa Administrative Code (IAC) 567, Chapter 137.

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
				Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
	mg/L											
04/23/1991	Chemical Oxygen Demand	--	61.4		8.3	67.8	NT		12	20.1	NT	NT
10/15/1991	Chemical Oxygen Demand	--	61.4		15	64.8	NT		16.5	19.4	NT	NT
01/23/1992	Chemical Oxygen Demand	--	61.4		24.2	84.1	NT		5	NT	NT	NT
03/23/1992	Chemical Oxygen Demand	--	61.4		5	119	NT		5	50	NT	NT
09/30/1992	Chemical Oxygen Demand	--	61.4		50	NT	NT		24	180	NT	NT
03/05/1993	Chemical Oxygen Demand	--	61.4		5	50.8	NT		5	NT	NT	NT
09/21/1993	Chemical Oxygen Demand	--	61.4		5	47.3	5		5	47.3	5	5
03/23/1994	Chemical Oxygen Demand	--	61.4		5	64	5		5	64	5	5
09/16/1994	Chemical Oxygen Demand	--	61.4		5	52	5		5	52	5	5
03/16/1995	Chemical Oxygen Demand	--	61.4		38	57	5		32	26	5	5
09/13/1995	Chemical Oxygen Demand	--	61.4		5	34	35		5	5	5	12
03/28/1996	Chemical Oxygen Demand	--	61.4	5	plugged	26	5	11	plugged	5	5	5
06/20/1996	Chemical Oxygen Demand	--	61.4	5		NT	5	10		NT	5	5
09/13/1996	Chemical Oxygen Demand	--	61.4	5		18	5	5		5	5	5
12/16/1996	Chemical Oxygen Demand	--	61.4	NT		28	5	NT		5	5	5
03/19/1997	Chemical Oxygen Demand	--	61.4	5		19	5	5		5	5	5
06/18/1997	Chemical Oxygen Demand	--	61.4	5		27	12	5		5	5	10
08/30/1997	Chemical Oxygen Demand	--	61.4	5		5	5	12		5	5	5
03/10/1998	Chemical Oxygen Demand	--	61.4	5		5	5	12		5	5	5
09/21/1998	Chemical Oxygen Demand	--	61.4	5		5	5	12		5	5	5
03/18/1999	Chemical Oxygen Demand	--	61.4	5		5	5	5		5	5	5
09/21/1999	Chemical Oxygen Demand	--	61.4	5		5	5	5		5	5	5
03/21/2000	Chemical Oxygen Demand	--	61.4	NT		5	5	NT		5	5	5
06/28/2000	Chemical Oxygen Demand	--	61.4	NT		NT	5	NT		NT	5	11
09/28/2000	Chemical Oxygen Demand	--	61.4	5		11	20	5		5	5	5
12/27/2000	Chemical Oxygen Demand	--	61.4	NT		NT	5	NT		NT	5	5
03/28/2001	Chemical Oxygen Demand	--	61.4	5		5	11	5		5	5	5
09/02/2001	Chemical Oxygen Demand	--	61.4	5		11	19	5		5	5	5
03/19/2002	Chemical Oxygen Demand	--	61.4	5		24	5	5		5	5	5
09/19/2002	Chemical Oxygen Demand	--	61.4	5		11	12	5		5	5	5
03/14/2003	Chemical Oxygen Demand	--	61.4	5		28	5	5		5	5	5
09/29/2003	Chemical Oxygen Demand	--	61.4	5		23	12	5		5	5	5
03/08/2004	Chemical Oxygen Demand	--	61.4	20		17	5	5		5	5	5
09/27/2004	Chemical Oxygen Demand	--	61.4	5		17	5	5		5	5	10
03/17/2005	Chemical Oxygen Demand	--	61.4	5		21	18	5		5	5	5
09/22/2005	Chemical Oxygen Demand	--	61.4	5		23	19	5		10	19	5
03/17/2006	Chemical Oxygen Demand	--	61.4	5		14	11	5		5	5	5
09/22/2006	Chemical Oxygen Demand	--	61.4	5		10	5	5		5	5	5
03/14/2007	Chemical Oxygen Demand	--	61.4	5		5	5	5		5	5	5
09/22/2007	Chemical Oxygen Demand	--	61.4	5		18	16	5		5	5	5
03/03/2008	Chemical Oxygen Demand	--	61.4	5		5	15	5		23	5	5
09/05/2008	Chemical Oxygen Demand	--	61.4	17		65	46	10		24	29	31
03/09/2009	Chemical Oxygen Demand	--	61.4	5		62	36	5		5	5	38
09/23/2009	Chemical Oxygen Demand	--	61.4	5		43	41	12		5	5	11
03/16/2010	Chemical Oxygen Demand	--	61.4	NT		5	5	NT		38	38	24
09/10/2010	Chemical Oxygen Demand	--	61.4	5		64	22	5		32	44	5
03/01/2011	Chemical Oxygen Demand	--	61.4	74		76	71	5		5	5	5
09/22/2011	Chemical Oxygen Demand	--	61.4	46		38	19	5		5	35	5
03/02/2012	Chemical Oxygen Demand	--	61.4	30		65	40	24		5	109	5
09/05/2012	Chemical Oxygen Demand	--	61.4	19		51	49	16		32	150	32
03/08/2013	Chemical Oxygen Demand	--	61.4	18		60	45	5		27	77	35
09/13/2013	Chemical Oxygen Demand	--	61.4	18		62	59	5		13	65	32
03/06/2014	Chemical Oxygen Demand	--	61.4	11		54	42	5		12	52	10
09/09/2014	Chemical Oxygen Demand	--	61.4	20		59	57	5		23	24	31
03/11/2015	Chemical Oxygen Demand	--	61.4	10		45	50	5		49	84	5
09/09/2015	Chemical Oxygen Demand	--	61.4	10		46	37	5		32	37	12
03/11/2016	Chemical Oxygen Demand	--	61.4	5		25	5	5		15	35	19
10/27/2016	Chemical Oxygen Demand	--	61.4	11		19	12	10		25	46	20
09/07/2017	Chemical Oxygen Demand	--	61.4	5		29	13	5		15	36	13
03/01/2018	Chemical Oxygen Demand	--	61.4	5		31	10	5		55	54	31
09/19/2018	Chemical Oxygen Demand	--	61.4	10		27	10	10		49	41	53
03/27/2019	Chemical Oxygen Demand	--	61.4	10		34	10	10		10	10	26
09/05/2019	Chemical Oxygen Demand	--	61.4	45		26	10	10		84	24	10
02/28/2020	Chemical Oxygen Demand	--	61.4	73		37	10	35		35	38	31
08/31/2020	Chemical Oxygen Demand	--	61.4	10		28	10	10		10	38	10
03/05/2021	Chemical Oxygen Demand	--	61.4	10		24	10	10		10	27	10
09/13/2021	Chemical Oxygen Demand	--	61.4	10		22	23	10		32	41	20
03/02/2022	Chemical Oxygen Demand	--	61.4	10		31	22	10		38	34	30
09/12/2022	Chemical Oxygen Demand	--	61.4	10		10	34	48		26	34	10
03/24/2023	Chemical Oxygen Demand	--	61.4	NT		NT	34	NT		NT	49	NT
09/13/2023	Chemical Oxygen Demand	--	61.4	NT		10	NT	NT		NT	NT	29
03/05/2024	Chemical Oxygen Demand	--	61.4	29		NT	NT	NT		10	NT	NT
09/03/2024	Chemical Oxygen Demand	--	61.4	NT		NT	10	10		NT	NT	NT
03/07/2025	Chemical Oxygen Demand	--	61.4	NT		NT	NT	NT		NT	10	97
08/28/2025	Chemical Oxygen Demand	--	61.4	NT		10	NT	NT		10	NT	NT
	Mean				18.5							
	Standard Deviation (STD)				21.4							
	Mean + 2 STD				61.4							

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

				WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
mg/L												
04/23/1991	Chloride	--	181.4		4.5	65	NT		2	4	NT	NT
10/15/1991	Chloride	--	181.4		3.77	47.6	NT		0.5	1.89	NT	NT
01/23/1992	Chloride	--	181.4		5.8	50.9	NT		1.6	NT	NT	NT
03/23/1992	Chloride	--	181.4		5.3	48.1	NT		1.1	3.7	NT	NT
09/30/1992	Chloride	--	181.4		19	NT	NT		1	3	NT	NT
03/05/1993	Chloride	--	181.4		5	59.2	NT		5	NT	NT	NT
09/21/1993	Chloride	--	181.4		5	90	10.8		5	5	5	5
03/23/1994	Chloride	--	181.4		5	88.6	33.9		5	5	5	5
09/16/1994	Chloride	--	181.4		5	79	56		5	5	5	5
03/16/1995	Chloride	--	181.4		15	52	27		11	5	9.8	4.7
09/13/1995	Chloride	--	181.4		5	55	36		5	5	14	5
03/28/1996	Chloride	--	181.4	9	plugged	67	27	14	plugged	4.2	9.8	4.7
06/20/1996	Chloride	--	181.4	6.7		NT	NT	3.8		NT	NT	NT
09/13/1996	Chloride	--	181.4	5.1		129	25.9	1.7		2.2	9.9	1.7
12/16/1996	Chloride	--	181.4	NT		139	28	NT		5	12	5
03/19/1997	Chloride	--	181.4	5		153	5	5		5	10	5
06/18/1997	Chloride	--	181.4	5		125	25	5		5	11	5
08/30/1997	Chloride	--	181.4	5		109	23	5		5	5	5
03/10/1998	Chloride	--	181.4	5		120	39	5		5	11	5
09/21/1998	Chloride	--	181.4	5		93	19	5		5	11	5
03/18/1999	Chloride	--	181.4	5		97	20	5		5	12	5
09/21/1999	Chloride	--	181.4	5		73	33	5		5	11	5
03/21/2000	Chloride	--	181.4	NT		249	33	NT		5	20	36
06/28/2000	Chloride	--	181.4	NT		NT	28	NT		NT	5	5
09/28/2000	Chloride	--	181.4	5		78	59	5		5	11	5
12/27/2000	Chloride	--	181.4	NT		NT	46	NT		NT	10	5
03/28/2001	Chloride	--	181.4	12		122	38	5		5	13	5
09/02/2001	Chloride	--	181.4	5		96	48	5		5	14	5
03/19/2002	Chloride	--	181.4	10		159	73	5		5	11	5
09/19/2002	Chloride	--	181.4	10		120	67	5		5	11	5
03/14/2003	Chloride	--	181.4	5		102	85	5		5	12	5
09/29/2003	Chloride	--	181.4	10		103	52	5		5	13	5
03/08/2004	Chloride	--	181.4	10		143	71	5		5	14	34
09/27/2004	Chloride	--	181.4	12		100	56	5		5	14	5
03/17/2005	Chloride	--	181.4	15		96	69	5		5	12	5
09/22/2005	Chloride	--	181.4	16		75	62	5		14	16	5
03/17/2006	Chloride	--	181.4	16		108	83	5		5	15	5
09/22/2006	Chloride	--	181.4	13		100	81	5		5	13	5
03/14/2007	Chloride	--	181.4	20		100	96	5		5	15	5
09/22/2007	Chloride	--	181.4	15		100	102	5		5	16	5
03/03/2008	Chloride	--	181.4	22		274	121	5		5	15	5
09/05/2008	Chloride	--	181.4	20		169	96	5		5	15	5
03/09/2009	Chloride	--	181.4	19		166	128	5		5	13	5
09/23/2009	Chloride	--	181.4	23		122	170	5		5	15	5
03/16/2010	Chloride	--	181.4	NT		169	177	NT		10	22	5
09/10/2010	Chloride	--	181.4	23		174	107	5		5	21	5
03/01/2011	Chloride	--	181.4	31		189	176	5		5	22	5
09/22/2011	Chloride	--	181.4	13		205	133	5		11	25	5
03/02/2012	Chloride	--	181.4	30		192	192	5		5	21	5
09/05/2012	Chloride	--	181.4	28		165	202	5		26	25	5
03/08/2013	Chloride	--	181.4	27		134	171	5		15	22	5
09/13/2013	Chloride	--	181.4	27		121	199	5		14	28	10
03/06/2014	Chloride	--	181.4	13		118	151	48		12	18	17
09/09/2014	Chloride	--	181.4	19		193	169	5		13	26	35
03/11/2015	Chloride	--	181.4	34		168	201	5		34	33	13
09/09/2015	Chloride	--	181.4	30		140	134	5		16	31	5
03/11/2016	Chloride	--	181.4	28		111	134	5		19	27	5
10/27/2016	Chloride	--	181.4	24		101	140	5		27	31	5
09/07/2017	Chloride	--	181.4	33		102	206	5		29	39	12
03/01/2018	Chloride	--	181.4	38		118	231	5		27	40	12
09/19/2018	Chloride	--	181.4	34		110	206	5		25	47	15
03/27/2019	Chloride	--	181.4	39		131	227	5		42	45	15
09/05/2019	Chloride	--	181.4	38		77	234	5		27	50	15
02/28/2020	Chloride	--	181.4	40		290	244	5		29	48	17
08/31/2020	Chloride	--	181.4	39		217	232	5		31	57	15
03/05/2021	Chloride	--	181.4	41.8		247	283	1.7		36.1	47.7	18.1
09/13/2021	Chloride	--	181.4	38		345	291	0.5		31.8	62.4	18
03/02/2022	Chloride	--	181.4	39.2		316	331	1.5		34.6	47.2	17.1
09/12/2022	Chloride	--	181.4	39.6		133	328	1.5		36.9	61.1	16.2
03/24/2023	Chloride	--	181.4	NT		NT	319	NT		NT	64.5	NT
09/13/2023	Chloride	--	181.4	NT		133	NT	NT		NT	NT	18.6
03/05/2024	Chloride	--	181.4	36.7		NT	NT	NT		56.3	NT	NT
09/03/2024	Chloride	--	181.4	NT		NT	316	1.2		NT	NT	NT
03/07/2025	Chloride	--	181.4	NT		NT	NT	NT		NT	84.5	24.5
08/28/2025	Chloride	--	181.4	NT		135	NT	NT		47.4	NT	NT

Mean
Standard Deviation (STD)
Mean + 2 STD

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

MONITORING WELL OPERATING RESULTS				WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
03/16/1995	Conductivity, us/cm	--	1835		590	890	580		550	360	320	310
09/13/1995	Conductivity, us/cm	--	1835		490	740	510		380	280	140	130
03/28/1996	Conductivity, us/cm	--	1835	500	plugged	720	420	490	plugged	340	330	340
06/20/1996	Conductivity, us/cm	--	1835	640		NT	NT	290		NT	NT	NT
09/13/1996	Conductivity, us/cm	--	1835	560		750	670	280		330	290	280
12/16/1996	Conductivity, us/cm	--	1835	NT		740	770	NT		320	360	350
03/19/1997	Conductivity, us/cm	--	1835	800		750	630	340		350	390	370
06/18/1997	Conductivity, us/cm	--	1835	530		540	540	280		250	250	250
08/30/1997	Conductivity, us/cm	--	1835	700		670	660	280		310	270	250
03/10/1998	Conductivity, us/cm	--	1835	860		710	630	410		370	350	360
09/21/1998	Conductivity, us/cm	--	1835	650		590	460	280		300	250	220
03/18/1999	Conductivity, us/cm	--	1835	1600		976	628	625		628	573	620
09/21/1999	Conductivity, us/cm	--	1835	650		590	1216	280		300	534	524
03/21/2000	Conductivity, us/cm	--	1835	NT		NT	1256	NT		NT	696	670
06/28/2000	Conductivity, us/cm	--	1835	NT		NT	1138	NT		NT	621	617
09/28/2000	Conductivity, us/cm	--	1835	688		686	466	688		1245	680	700
12/27/2000	Conductivity, us/cm	--	1835	NT		NT	1252	NT		NT	717	728
03/28/2001	Conductivity, us/cm	--	1835	1949		938	1532	812		725	764	794
09/02/2001	Conductivity, us/cm	--	1835	1583		NT	1446	687		NT	674	586
03/19/2002	Conductivity, us/cm	--	1835	NT		1607	1590	NT		724	684	663
09/19/2002	Conductivity, us/cm	--	1835	1530		1395	1521	640		686	703	673
03/14/2003	Conductivity, us/cm	--	1835	1129		1358	1379	499		658	731	710
09/29/2003	Conductivity, us/cm	--	1835	1185		890	1018	584		615	606	593
03/08/2004	Conductivity, us/cm	--	1835	1647		1294	1225	646		787	704	709
09/27/2004	Conductivity, us/cm	--	1835	1819		1580	1673	750		760	822	774
03/17/2005	Conductivity, us/cm	--	1835	1564		1413	1225	650		733	704	709
09/22/2005	Conductivity, us/cm	--	1835	1029		948	919	638		611	592	579
03/17/2006	Conductivity, us/cm	--	1835	1607		1378	1377	709		762	779	759
09/22/2006	Conductivity, us/cm	--	1835	1374		1275	1281	680		670	686	656
03/14/2007	Conductivity, us/cm	--	1835	1889		1334	1336	763		667	701	644
09/22/2007	Conductivity, us/cm	--	1835	1866		1275	1065	658		670	532	522
03/03/2008	Conductivity, us/cm	--	1835	2000		NT	NT	641		NT	NT	NT
09/05/2008	Conductivity, us/cm	--	1835	1418		685	804	688		467	504	484
03/09/2009	Conductivity, us/cm	--	1835	1376		1406	1255	758		712	796	743
09/23/2009	Conductivity, us/cm	--	1835	1160		1501	1560	520		677	681	620
03/16/2010	Conductivity, us/cm	--	1835	NT		1590	1700	NT		780	690	711
09/10/2010	Conductivity, us/cm	--	1835	1314		1270	855	587		475	720	610
03/01/2011	Conductivity, us/cm	--	1835	1080		1122	928	583		565	615	553
09/22/2011	Conductivity, us/cm	--	1835	998		1373	640	518		413	617	534
03/02/2012	Conductivity, us/cm	--	1835	1868		1945	1695	767		769	859	736
09/05/2012	Conductivity, us/cm	--	1835	998		1373	640	518		413	617	534
03/08/2013	Conductivity, us/cm	--	1835	1860		1900	1680	750		670	880	730
09/13/2013	Conductivity, us/cm	--	1835	1620		1430	1600	650		530	830	660
03/06/2014	Conductivity, us/cm	--	1835	1640		1550	1650	670		550	810	680
09/09/2014	Conductivity, us/cm	--	1835	1760		1627	1527	730		617	806	594
03/11/2015	Conductivity, us/cm	--	1835	1700		1660	1580	710		440	820	610
09/09/2015	Conductivity, us/cm	--	1835	1104		1311	1046	574		610	675	527
03/11/2016	Conductivity, us/cm	--	1835	1304		1420	1290	635		659	610	550
10/27/2016	Conductivity, us/cm	--	1835	1430		1480	1300	630		710	890	680
03/01/2018	Conductivity, us/cm	--	1835	2004		2108	1544	803		603	1022	805
09/19/2018	Conductivity, us/cm	--	1835	1455		1545	1371	664		618	857	599
03/27/2019	Conductivity, us/cm	--	1835	1565		1669	1208	603		636	849	629
09/05/2019	Conductivity, us/cm	--	1835	1355		1210	1281	563		578	880	619
02/28/2020	Conductivity, us/cm	--	1835	1707		1991	1519	620		626	864	664
08/31/2020	Conductivity, us/cm	--	1835	1517		1656	1380	575		622	945	650
03/05/2021	Conductivity, us/cm	--	1835	1572		1829	1495	622		603	893	649
09/13/2021	Conductivity, us/cm	--	1835	1463		1997	1478	588		632	937	538
03/02/2022	Conductivity, us/cm	--	1835	1532		2490	1660	578		535	925	657
09/12/2022	Conductivity, us/cm	--	1835	1634		1425	1769	586		538	879	618
03/24/2023	Conductivity, us/cm	--	1835	NT		NT	2276	NT		NT	977	NT
09/13/2023	Conductivity, us/cm	--	1835	NT		NT	NT	NT		NT	NT	NT
03/05/2024	Conductivity, us/cm	--	1835	1846		NT	NT	NT		776	NT	NT
09/03/2024	Conductivity, us/cm	--	1835	NT		NT	3206	713		NT	NT	NT
03/07/2025	Conductivity, us/cm	--	1835	NT		NT	NT	NT		NT		853
08/28/2025	Conductivity, us/cm	--	1835	NT		1430	NT	NT		550	NT	NT

Mean	894
Standard Deviation (STD)	470
Mean + 2 STD	1835

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
				Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
04/23/1991	pH	6.3	8.6		7.01	6.99	NT		7.82	7.8	NT	NT
10/15/1991	pH	6.3	8.6		7.05	7.71	NT		7.76	6.96	NT	NT
01/23/1992	pH	6.3	8.6		7.16	7.41	NT		7.53	NT	NT	NT
03/23/1992	pH	6.3	8.6		7.61	7.32	NT		7.51	7.68	NT	NT
09/30/1992	pH	6.3	8.6		7.22	NT	NT		7.68	7.36	NT	NT
03/05/1993	pH	6.3	8.6		7.58	6.72	NT		7.73	NT	NT	NT
09/21/1993	pH	6.3	8.6		7.34	6.73	7		7.61	7.1	7	7.3
03/23/1994	pH	6.3	8.6		7.4	7.05	7.3		7.5	7.1	7.4	7.3
09/16/1994	pH	6.3	8.6		6.82	6.57	7		6.86	6.95	7.4	7.3
03/16/1995	pH	6.3	8.6		7.2	6.9	7.5		7.6	6.7	7.8	7.9
09/13/1995	pH	6.3	8.6		7.3	7	7.8		7.6	7.1	8.2	8
03/28/1996	pH	6.3	8.6	7.9	plugged	8.4	7.8	8	plugged	8.2	7.8	7.8
06/20/1996	pH	6.3	8.6	6.7		NT	NT	7		NT	NT	NT
09/13/1996	pH	6.3	8.6	7.8		7.7	7.6	8.3		8.3	7.9	7.9
12/16/1996	pH	6.3	8.6	NT		6.8	6.9	NT		7.2	6.8	6.7
03/19/1997	pH	6.3	8.6	7.7		7.7	7.7	8.2		7.7	7.4	7.3
06/18/1997	pH	6.3	8.6	7.5		7.8	8.4	8.2		7.8	7.8	7.6
08/30/1997	pH	6.3	8.6	8.1		8	8	7.7		7.8	6.8	6.7
03/10/1998	pH	6.3	8.6	7.8		8.1	8.3	7.8		7.8	8.2	8.1
09/21/1998	pH	6.3	8.6	7		7	6.4	7.2		7.2	3.2	2.8
03/18/1999	pH	6.3	8.6	7.3		7.7	7.2	7.4		7.8	6.9	7
09/21/1999	pH	6.3	8.6	7		7	7.2	7.2		7.2	7.4	7.7
03/21/2000	pH	6.3	8.6	NT		NT	7.9	NT		NT	8.1	7.9
06/28/2000	pH	6.3	8.6	NT		NT	7.1	NT		NT	7.3	7.1
09/28/2000	pH	6.3	8.6	7		7.4	6.8	7.5		7.1	7.3	7.3
12/27/2000	pH	6.3	8.6	NT		NT	8.2	NT		NT	8.5	8.5
03/28/2001	pH	6.3	8.6	7.3		7.8	6.8	7.5		7.4	7.9	7.5
09/02/2001	pH	6.3	8.6	7.7		NT	6.9	7.5		NT	7.4	7.7
03/19/2002	pH	6.3	8.6	6.8		7.4	6.5	NT		7.2	7.2	7.1
09/19/2002	pH	6.3	8.6	6.7		6.8	6.6	7.8		7.7	7.1	6.9
03/14/2003	pH	6.3	8.6	7.5		6.7	6.6	7.6		7	7	7.1
09/29/2003	pH	6.3	8.6	7.5		7.4	6.9	7.8		7.7	7.4	7.4
03/08/2004	pH	6.3	8.6	7.1		7.5	7.1	7		7.5	7.1	7.7
09/27/2004	pH	6.3	8.6	7.1		7.3	6.7	7.5		7.7	7.8	7.6
03/17/2005	pH	6.3	8.6	7.3		6.9	7.1	8		7.4	7.1	7.7
09/22/2005	pH	6.3	8.6	7.3		7.2	7.2	7.6		7.7	8	8.3
03/17/2006	pH	6.3	8.6	8		7.8	8.1	8.3		8.2	8.3	8.4
09/22/2006	pH	6.3	8.6	7.7		8	7.7	8.1		8.4	8.3	8.4
03/14/2007	pH	6.3	8.6	6.9		7.2	6.7	7.4		7.3	7.2	7.3
09/22/2007	pH	6.3	8.6	7.9		7.2	6.9	7.71		8.4	7.4	7.5
03/03/2008	pH	6.3	8.6	6.93		7	6.7	7.44		7.1	7.2	7.2
09/05/2008	pH	6.3	8.6	7		7	6.6	7.3		7.3	7.2	7.1
03/09/2009	pH	6.3	8.6	7.3		7.3	8	7.7		7.6	7.6	7.6
09/23/2009	pH	6.3	8.6	8.1		8.4	7.8	8.2		7.9	7.9	8
03/16/2010	pH	6.3	8.6	NT		8	7.3	NT		7.8	7.7	7.7
09/10/2010	pH	6.3	8.6	7.8		7	7.2	8		7	7.1	7.1
03/01/2011	pH	6.3	8.6	7.9		7.7	7.8	7.9		7.9	7.9	7.8
09/22/2011	pH	6.3	8.6	7.5		7.6	7.7	7.8		7.9	7.9	7.7
03/02/2012	pH	6.3	8.6	7.7		7.2	7.2	7.4		7.5	7.2	7.3
09/05/2012	pH	6.3	8.6	8		8	8	8.1		8.2	8.1	8.2
03/08/2013	pH	6.3	8.6	6.7		6.7	6.3	7		7	6.7	6.8
09/13/2013	pH	6.3	8.6	7.2		7.2	7	7.6		7.9	7.1	7.6
03/06/2014	pH	6.3	8.6	7.8		8.8	7.6	8.9		8.4	8.5	8.3
09/09/2014	pH	6.3	8.6	7.5		7.1	7.5	7.7		7.7	7.3	7.8
03/11/2015	pH	6.3	8.6	7.9		7.6	6.7	7.7		8	7.4	7.5
09/09/2015	pH	6.3	8.6	7.2		7.2	6.9	7.9		7.5	7.4	7.7
03/11/2016	pH	6.3	8.6	7.8		7.9	7.6	8.3		8.1	8.3	8.2
10/27/2016	pH	6.3	8.6	7.4		7.1	7	7.8		7.6	7.3	7.5
03/01/2018	pH	6.3	8.6	6.9		7.4	7.1	7.9		8	7.4	7.7
09/19/2018	pH	6.3	8.6	7		7.3	7.5	7		7.4	7.4	8.1
03/27/2019	pH	6.3	8.6	7.2		7.3	7.1	7.9		7.7	7.5	7.8
09/05/2019	pH	6.3	8.6	7.4		7.4	7.1	7.7		7.7	7.6	7.8
02/28/2020	pH	6.3	8.6	7.3		7.4	7.5	7.7		7.8	7.8	8.3
08/31/2020	pH	6.3	8.6	7.5		7.3	7.1	8.3		8.3	7.4	7.6
03/05/2021	pH	6.3	8.6									
09/13/2021	pH	6.3	8.6	6.9		6.8	6.9	7.5		8	7.1	7.2
03/02/2022	pH	6.3	8.6	6.8		6.9	6.9	7.4		7.6	7	7.3
09/12/2022	pH	6.3	8.6	7.1		7.3	6.9	8.1		8.8	7.5	8.2
03/24/2023	pH	6.3	8.6	NT		NT	7	NT		NT	6.9	NT
09/13/2023	pH	6.3	8.6	NT		6.7	NT	NT		NT	NT	6.8
03/05/2024	pH	6.3	8.6	7		NT	NT	NT		8.8	NT	NT
09/03/2024	pH	6.3	8.6	NT		NT	6.3	7.2		NT	NT	NT
03/07/2025	pH	6.3	8.6	NT		NT	NT	NT		NT		8.7
08/28/2025	pH	6.3	8.6	NT		6.6	NT	NT		6.7	NT	NT

Mean 7.5
Standard Deviation (STD) 0.6
Mean + 2 STD 8.6
Mean - 2 STD 6.3

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM								
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
mg/L												
04/23/1991	Phenols	2	0.07		0.05	0.05	NT		0.05	0.05	NT	NT
10/15/1991	Phenols	2	0.07		0.05	0.05	NT		0.05	0.05	NT	NT
01/23/1992	Phenols	2	0.07		0.05	0.05	NT		0.05	NT	NT	NT
03/23/1992	Phenols	2	0.07		0.05	0.05	NT		0.05	0.05	NT	NT
09/30/1992	Phenols	2	0.07		0.05	NT	NT		0.05	0.05	NT	NT
03/05/1993	Phenols	2	0.07		NT	NT	0.05		NT	NT	NT	NT
09/21/1993	Phenols	2	0.07		0.05	0.05	NT		0.05	0.05	0.05	0.05
03/23/1994	Phenols	2	0.07		NT	NT	NT		NT	NT	NT	NT
09/16/1994	Phenols	2	0.07		0.05	0.05	0.05		0.05	0.05	0.05	0.05
03/16/1995	Phenols	2	0.07		NT	NT	0.05		NT	NT	0.05	0.05
09/13/1995	Phenols	2	0.07		0.05	0.05	NT		0.05	0.05	NT	NT
03/28/1996	Phenols	2	0.07	NT	plugged	NT	NT	NT	plugged	0.05	NT	NT
06/20/1996	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/13/1996	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
12/16/1996	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
03/19/1997	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
06/18/1997	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
08/30/1997	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/10/1998	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/21/1998	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/18/1999	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/21/1999	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/21/2000	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
06/28/2000	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/28/2000	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
12/27/2000	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
03/28/2001	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/02/2001	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/19/2002	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/19/2002	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/14/2003	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/29/2003	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/08/2004	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/27/2004	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/17/2005	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/22/2005	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/17/2006	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/22/2006	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/14/2007	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/22/2007	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/03/2008	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/05/2008	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.216	0.05	0.05
03/09/2009	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/23/2009	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/16/2010	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/10/2010	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/01/2011	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/22/2011	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/02/2012	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/05/2012	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/08/2013	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/13/2013	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/06/2014	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/09/2014	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/11/2015	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/09/2015	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/11/2016	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
10/27/2016	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
09/07/2017	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/01/2018	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/19/2018	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/27/2019	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/05/2019	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
02/28/2020	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
08/31/2020	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/05/2021	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/13/2021	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/02/2022	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/12/2022	Phenols	2	0.07	0.05		0.05	0.05	0.05		0.05	0.05	0.05
03/24/2023	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/13/2023	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
03/05/2024	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
09/03/2024	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
03/07/2025	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
08/28/2025	Phenols	2	0.07	NT		NT	NT	NT		NT	NT	NT
Mean				0.05								
Standard Deviation (STD)				0.01								
Mean + 2 STD				0.07								

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
				Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
04/23/1991	Temperature, celsius	--	22.6		14.1	16.9	NT		11.4	12.7	NT	NT
10/15/1991	Temperature, celsius	--	22.6		13.6	12.4	NT		10.7	11.9	NT	NT
01/23/1992	Temperature, celsius	--	22.6		8.2	6.1	NT		8.4	NT	NT	NT
03/23/1992	Temperature, celsius	--	22.6		7.6	9.5	NT		11	10.5	NT	NT
09/30/1992	Temperature, celsius	--	22.6		10.6	NT	NT		11.5	12.1	NT	NT
03/05/1993	Temperature, celsius	--	22.6		8.8	5.2	NT		10.3	NT	NT	NT
09/21/1993	Temperature, celsius	--	22.6		17.3	17.5	14.2		14.4	14.6	10.9	10.4
03/23/1994	Temperature, celsius	--	22.6		11.6	10.2	9.2		12.1	8.2	8.4	9.3
09/16/1994	Temperature, celsius	--	22.6		18.7	21.3	18		14.8	17.1	15	14
03/16/1995	Temperature, celsius	--	22.6		7	5	6		8	6	NT	10
09/13/1995	Temperature, celsius	--	22.6		4.73	4.72	4.3		4.71	4.62	4.3	4.3
03/28/1996	Temperature, celsius	--	22.6	9	plugged	6	5	10	plugged	7	10	10
06/20/1996	Temperature, celsius	--	22.6	13		NT	NT	14		NT	NT	NT
09/13/1996	Temperature, celsius	--	22.6	17		19	17	12		17	14	13
12/16/1996	Temperature, celsius	--	22.6	NT		10	7	NT		12	7	8
03/19/1997	Temperature, celsius	--	22.6	9		6	4	10		8	7	7
06/18/1997	Temperature, celsius	--	22.6	14		15	14	13		14	15	14
08/30/1997	Temperature, celsius	--	22.6	20		20	23	14		17	18	16
03/10/1998	Temperature, celsius	--	22.6	8		6	8	10		8	11	8
09/21/1998	Temperature, celsius	--	22.6	16		18	19	11		14	15	15
03/18/1999	Temperature, celsius	--	22.6	8		5	12	10		6	11	11
09/21/1999	Temperature, celsius	--	22.6	16		18	21	11		14	13	13
03/21/2000	Temperature, celsius	--	22.6	NT		NT	11	NT		NT	9	9
06/28/2000	Temperature, celsius	--	22.6	NT		NT	19	NT		NT	NT	NT
09/28/2000	Temperature, celsius	--	22.6	19		17	20	15		18	16	15
12/27/2000	Temperature, celsius	--	22.6	NT		NT	13	NT		NT	14	13
03/28/2001	Temperature, celsius	--	22.6	8		6	10	10		8	13	13
09/02/2001	Temperature, celsius	--	22.6	17		NT	NT	14		NT	NT	NT
03/19/2002	Temperature, celsius	--	22.6	10		7	8	12		10	11	11
09/19/2002	Temperature, celsius	--	22.6	19		20	18	14		18	15	14
03/14/2003	Temperature, celsius	--	22.6	12		7	6	13		5	10	11
09/29/2003	Temperature, celsius	--	22.6	17		15	18	14		15	14	14
03/08/2004	Temperature, celsius	--	22.6	11		6	7	12		10	12	12
09/27/2004	Temperature, celsius	--	22.6	19		21	18	16		17	15	14
03/17/2005	Temperature, celsius	--	22.6	10		9	7	13		13	12	12
09/22/2005	Temperature, celsius	--	22.6	21		27	25	20		22	23	25
03/17/2006	Temperature, celsius	--	22.6	14		9	8	14		10	11	11
09/22/2006	Temperature, celsius	--	22.6	22		24	22	23		21	18	24
03/14/2007	Temperature, celsius	--	22.6	8		6	7	11		9	12	12
09/22/2007	Temperature, celsius	--	22.6	19.2		19	19.6	15.9		21	14.9	14.8
03/03/2008	Temperature, celsius	--	22.6	8		6	8	10.5		10	12	12
09/05/2008	Temperature, celsius	--	22.6	16.9		18.4	18.2	13.5		15.9	13.4	13.5
03/09/2009	Temperature, celsius	--	22.6	5		5	6	11		10	12	12
09/23/2009	Temperature, celsius	--	22.6	17		16	16	15		14	13	14
03/16/2010	Temperature, celsius	--	22.6	NT		8	8	NT		10	11	12
09/10/2010	Temperature, celsius	--	22.6	15		18	18	14		14	19	23
03/01/2011	Temperature, celsius	--	22.6	13		10	10	13		13	13	13
09/22/2011	Temperature, celsius	--	22.6	14		18	17	13		14	14	14
03/02/2012	Temperature, celsius	--	22.6	13		9	9	12		12	11	12
09/05/2012	Temperature, celsius	--	22.6	15		18	18	13		13	14	13
03/08/2013	Temperature, celsius	--	22.6	11		9	9	12		12	12	12
09/13/2013	Temperature, celsius	--	22.6	14		18	18	15		15	15	14
03/06/2014	Temperature, celsius	--	22.6	12		9	8	10		11	12	13
09/09/2014	Temperature, celsius	--	22.6	14		16.5	18.4	13		17.4	16.7	16
03/11/2015	Temperature, celsius	--	22.6	11		8	10	12		12	13	14
09/09/2015	Temperature, celsius	--	22.6	14		16	16	13		13	13	13
03/11/2016	Temperature, celsius	--	22.6	14		11	10	14		14	14	15
10/27/2016	Temperature, celsius	--	22.6	15		17	17	14		14	14	14
03/01/2018	Temperature, celsius	--	22.6	11.5		7.3	7.5	9.1		8	9.5	10.8
09/19/2018	Temperature, celsius	--	22.6	20.2		20.8	21.5	20.7		19.1	18.7	19.5
03/27/2019	Temperature, celsius	--	22.6	16.4		14.9	18.4	16.7		17.6	14.8	16.1
09/05/2019	Temperature, celsius	--	22.6	22.7		26	24.1	22.3		21.4	17.2	19.3
02/28/2020	Temperature, celsius	--	22.6	10		6.6	4.9	10.1		7.1	8.8	10.6
08/31/2020	Temperature, celsius	--	22.6	17		19	20.5	16		20	14.9	15.1
03/05/2021	Temperature, celsius	--	22.6	14.5		8.6	12.3	12.6		10.9	14.5	14.5
09/13/2021	Temperature, celsius	--	22.6	21.2		19.4	23.9	19.3		21.3	17.8	24.4
03/02/2022	Temperature, celsius	--	22.6	15.3		12.7	14	17		12.2	13.8	14.6
09/12/2022	Temperature, celsius	--	22.6	16		17	20.9	16.6		18.8	18.5	19.2
03/24/2023	Temperature, celsius	--	22.5	NT		NT	6.5	NT		NT	9.5	NT
09/13/2023	Temperature, celsius	--	22.5	NT		NT	NT	NT		NT	NT	NT
03/05/2024	Temperature, celsius	--	22.6	9		NT	NT	NT		7.6	NT	NT
09/03/2024	Temperature, celsius	--	22.6	NT		NT	20.3	20.3		NT	NT	NT
03/07/2025	Temperature, celsius	--	22.6	NT		NT	NT	NT		NT		9.4
08/28/2025	Temperature, celsius	--	22.6	NT		17.1	NT	NT		18	NT	NT

Mean 13.4
Standard Deviation (STD) 4.6
Mean + 2 STD 22.6

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
				Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
	mg/L											
03/11/2016	Boron, Total	6	0.288	0.05		0.176	0.05	0.151		0.05	0.05	0.05
10/27/2016	Boron, Total	6	0.288	0.05		0.277	0.106	0.14		0.05	0.05	0.05
09/07/2017	Boron, Total	6	0.288	0.05		0.262	0.05	0.143		0.05	0.05	0.05
03/01/2018	Boron, Total	6	0.288	0.05		0.168	0.05	0.117		0.05	0.05	0.05
09/19/2018	Boron, Total	6	0.288	0.05		0.256	0.05	0.180		0.05	0.05	0.05
03/27/2019	Boron, Total	6	0.288	0.05		0.175	0.05	0.149		0.05	0.05	0.05
09/05/2019	Boron, Total	6	0.288	0.05		0.343	0.05	0.138		0.05	0.05	0.05
02/28/2020	Boron, Total	6	0.288	0.05		0.218	0.05	0.143		0.05	0.05	0.05
08/31/2020	Boron, Total	6	0.288	0.05		0.31	0.05	0.141		0.05	0.05	0.05
03/05/2021	Boron, Total	6	0.288	0.05		0.317	0.05	0.125		0.05	0.05	0.05
09/13/2021	Boron, Total	6	0.288	0.05		0.389	0.05	0.124		0.05	0.05	0.05
03/02/2022	Boron, Total	6	0.288	0.05		0.256	0.05	0.110		0.05	0.05	0.05
09/12/2022	Boron, Total	6	0.288	0.05		0.467	0.05	0.130		0.05	0.05	0.05
03/24/2023	Boron, Total	6	0.288	NT		NT	0.05	NT		NT	0.05	NT
09/13/2023	Boron, Total	6	0.288	NT		0.338	NT	NT		NT	NT	0.114
03/05/2024	Boron, Total	6	0.288	0.05		NT	NT	NT		0.05	NT	NT
09/03/2024	Boron, Total	6	0.288	NT		NT	0.109	0.133		NT	NT	NT
03/07/2025	Boron, Total	6	0.288	NT		NT	NT	NT		NT	0.05	0.05
08/28/2025	Boron, Total	6	0.288	NT		0.488	NT	NT		0.05	NT	NT
	Mean			0.099								
	Standard Deviation (STD)			0.094								
	Mean + 2 STD			0.288								

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
				Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
	Sulfate											
03/11/2016	Sulfate	--	547.2218	597		529	133	16.9		71.4	71.6	26.1
10/27/2016	Sulfate	--	547.2218	514		524	102	11		74.5	79.1	42
09/07/2017	Sulfate	--	547.2218	470		407	76.6	9.2		67	70	42.8
03/01/2018	Sulfate	--	547.2218	600		539	76.9	10.5		68.1	69.1	40.9
09/19/2018	Sulfate	--	547.2218	468		512	53.3	9		70.9	73.2	45
03/27/2019	Sulfate	--	547.2218	550		532	44.2	10.9		64.2	71.2	44.9
09/05/2019	Sulfate	--	547.2218	442		315	33.3	13.7		56.4	75.1	44.8
02/28/2020	Sulfate	--	547.2218	518		440	40.7	8.7		64.8	70	42.5
08/31/2020	Sulfate	--	547.2218	436		357	29.9	13.6		67.4	69.6	41.4
03/05/2021	Sulfate	--	547.2218	546		361	49.5	9.5		65.1	69.6	41.7
09/13/2021	Sulfate	--	547.2218	371		377	54.4	11		70.7	70.2	43.3
03/02/2022	Sulfate	--	547.2218	378		477	88.6	10		70.8	71.3	41.6
09/12/2022	Sulfate	--	547.2218	363		323	147	12.6		71.4	70.5	33
03/24/2023	Sulfate	--	547.2218	NT		NT	315	NT		NT	74.6	NT
09/13/2023	Sulfate	--	547.2218	NT		418	NT	NT		NT	NT	46.4
03/05/2024	Sulfate	--	547.2218	422		NT	NT	NT		62.4	NT	NT
09/03/2024	Sulfate	--	547.2218	NT		NT	327	11.6		NT	NT	NT
03/07/2025	Sulfate	--	547.2218	NT		NT	NT	NT		NT	81.7	42
08/28/2025	Sulfate	--	547.2218	NT		422	NT	NT		67.8	NT	NT
	Mean			171								
	Standard Deviation (STD)			188								
	Mean + 2 STD			547								

AMES-STORY ENVIRONMENTAL LANDFILL
85-SDP-13-91P
MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
				Control Limits				Control Limits				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
				mg/L								
09/09/2014	Turbidity, NTU	--	238.8576	632.4		0.44	2.03	11.02		4.43	39.1	40.9
03/11/2016	Turbidity, NTU	--	238.8576	101		2.26	1.13	0.97		7.08	3.95	2.14
10/27/2016	Turbidity, NTU	--	238.8576	6.65		2.69	1.34	6.36		16.9	1.68	3.12
03/27/2017	Turbidity, NTU	--	238.8576	129		1.25	3.15	3.79		10.1	NT	23
09/07/2017	Turbidity, NTU	--	238.8576	418.2		0.72	0.59	2.72		13.34	45.19	8.35
03/01/2018	Turbidity, NTU	--	238.8576	30.1		1.23	0.7	0.91		3.91	5.64	7.51
09/19/2018	Turbidity, NTU	--	238.8576	668		0.42	0.63	0.71		2.61	1.43	5.81
03/27/2019	Turbidity, NTU	--	238.8576	195.1		2.11	1.28	0.83		11.76	3.02	36.95
09/05/2019	Turbidity, NTU	--	238.8576	36.19		0.95	0.56	1.84		22.06	30.36	18.85
02/28/2020	Turbidity, NTU	--	238.8576	218.7		7.68	1.21	0.93		1.14	4.15	25.68
08/31/2020	Turbidity, NTU	--	238.8576	168		1.68	0.83	6		2.74	114	34.58
03/05/2021	Turbidity, NTU	--	238.8576	103.4		4.28	1.28	1.4		12.29	12.26	21.07
09/13/2021	Turbidity, NTU	--	238.8576	84.39		1.79	0.94	1.23		5.66	4.53	5.87
03/02/2022	Turbidity, NTU	--	238.8576	64.75		2.73	1.49	3.7		15.86	10.21	14.62
09/12/2022	Turbidity, NTU	--	238.8576	61.68		2.66	0.94	4.15		9.12	9.36	4.7
03/24/2023	Turbidity, NTU	--	238.8576	NT		NT	1.33	NT		NT	36.31	NT
09/13/2023	Turbidity, NTU	--	238.8576	NT		4.61	NT	NT		NT	NT	51.95
03/05/2024	Turbidity, NTU	--	238.8576	342		NT	NT	NT		21.29	NT	NT
09/03/2024	Turbidity, NTU	--	238.8576	NT		NT	2.62	5.93		NT	NT	NT
03/07/2025	Turbidity, NTU	--	238.8576	NT		NT	NT	NT		NT	45.2	1.69
08/28/2025	Turbidity, NTU	--	238.8576	NT		2.23	NT	NT		36.54	NT	NT
	Mean			36.58								
	Standard Deviation (STD)			101.14								
	Mean + 2 STD			238.86								

Table 6 – Summary of Current Year Detections with Limit Exceedances

Table 6
Summary of Well/Detected Constituent Pairs With Limit Exceedances
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

2025

Well	Constituent	Units	Most recent result	Background Standard	GWPS
MW-6	None				
MW-7	None				
MW-8	None				
MW-28	None				
MW-29	None				
MW-36	None				
MW-37	None				
SW-3	None				
MW-25 - Spring	Boron	mg/L	0.984	0.288	6.0
MW-25 - Fall	Boron	mg/L	0.586	0.288	6.0
MW-33 - Spring	Iron	mg/L	10.2	5.66	None
MW-33 - Fall	Iron	mg/L	9.6	5.66	None
MW-33 - Spring	Nitrogen, Ammonia	mg/L	1.98	0.90	30.0
MW-33 - Fall	Nitrogen, Ammonia	mg/L	1.73	0.90	30.0
MW-33 - Spring	Boron	mg/L	0.503	0.288	6.0
MW-33 - Fall	Boron	mg/L	0.565	0.288	6.0
MW-34 - Fall	Iron	mg/L	5.95	5.66	None
MW-35 -Spring	Arsenic	mg/L	0.1740	0.0376	0.0376
MW-35 -Spring	Chloride	mg/L	462	181.4	None
MW-35 -Spring	Conductivity	mg/L	2760	1835.0	None
MW-39 - Spring	Conductivity	mg/L	2720	1835.0	None
MW-39 - Fall	Conductivity	mg/L	2560	1835.0	None
MW-39 - Spring	Sulfate	mg/L	613.0	547.2	None
MW-40	None				

Table 7 – Summary of Ongoing and Newly Identified SSI

Table 7
Summary of Ongoing Compounds with Historic Limit Exceedances
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

2025								
Date	Well	Constituent	Units	Most recent result	Background Standard	GWPS	Initial Exceedance	Recorded Exceedances
8/28/2025	MW-25 - Fall	Boron	mg/L	0.586	0.288	6.0	3/11/2016	19 of 19 episodes (all)
8/28/2025	MW-33 - Fall	Iron	mg/L	9.61	5.66	None	9/9/2014	20 of 21 episodes
8/28/2025	MW-33 - Fall	Nitrogen, Ammonia	mg/L	1.73	0.90	30.0	9/9/2014	22 of 22 episodes (all)
8/28/2025	MW-33 - Fall	Boron	mg/L	0.565	0.288	6.0	3/11/2016	19 of 19 episodes (all)
8/28/2025	MW-34 - Fall	Arsenic	mg/L	0.0059	0.0376	0.0376	3/5/2021	3/5/2021, 3/2/2022
8/28/2025	MW-34 - Fall	Iron	mg/L	5.95	5.66	None	9/7/2017	9/7/2017, 9/5/2019, 8/31/2020, 9/13/2021, 3/2/2022, 9/12/2022, 9/13/2023, 3/5/2024, 9/3/2024, 8/28/2025
8/28/2025	MW-34 - Fall	Nitrogen, Ammonia	mg/L	<1.0	0.90	30.0	9/7/2017	9/7/2017, 9/5/2019, 8/31/2020, 9/13/2021, 9/12/2022, 9/13/2023, 3/5/2024, 9/3/2024
8/28/2025	MW-34 - Fall	Boron	mg/L	0.235	0.288	6.0	9/19/2018	9/19/2018, 3/24/2023
8/28/2025	MW-34 - Fall	Sulfate	mg/L	199.0	547.22	None	3/24/2023	3/24/2023
8/28/2025	MW-35 - Fall	Arsenic	mg/L	0.0364	0.0376	0.0376	10/27/2016	10/27/2016, 3/27/2019, 8/31/2020, 3/2/2022, 3/24/2023, 3/5/2024, 3/7/2025
8/28/2025	MW-35 - Fall	COD	mg/L	<20	61.4	None	9/9/2015	9/9/2015, 10/27/2016, 9/5/2019
8/28/2025	MW-35 - Fall	Chloride	mg/L	107.0	181.4	None	3/11/2015	3/11/2015, 3/11/2016, 3/1/2018, 3/27/2019, 2/28/2020, 3/5/2021, 3/2/2022, 3/24/2023, 3/5/2024, 3/7/2025
8/28/2025	MW-35 - Fall	Conductivity	us/cm	1580.0	1835.0	None	3/27/2019	3/27/2019, 2/28/2020, 3/24/2023, 3/5/2024, 9/3/2024, 3/7/2025
8/28/2025	MW-35 - Fall	Temperature	C	19.0	22.6	None	9/5/2019	9/5/2019
8/28/2025	MW-35 - Fall	Turbidity	NTU	399.3	238.60	None	3/5/2024	3/5/2024, 3/7/2025
8/28/2025	MW-39 - Fall	Arsenic	mg/L	<0.002	0.0376	0.0376	8/31/2020	8/31/2020, 3/5/2021
8/28/2025	MW-39 - Fall	Conductivity	us/cm	2560.0	1835.0	None	3/1/2018	3/1/2018, 3/5/2021, 3/2/2022, 3/5/2024, 9/3/2024, 3/7/2025, 9/17/2025
8/28/2025	MW-39 - Fall	Sulfate	mg/L	61.90	547.22	None	3/1/2018	3/1/2018, 9/5/2019, 8/31/2020, 3/5/2021, 9/13/2021, 3/2/2022, 9/12/2022, 3/24/2023, 3/5/2024, 3/7/2025
8/28/2025	MW-39 - Fall	Turbidity	NTU	3.95	238.86	None	3/5/2021	3/5/2021
8/28/2025	MW-40 - Fall	Chloride	mg/L	19.0	181.4	None	3/1/2018	3/1/2018
8/28/2025	MW-40 - Fall	Temperature	C	7.2	22.6	None	9/19/2018	9/19/2018, 9/5/2019

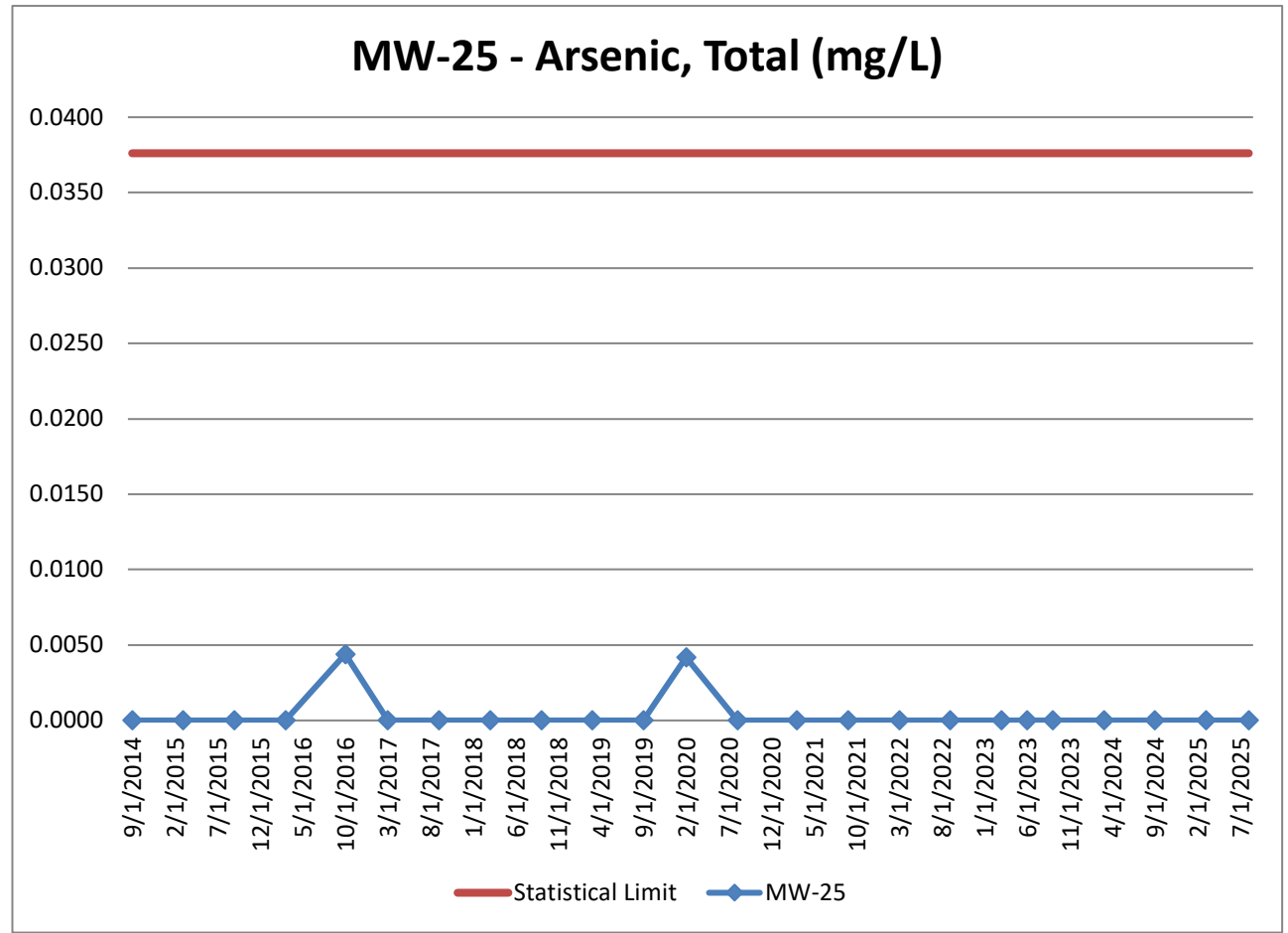
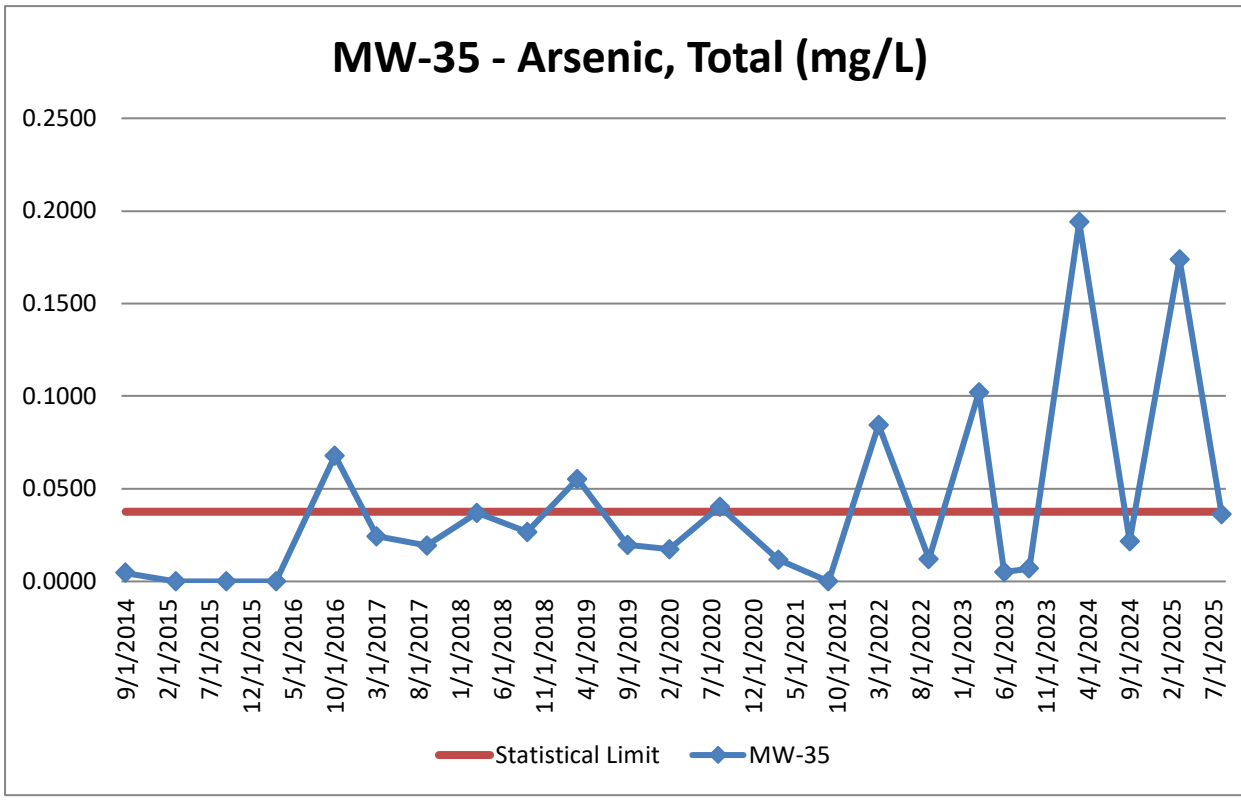
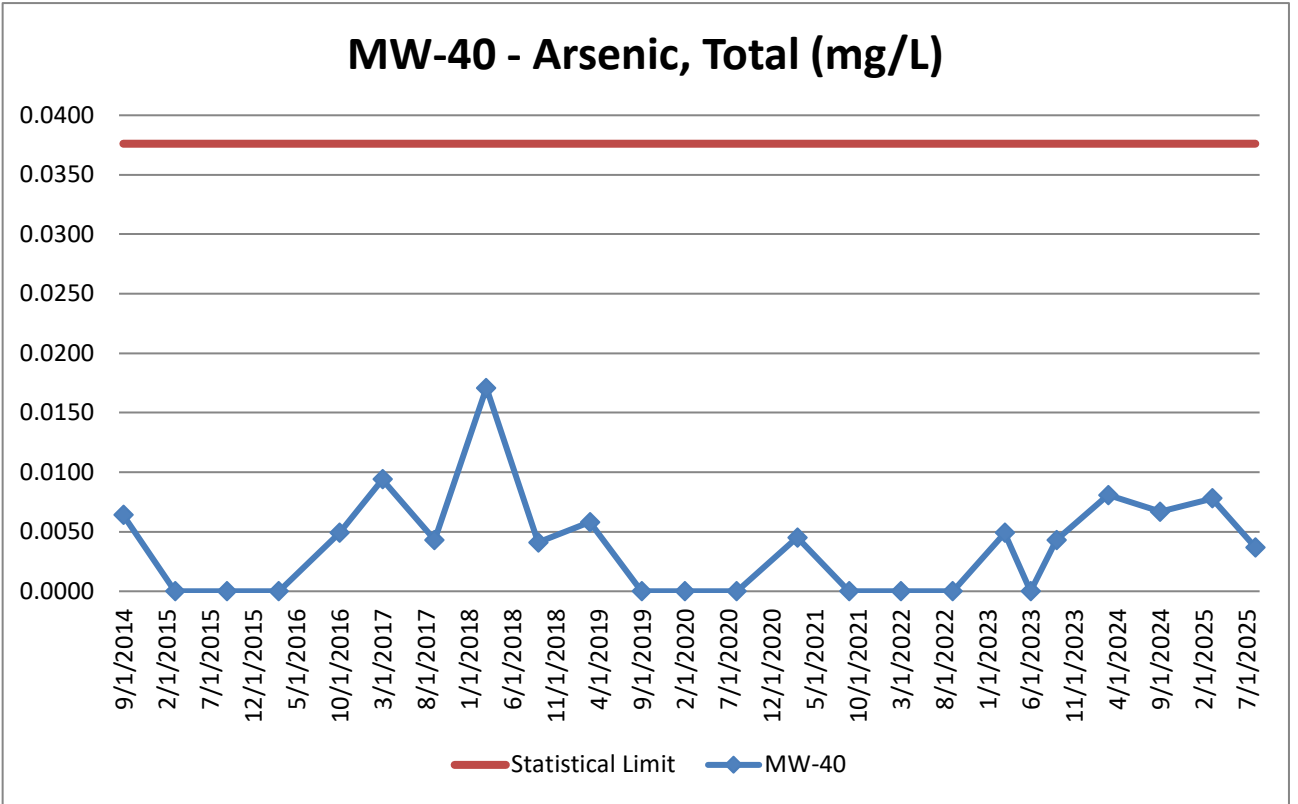
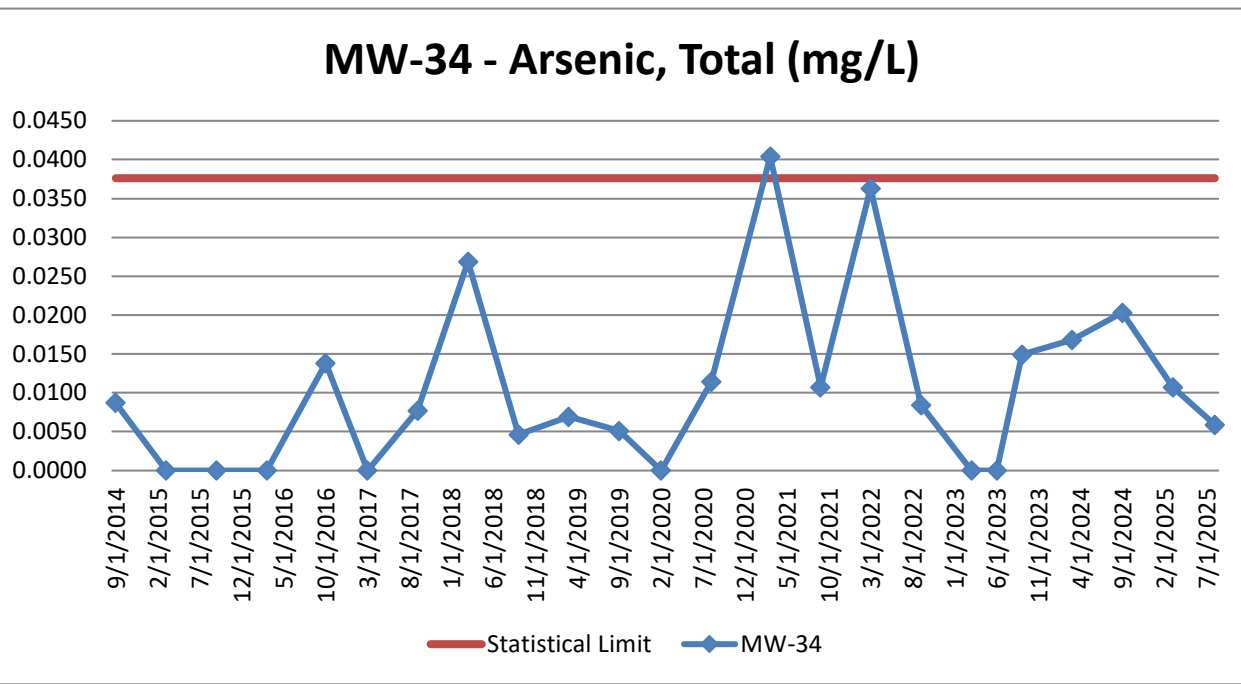
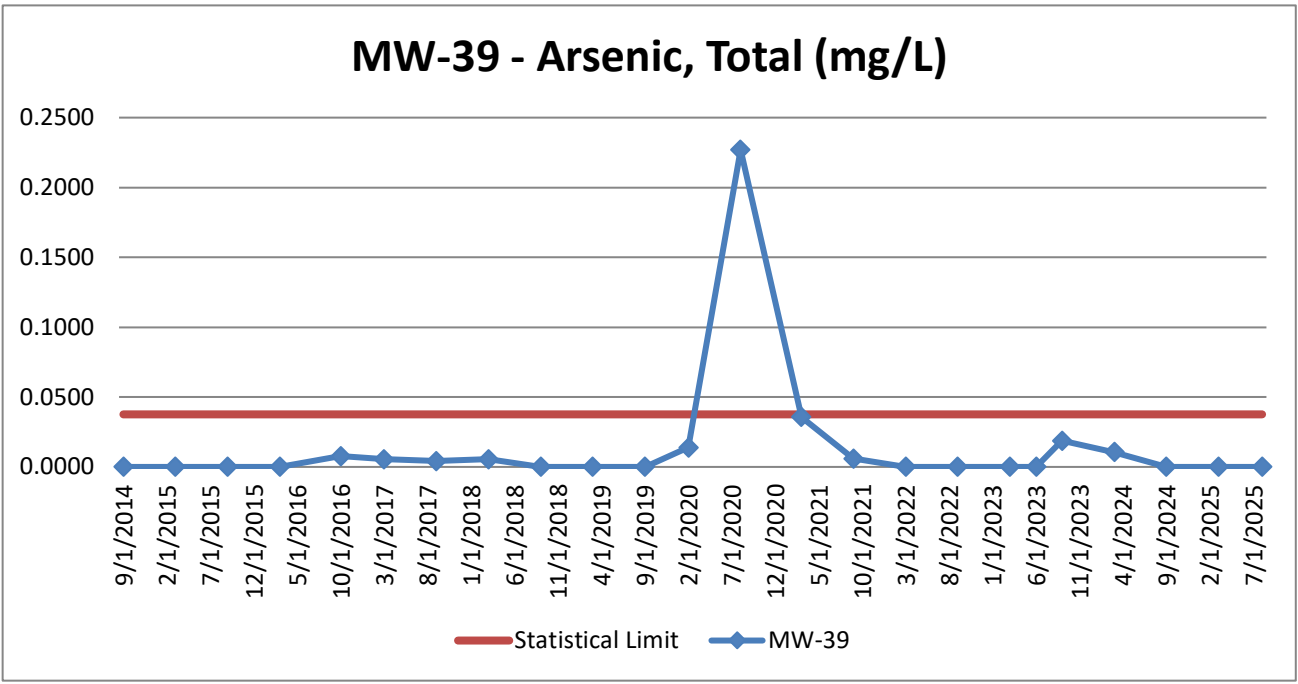
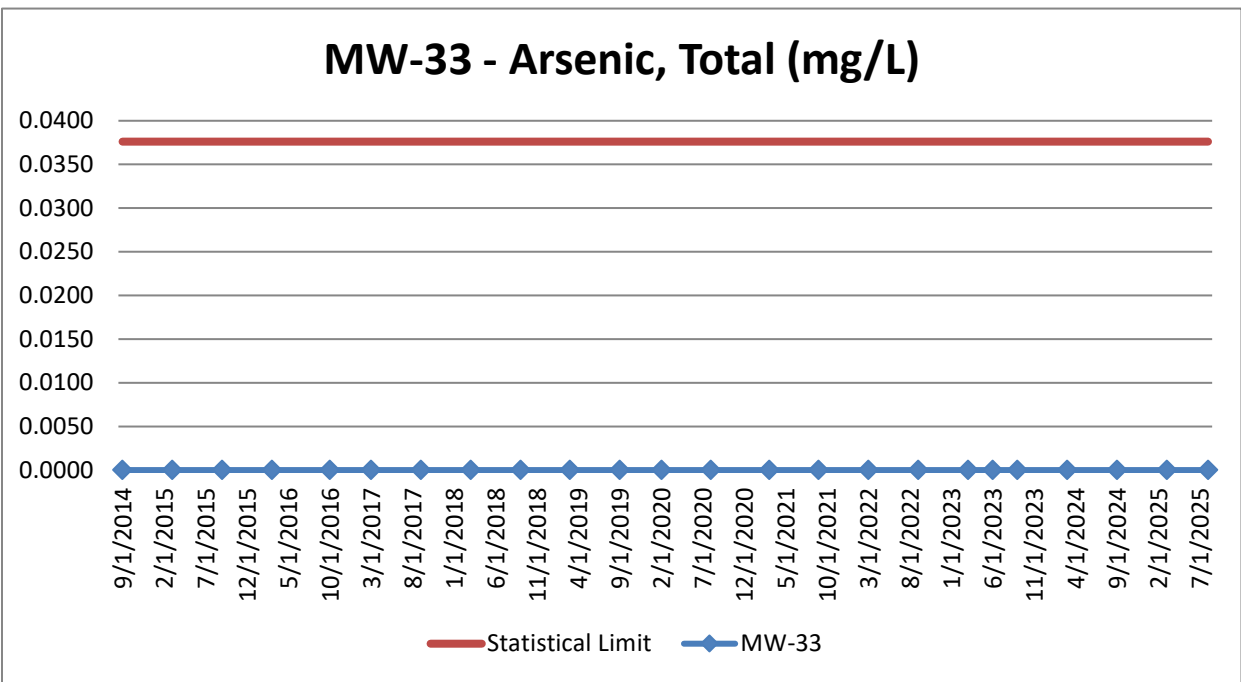
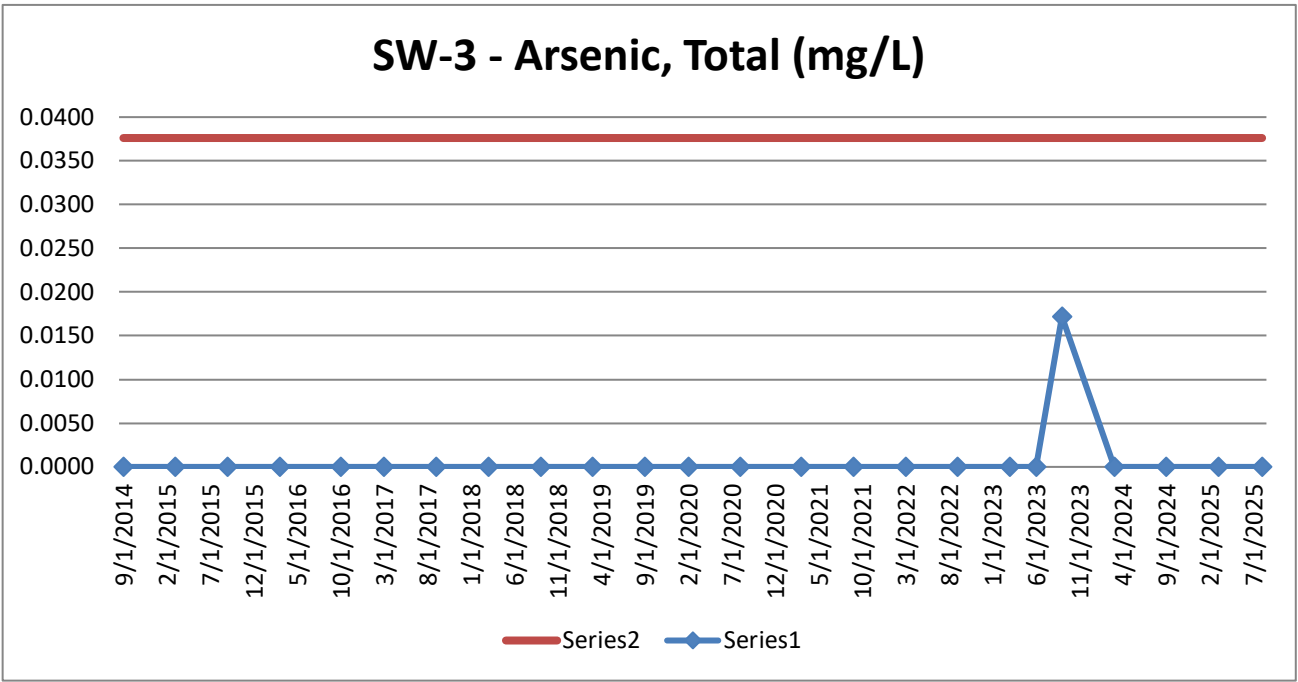
Table 8 - Summary of Ongoing and Newly Identified SSL

Table 8
Summary of Ongoing and Newly Identified GWPS Exceedances
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

2025

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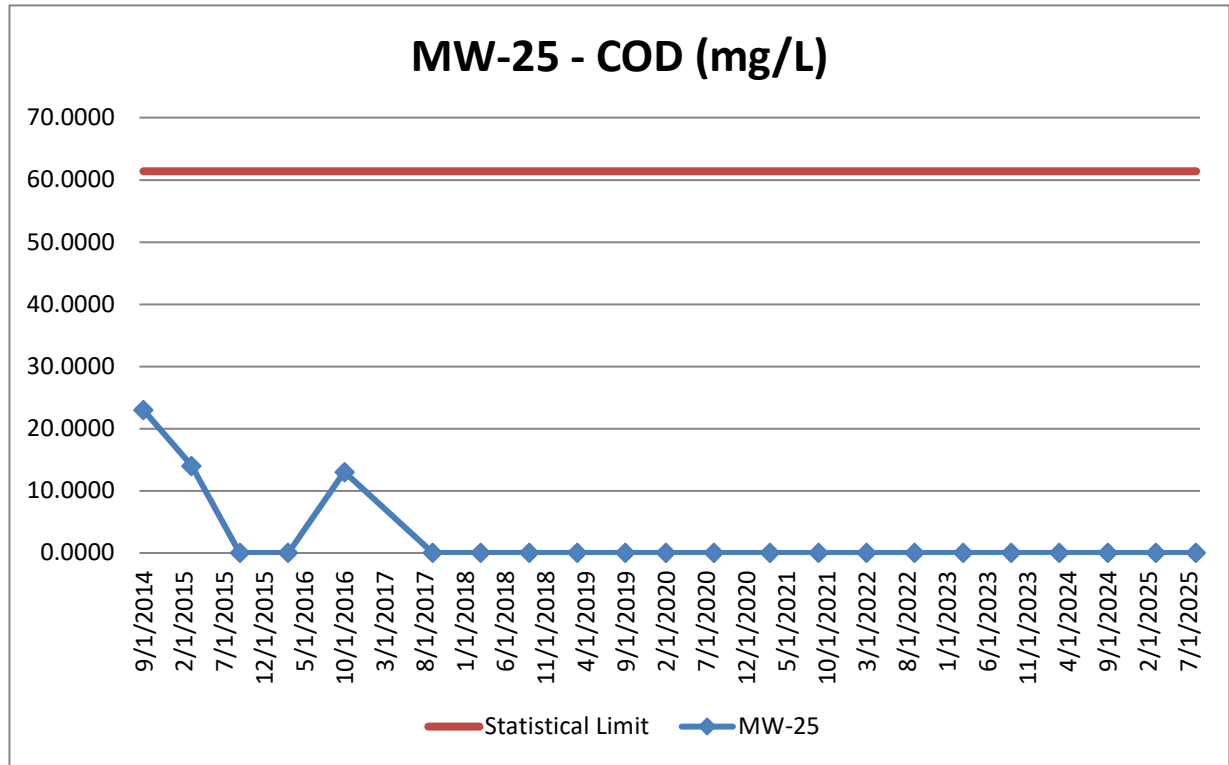
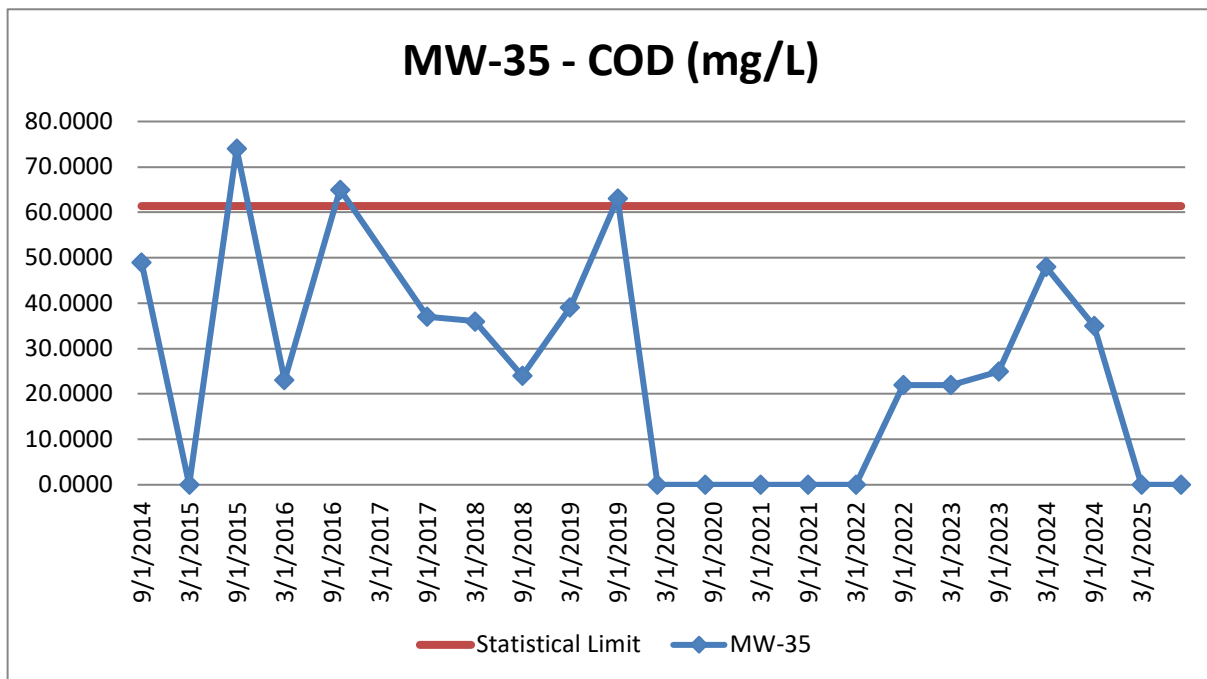
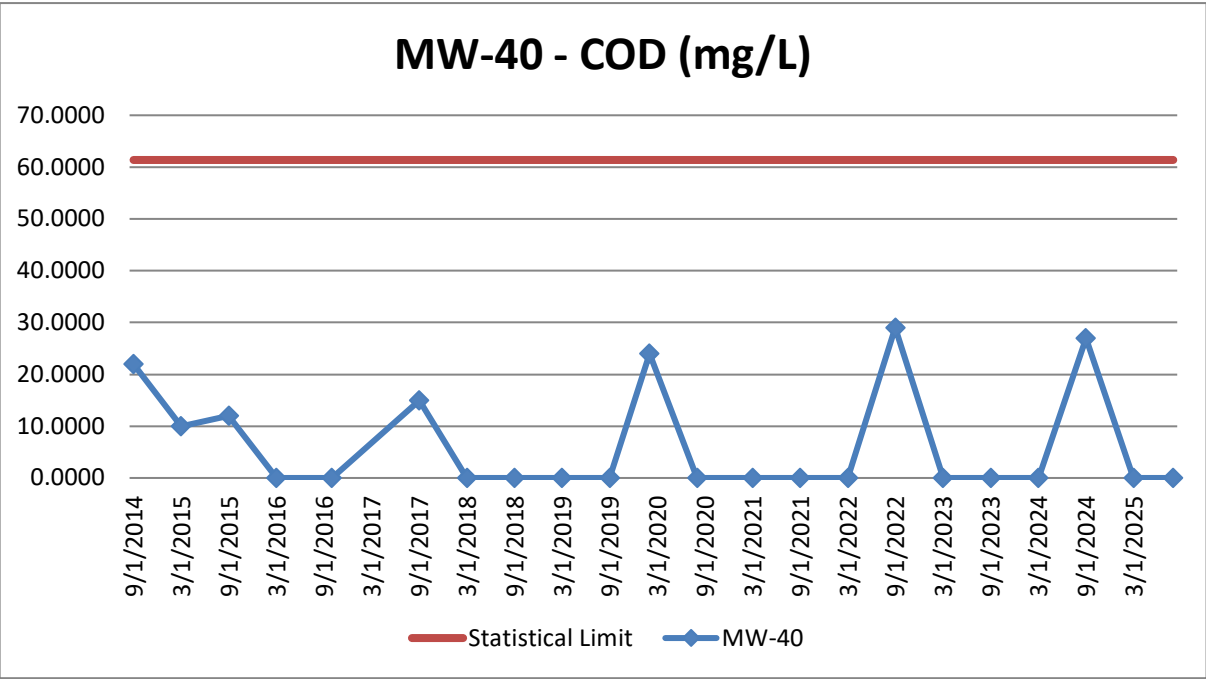
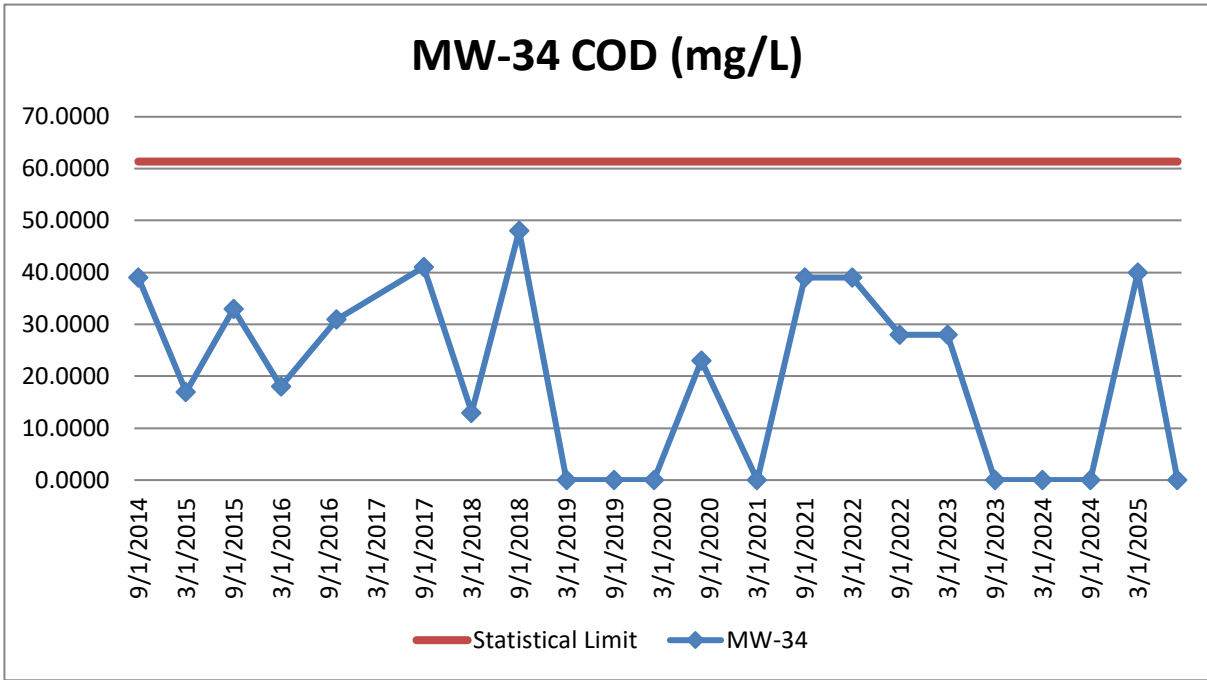
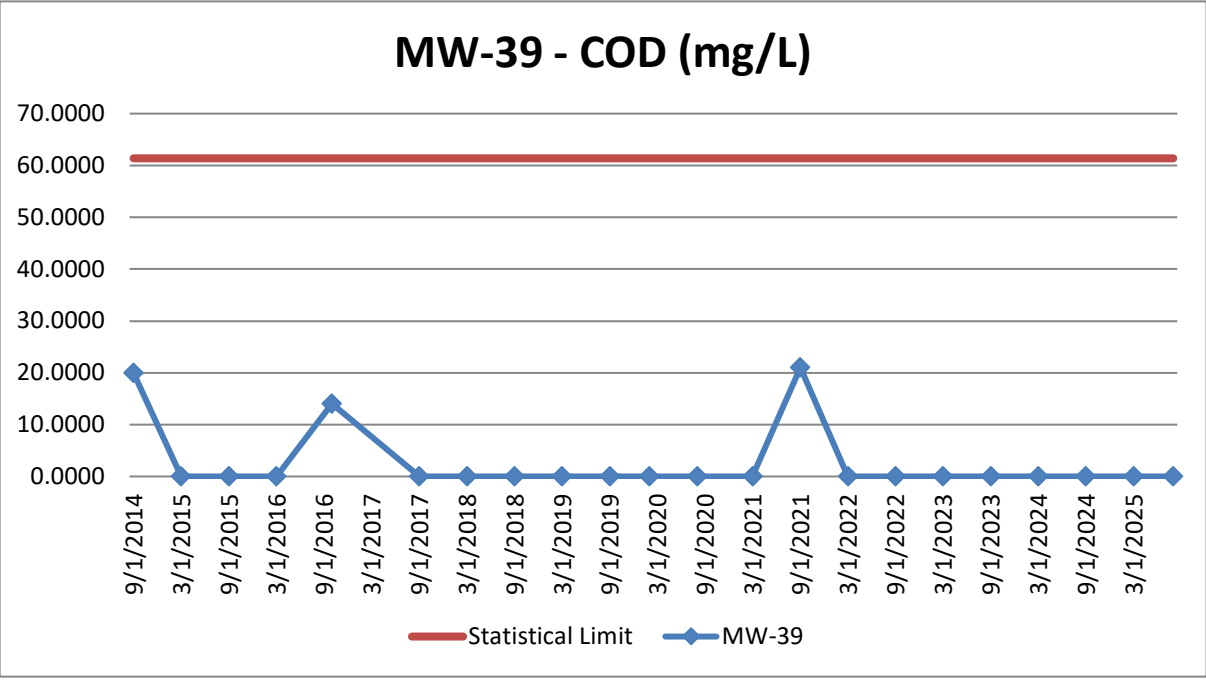
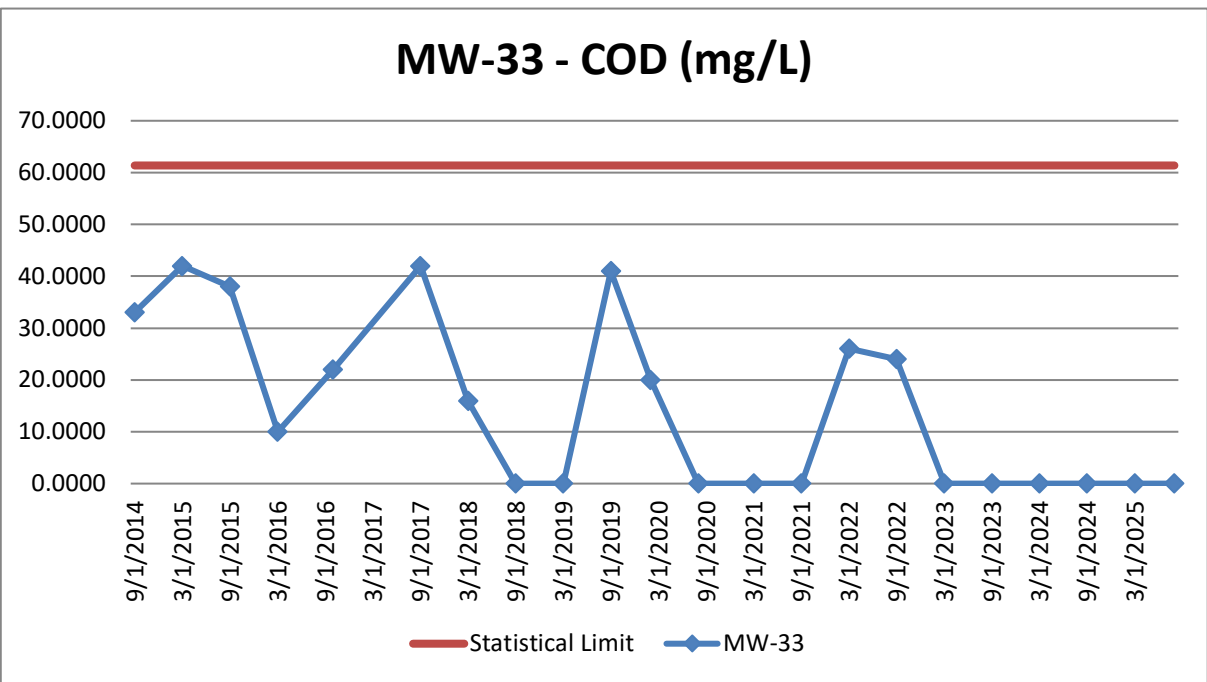
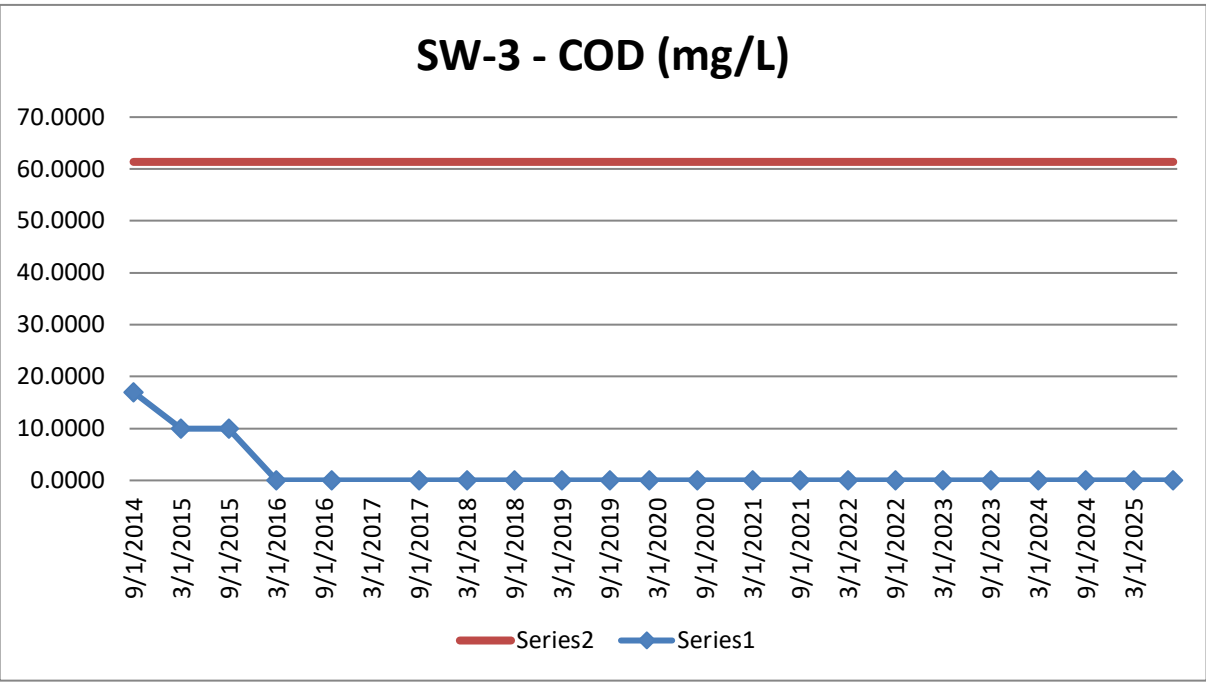
Combined Table 9 & 10– Analytical Data Summary & Exceedance Tracking



AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

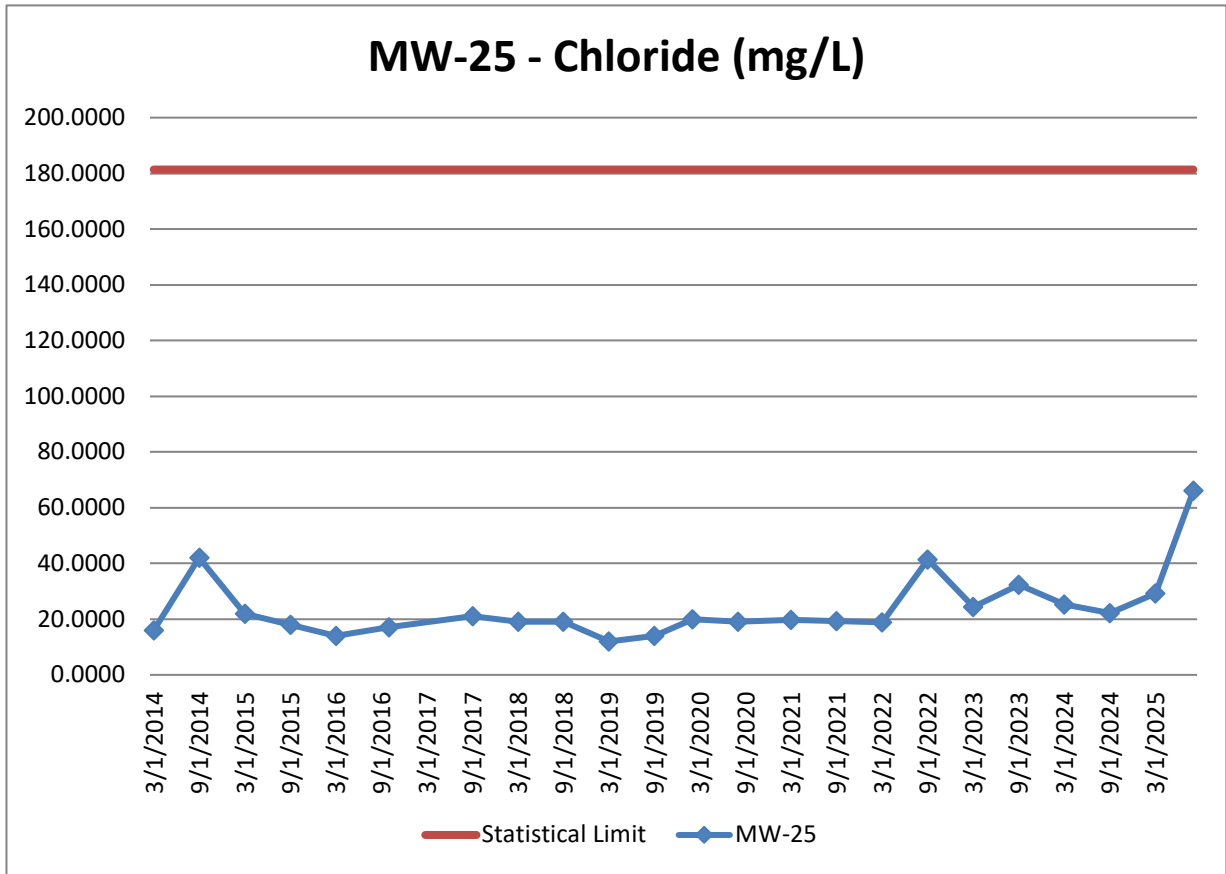
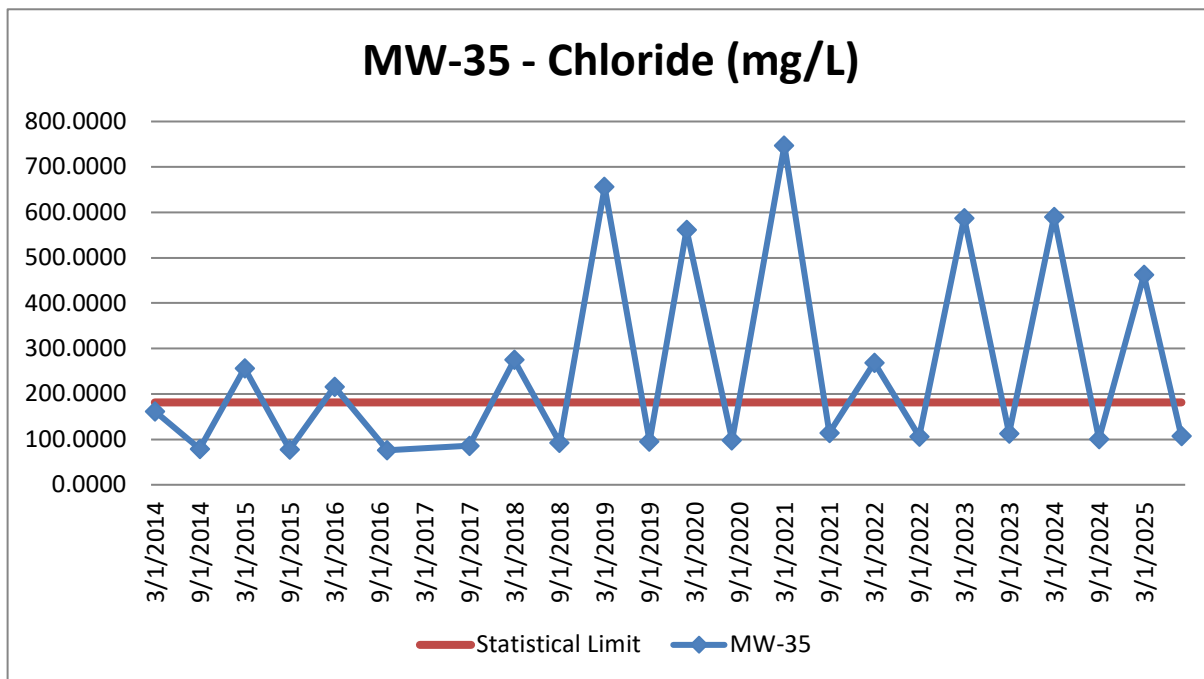
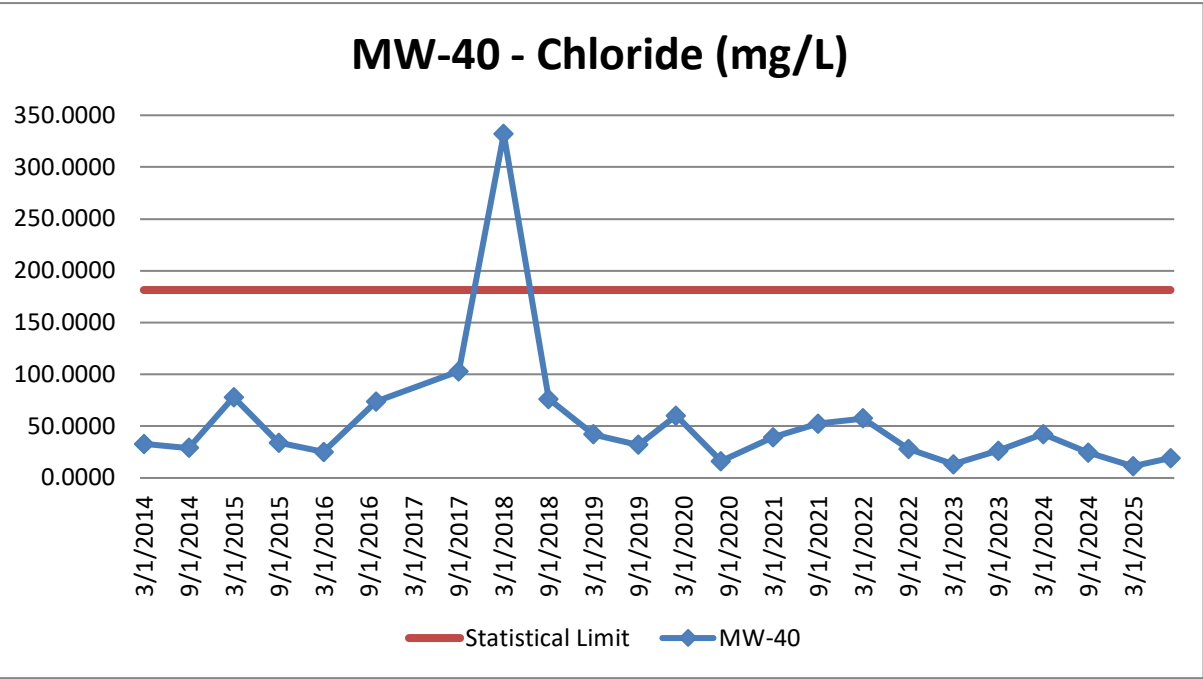
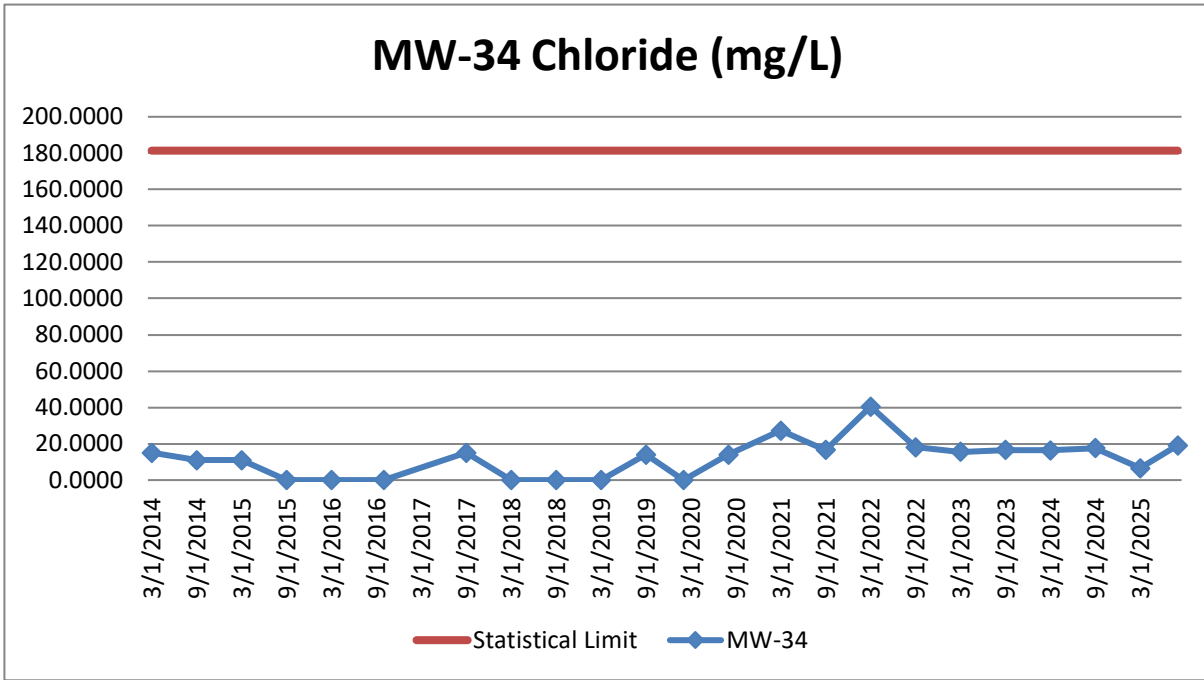
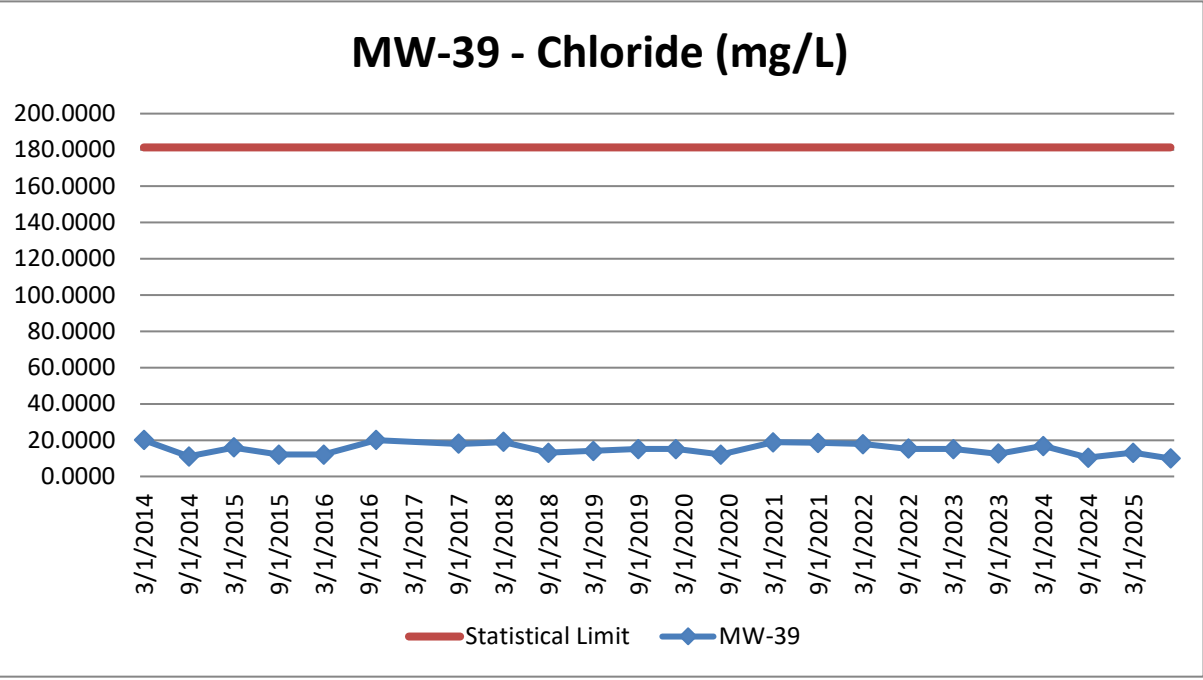
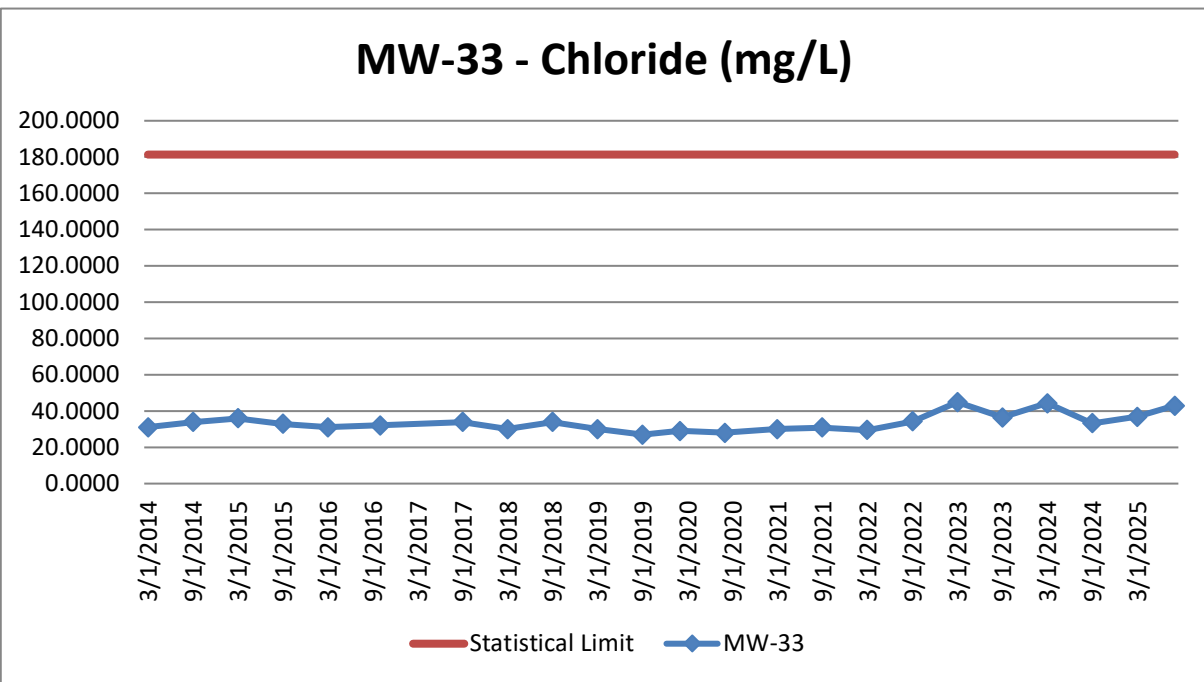
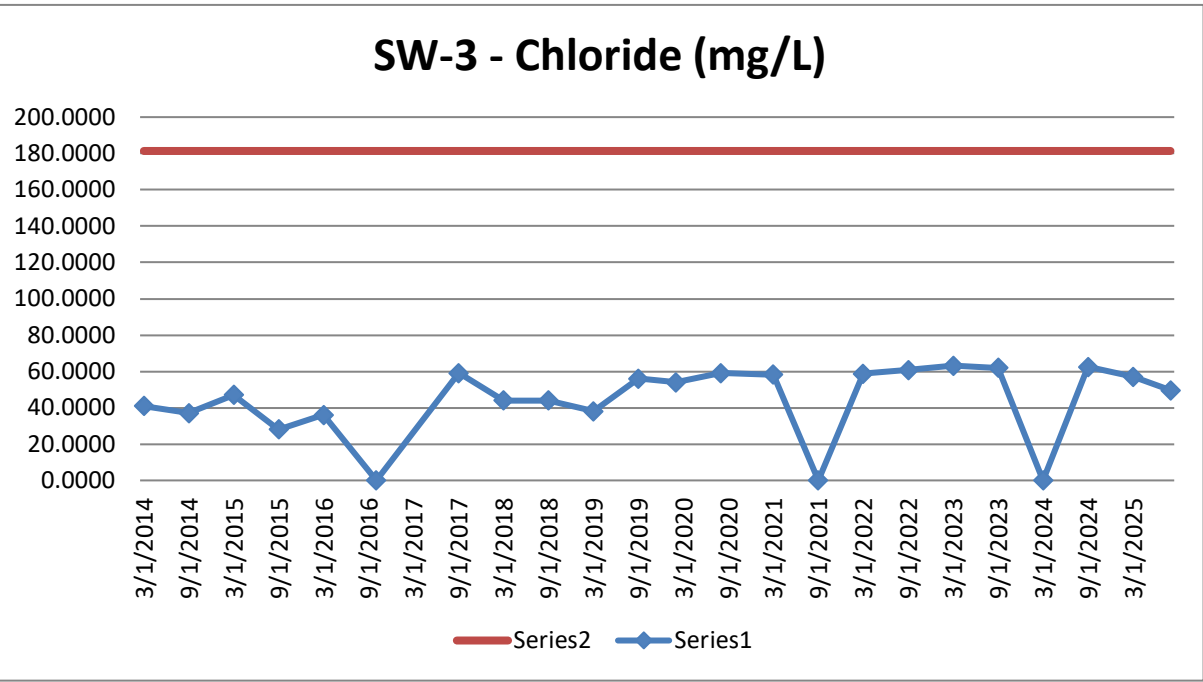
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW							
				D.G.W SW 3	D.G.W MW 39	D.G.W MW 40	BOTH MW 25	BOTH MW 33	BOTH MW 34	BOTH MW35
mg/L										
04/23/1991	Chemical Oxygen Demand	--	61.4	10.5			33.4	---	120.1	
10/15/1991	Chemical Oxygen Demand	--	61.4	<10			17.2	---	14.3	
01/23/1992	Chemical Oxygen Demand	--	61.4	<10			12	33.4	<10	
03/23/1992	Chemical Oxygen Demand	--	61.4	<10			20	54	10	
09/30/1992	Chemical Oxygen Demand	--	61.4	DRY			230	28	107	
03/05/1993	Chemical Oxygen Demand	--	61.4	DRY			<10	<10	<10	
09/21/1993	Chemical Oxygen Demand	--	61.4	<10			<10	<10	<10	
03/23/1994	Chemical Oxygen Demand	--	61.4	<10			<10	19	<10	
09/16/1994	Chemical Oxygen Demand	--	61.4	NT			<10	13	<10	
03/16/1995	Chemical Oxygen Demand	--	61.4	NT			39	69	29	
09/13/1995	Chemical Oxygen Demand	--	61.4	NT			<10	<10	<10	
03/28/1996	Chemical Oxygen Demand	--	61.4	NT			<10	<10	<10	<10
06/20/1996	Chemical Oxygen Demand	--	61.4	NT			NT	NT	NT	10
09/13/1996	Chemical Oxygen Demand	--	61.4	DRY			<10	12	<10	<10
12/16/1996	Chemical Oxygen Demand	--	61.4	NT			NT	NT	NT	NT
03/19/1997	Chemical Oxygen Demand	--	61.4	DRY			<10	14	<10	<10
06/18/1997	Chemical Oxygen Demand	--	61.4	NT			NT	NT	NT	<10
08/30/1997	Chemical Oxygen Demand	--	61.4	DRY			<10	<10	<10	<10
03/10/1998	Chemical Oxygen Demand	--	61.4	DRY			<10	<10	<10	<10
09/21/1998	Chemical Oxygen Demand	--	61.4	DRY			<10	<10	<10	<10
03/18/1999	Chemical Oxygen Demand	--	61.4	DRY			<10	<10	<10	<10
09/21/1999	Chemical Oxygen Demand	--	61.4	DRY			<10	<10	<10	<10
03/21/2000	Chemical Oxygen Demand	--	61.4	DRY			<10	<10	55	NT
06/28/2000	Chemical Oxygen Demand	--	61.4	DRY	11	<10	NT	NT	NT	NT
09/28/2000	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	<10	<10	DRY
12/27/2000	Chemical Oxygen Demand	--	61.4	NT	<10	<10	NT	NT	NT	NT
03/28/2001	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	<10	28	<10
09/02/2001	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	17	19	11
03/19/2002	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	17	36	14
09/19/2002	Chemical Oxygen Demand	--	61.4	DRY	18	<10	<10	19	15	<10
03/14/2003	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	28	55	54
09/29/2003	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	18	17	<10
03/08/2004	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	17	36	<10
09/27/2004	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	16	37	21	27
03/17/2005	Chemical Oxygen Demand	--	61.4	DRY	23	19	<10	22	54	<10
09/22/2005	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	10	21	10	10
03/17/2006	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	13	27	<10
09/22/2006	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	12	24	53	10
03/14/2007	Chemical Oxygen Demand	--	61.4	<10	<10	<10	<10	15	32	11
09/22/2007	Chemical Oxygen Demand	--	61.4	DRY	<10	12	12	17	50	12
03/03/2008	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	<10	10	25	11
09/05/2008	Chemical Oxygen Demand	--	61.4	DRY	14	20	19	17	46	63
03/09/2009	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	16	34	33	45
09/23/2009	Chemical Oxygen Demand	--	61.4	DRY	<10	<10	24	28	25	33
03/16/2010	Chemical Oxygen Demand	--	61.4	11	159	18	67	30	47	364
09/10/2010	Chemical Oxygen Demand	--	61.4	17	18	<10	56	22	25	53
03/01/2011	Chemical Oxygen Demand	--	61.4	115	<10	<10	<10	<10	11	81
09/22/2011	Chemical Oxygen Demand	--	61.4	<10	24	15	<10	34	42	46
03/02/2012	Chemical Oxygen Demand	--	61.4	30	31	15	<10	30	37	48
09/05/2012	Chemical Oxygen Demand	--	61.4	23	21	21	15	29	52	71
03/08/2013	Chemical Oxygen Demand	--	61.4	DRY	17	24	24	31	29	114
09/13/2013	Chemical Oxygen Demand	--	61.4	DRY	10	77	15	34	<10	70
03/06/2014	Chemical Oxygen Demand	--	61.4	<10	40	16	24	<10	20	44
09/09/2014	Chemical Oxygen Demand	--	61.4	17	20	22	23	33	39	49
03/11/2015	Chemical Oxygen Demand	--	61.4	10	<10	10	14	42	17	<10
09/09/2015	Chemical Oxygen Demand	--	61.4	10	<10	12	<10	38	33	74
03/11/2016	Chemical Oxygen Demand	--	61.4	<10	<10	<10	<10	10	18	23
10/27/2016	Chemical Oxygen Demand	--	61.4	DRY	14	<10	13	22	31	65
09/07/2017	Chemical Oxygen Demand	--	61.4	<10	<10	15	<10	42	41	37
03/01/2018	Chemical Oxygen Demand	--	61.4	<10	<10	<10	<10	16	13	36
09/19/2018	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	48	24
03/27/2019	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	<20	39
09/05/2019	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	41	<20	63
02/28/2020	Chemical Oxygen Demand	--	61.4	<20	<20	24	<20	20		<20
08/31/2020	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	23	<20
03/05/2021	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	<20	<20
09/13/2021	Chemical Oxygen Demand	--	61.4	DRY	21	<20	<20	<20	39	<20
03/02/2022	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	26	39	<20
09/12/2022	Chemical Oxygen Demand	--	61.4	<20	<20	29	<20	24	28	22
03/24/2023	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	28	22
09/13/2023	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	<20	25
03/05/2024	Chemical Oxygen Demand	--	61.4	Dry	<20	<20	<20	<20	<20	48
09/03/2024	Chemical Oxygen Demand	--	61.4	<20	<20	27	<20	<20	<20	35
03/07/2025	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	40	<20
08/28/2025	Chemical Oxygen Demand	--	61.4	<20	<20	<20	<20	<20	<20	<20
	Mean			27.1	29.4	22.1	32.3	26.0	35.3	49.0
	Standard Deviation (STD)			31.8	35.4	14.7	45.4	12.1	21.1	58.4
	Mean + 2 STD			90.6	100.2	51.5	123.1	50.1	77.4	165.9



AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

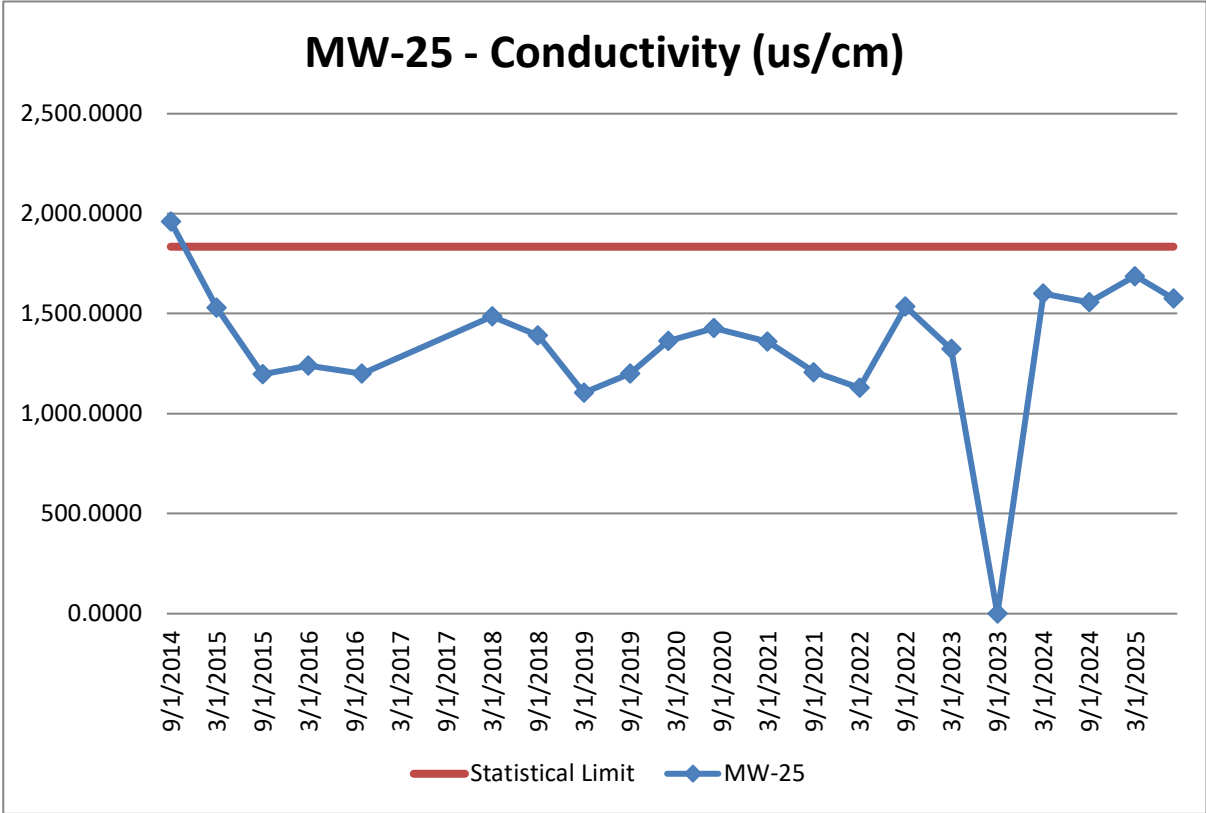
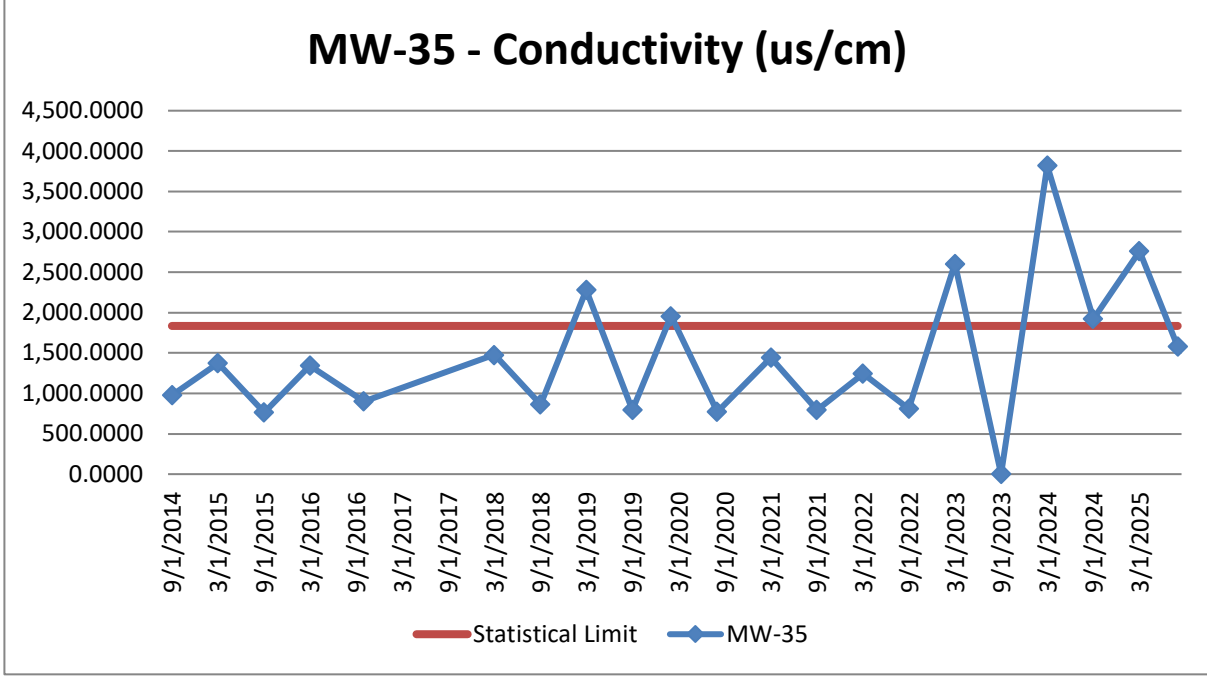
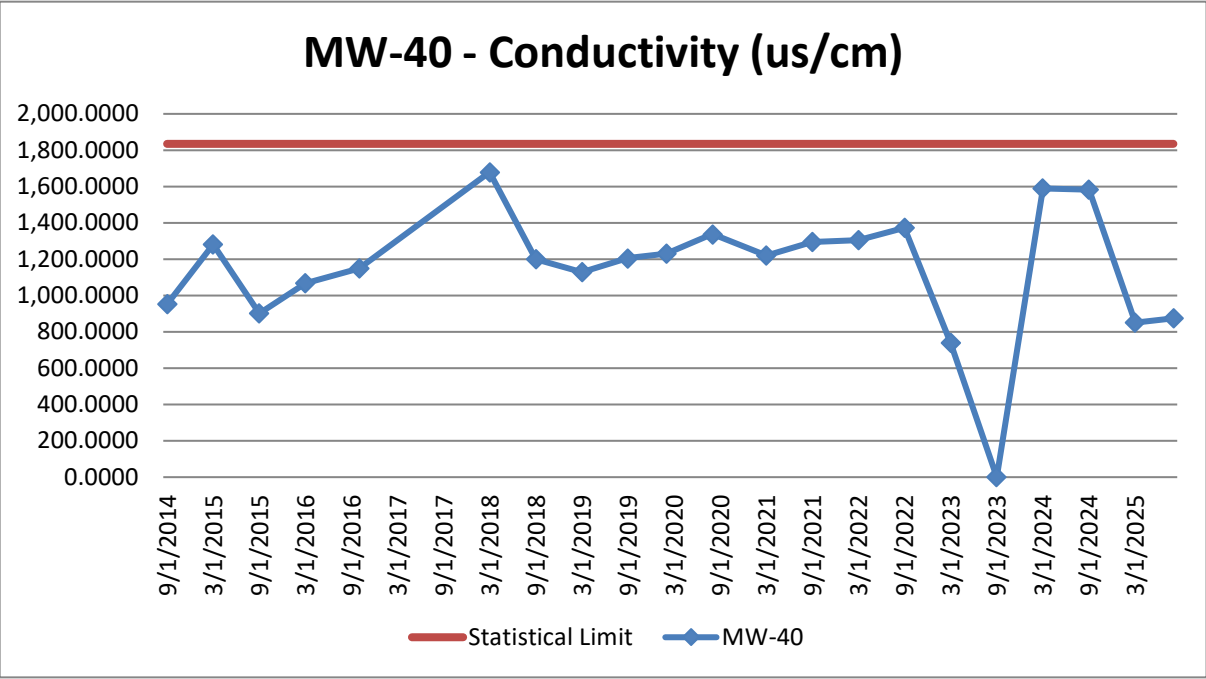
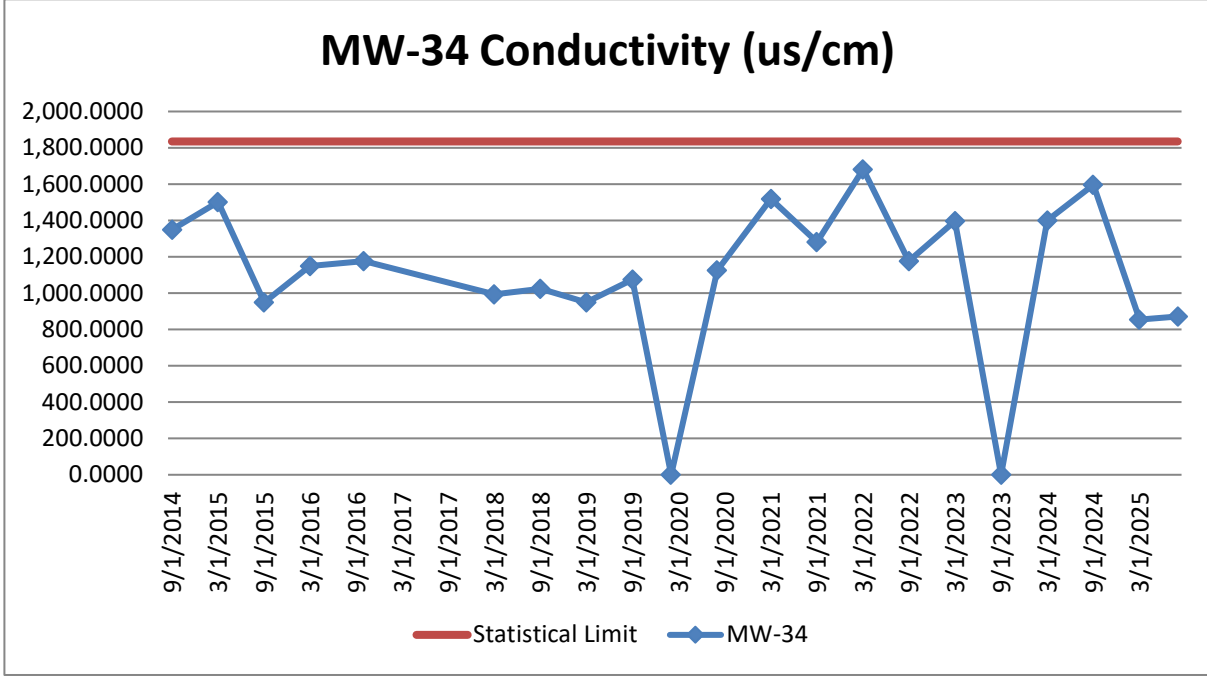
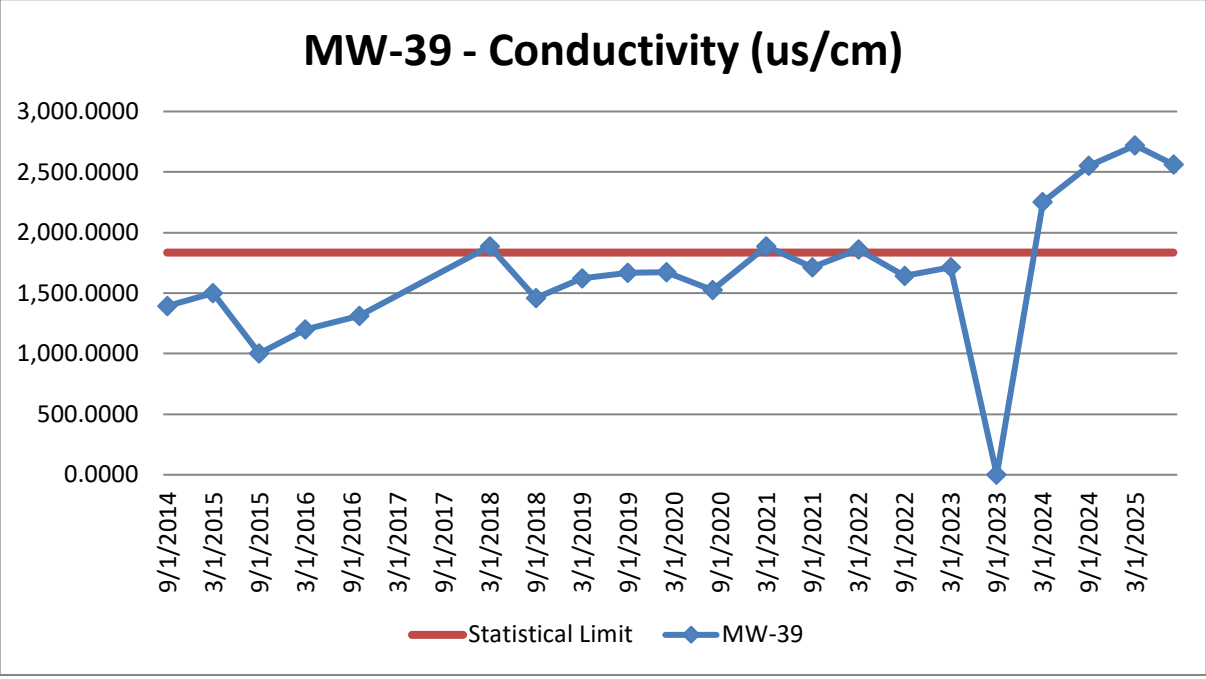
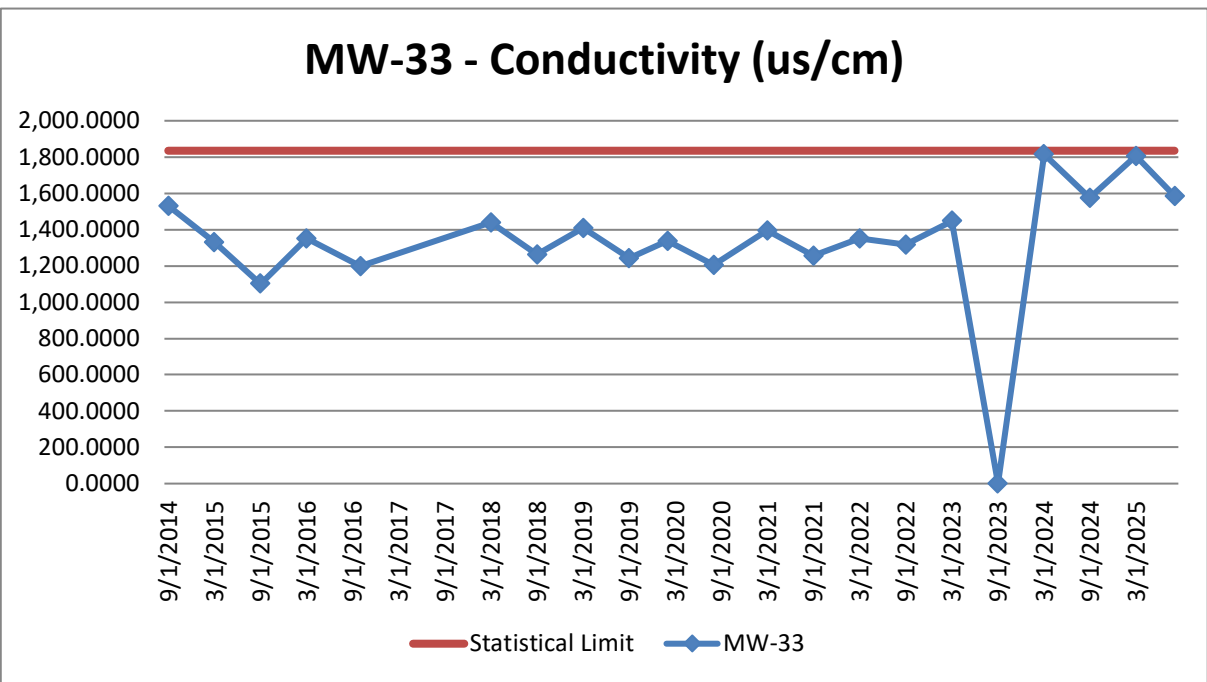
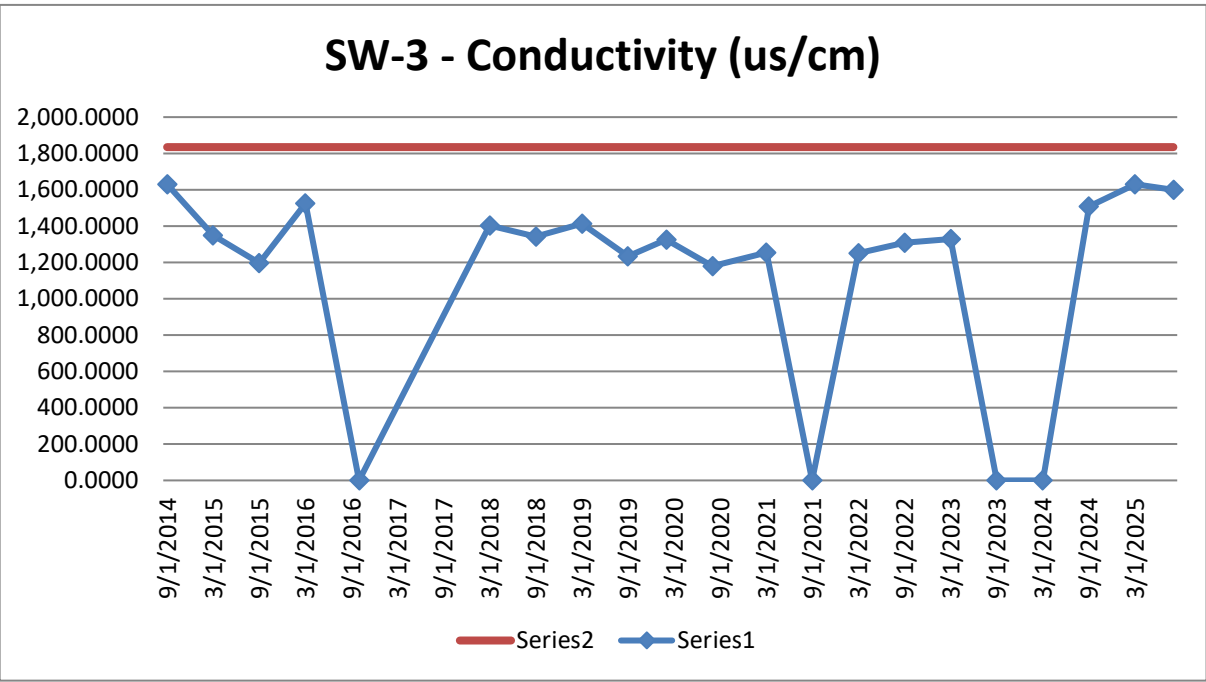
			MEAN +							
		ACTION	2 STD	D.G.W	D.G.W	D.G.W	BOTH	BOTH	BOTH	BOTH
DATE	PARAMETER	LEVEL	AW	SW 3	MW 39	MW 40	MW 25	MW 33	MW 34	MW35
mg/L										
04/23/1991	Chloride	--	181.4	11.5			13.5	---	6	
10/15/1991	Chloride	--	181.4	8.02			17.4	---	6.6	
01/23/1992	Chloride	--	181.4	12.1			43.5	44.6	10	
03/23/1992	Chloride	--	181.4	14.8			70.8	70.8	9	
09/30/1992	Chloride	--	181.4	DRY			83	28	3	
03/05/1993	Chloride	--	181.4	DRY			101	22.5	<10	
09/21/1993	Chloride	--	181.4	16.6			20	26	<10	
03/23/1994	Chloride	--	181.4	19.8			65.1	29.2	<10	
09/16/1994	Chloride	--	181.4	NT			82	21	<10	
03/16/1995	Chloride	--	181.4	NT			76	27	<10	
09/13/1995	Chloride	--	181.4	NT			69	22	15	
03/28/1996	Chloride	--	181.4	NT			173	22	8.9	30
06/20/1996	Chloride	--	181.4	NT			NT	NT	NT	44
09/13/1996	Chloride	--	181.4	Dry			5.3	23.6	7.1	54.2
12/16/1996	Chloride	--	181.4	NT			NT	NT	NT	NT
03/19/1997	Chloride	--	181.4	DRY			23	38	17	96
06/18/1997	Chloride	--	181.4	NT			NT	NT	NT	95
08/30/1997	Chloride	--	181.4	DRY			30	19	<10	86
03/10/1998	Chloride	--	181.4	DRY			72	24	10	37
09/21/1998	Chloride	--	181.4	DRY			31	19	10	81
03/18/1999	Chloride	--	181.4	DRY			83	21	15	29
09/21/1999	Chloride	--	181.4	DRY			52	20	26	67
03/21/2000	Chloride	--	181.4	DRY			55	23	45	NT
06/28/2000	Chloride	--	181.4	DRY	42	65	NT	NT	NT	NT
09/28/2000	Chloride	--	181.4	DRY	36	22	124	24	13	DRY
12/27/2000	Chloride	--	181.4	NT	49	46	NT	NT	NT	NT
03/28/2001	Chloride	--	181.4	DRY	40	54	229	24	105	87
09/02/2001	Chloride	--	181.4	DRY	45	23	135	29	56	150
03/19/2002	Chloride	--	181.4	DRY	49	56	142	53	52	179
09/19/2002	Chloride	--	181.4	DRY	43	35	181	44	25	111
03/14/2003	Chloride	--	181.4	DRY	53	30	163	383	34	185
09/29/2003	Chloride	--	181.4	DRY	45	25	165	30	23	141
03/08/2004	Chloride	--	181.4	DRY	42	47	197	45	43	149
09/27/2004	Chloride	--	181.4	DRY	30	43	49	51	21	114
03/17/2005	Chloride	--	181.4	DRY	29	27	125	48	30	235
09/22/2005	Chloride	--	181.4	DRY	27	53	49	45	21	119
03/17/2006	Chloride	--	181.4	DRY	34	39	146	49	28	340
09/22/2006	Chloride	--	181.4	DRY	24	16	288	44	<10	142
03/14/2007	Chloride	--	181.4	66	22	26	52	58	<10	51
09/22/2007	Chloride	--	181.4	DRY	14	26	26	53	11	52
03/03/2008	Chloride	--	181.4	DRY	22	22	34	53	10	10
09/05/2008	Chloride	--	181.4	DRY	13	30	26	40	<10	85
03/09/2009	Chloride	--	181.4	DRY	16	14	27	44	<10	239
09/23/2009	Chloride	--	181.4	DRY	16	32	28	39	12	105
03/16/2010	Chloride	--	181.4	23	16	254	18	38	<10	98
09/10/2010	Chloride	--	181.4	39	17	13	16	35	<10	94
03/01/2011	Chloride	--	181.4	23	18	21	18	34	10	89
09/22/2011	Chloride	--	181.4	47	12	23	16	32	10	88
03/02/2012	Chloride	--	181.4	55	20	15	20	31	17	278
09/05/2012	Chloride	--	181.4	53	24	24	24	28	13	101
03/08/2013	Chloride	--	181.4	DRY	26	60	65	34	14	339
09/13/2013	Chloride	--	181.4	DRY	19	31	24	44	12	112
03/06/2014	Chloride	--	181.4	41	20	33	16	31	15	162
09/09/2014	Chloride	--	181.4	37	11	29	42	34	11	79
03/11/2015	Chloride	--	181.4	47	16	78	22	36	11	257
09/09/2015	Chloride	--	181.4	28	12	34	18	33	<10	78
03/11/2016	Chloride	--	181.4	36	12	25	14	31	<10	216
10/27/2016	Chloride	--	181.4	DRY	20	74	17	32	<10	76
09/07/2017	Chloride	--	181.4	59	18	103	21	34	15	86
03/01/2018	Chloride	--	181.4	44	19	332	19	30	<10	275
09/19/2018	Chloride	--	181.4	44	13	76	19	34	<10	93
03/27/2019	Chloride	--	181.4	38	14	42	12	30	<10	656
09/05/2019	Chloride	--	181.4	56	15	32	14	27	14	95
02/28/2020	Chloride	--	181.4	54	15	60	20	29		562
08/31/2020	Chloride	--	181.4	59	12	16	19	28	14	98
03/05/2021	Chloride	--	181.4	58.2	18.9	39.4	19.7	30.1	27.2	747
09/13/2021	Chloride	--	181.4	DRY	18.5	52.5	19.2	30.9	16.6	114
03/02/2022	Chloride	--	181.4	58.7	17.9	57.5	18.9	29.5	40.5	269
09/12/2022	Chloride	--	181.4	60.8	15.2	28	41.4	34.3	18.1	106
03/24/2023	Chloride	--	181.4	63.2	15	13.3	24.4	44.9	15.5	587
09/13/2023	Chloride	--	181.4	62.0	12.5	26.1	32.3	36.4	16.6	113
03/05/2024	Chloride	--	181.4	Dry	16.7	42.2	25.3	44.3	16.5	590
09/03/2024	Chloride	--	181.4	62.5	10.3	24.4	22.1	33.2	17.6	101
03/07/2025	Chloride	--	181.4	57.1	13	11.3	29.3	36.8	6.5	462
08/28/2025	Chloride	--	181.4	49.6	9.9	19	66	43	19.2	107
	Mean			42.5	22.8	46.5	58.6	39.8	20.1	173.6
	Standard Deviation (STD)			17.5	11.8	53.4	58.8	43.2	16.7	163.4
	Mean + 2 STD			77.6	46.5	153.4	176.3	126.2	53.5	500.3

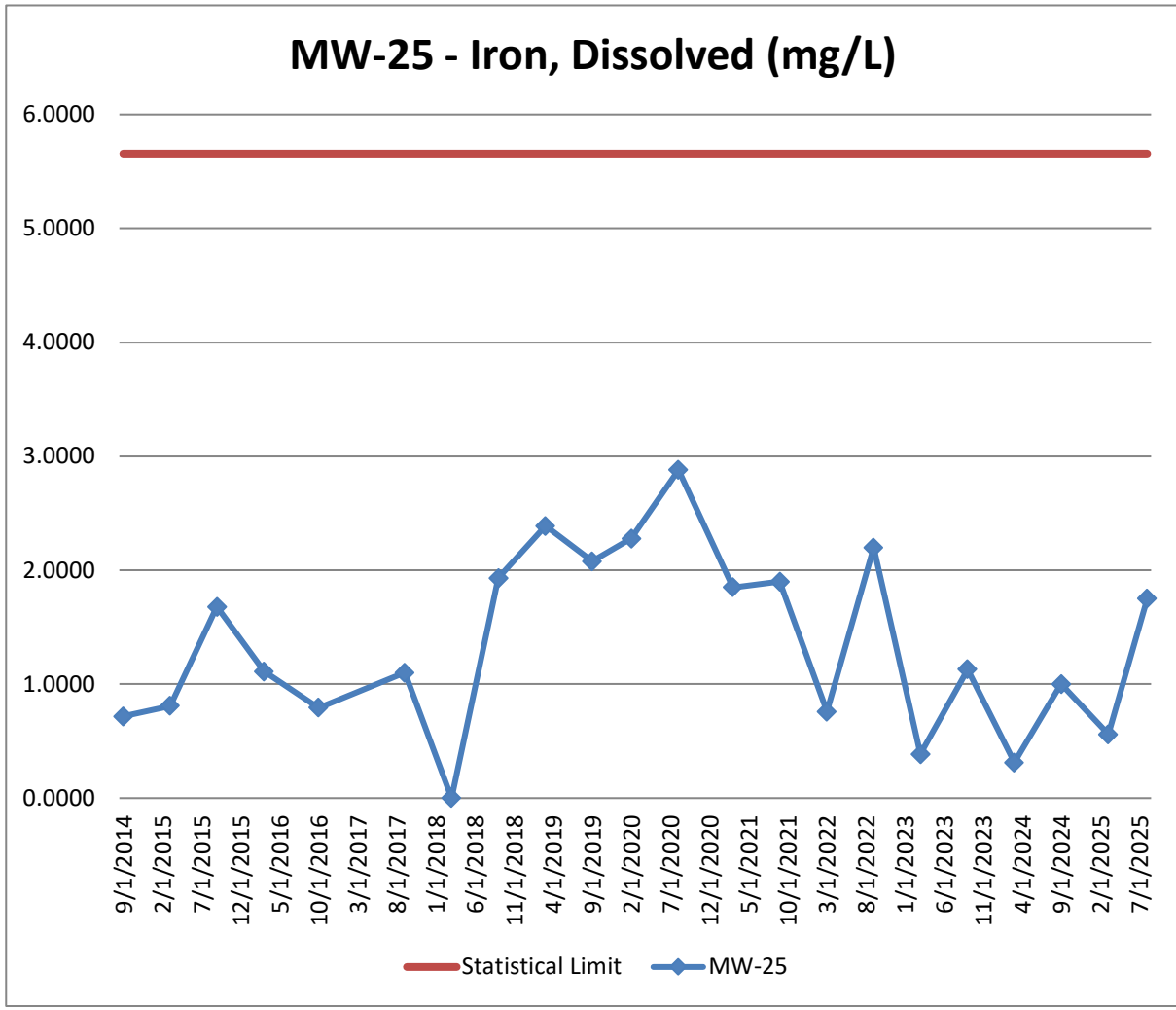
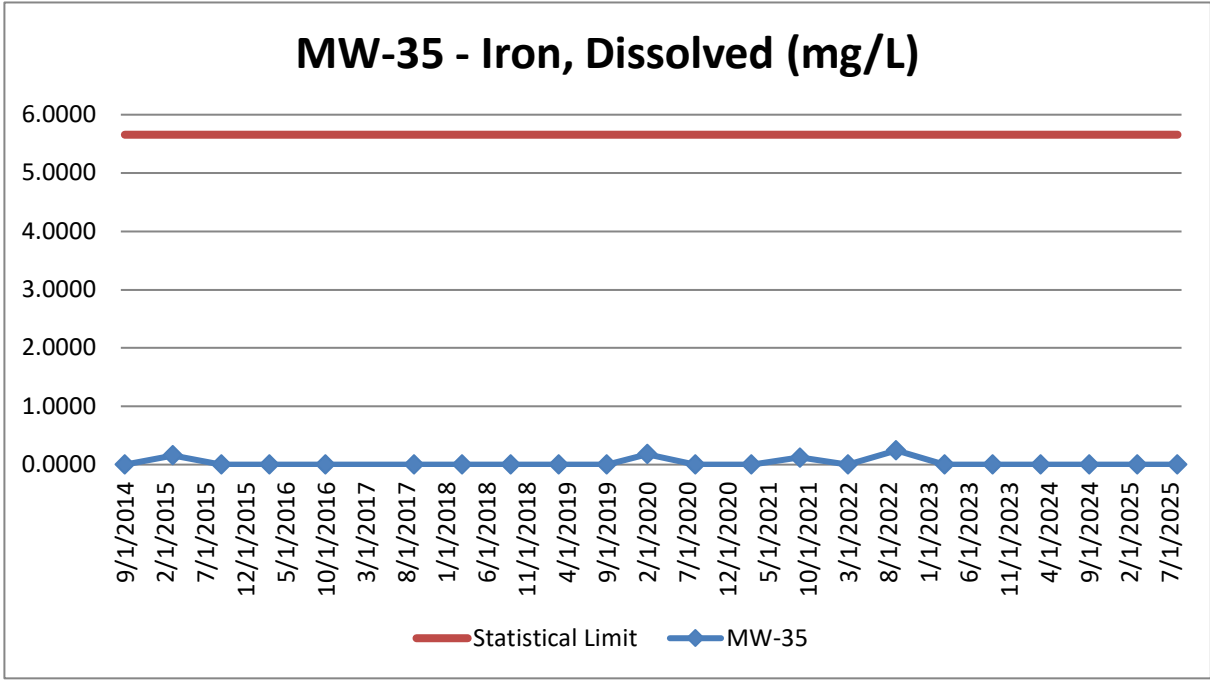
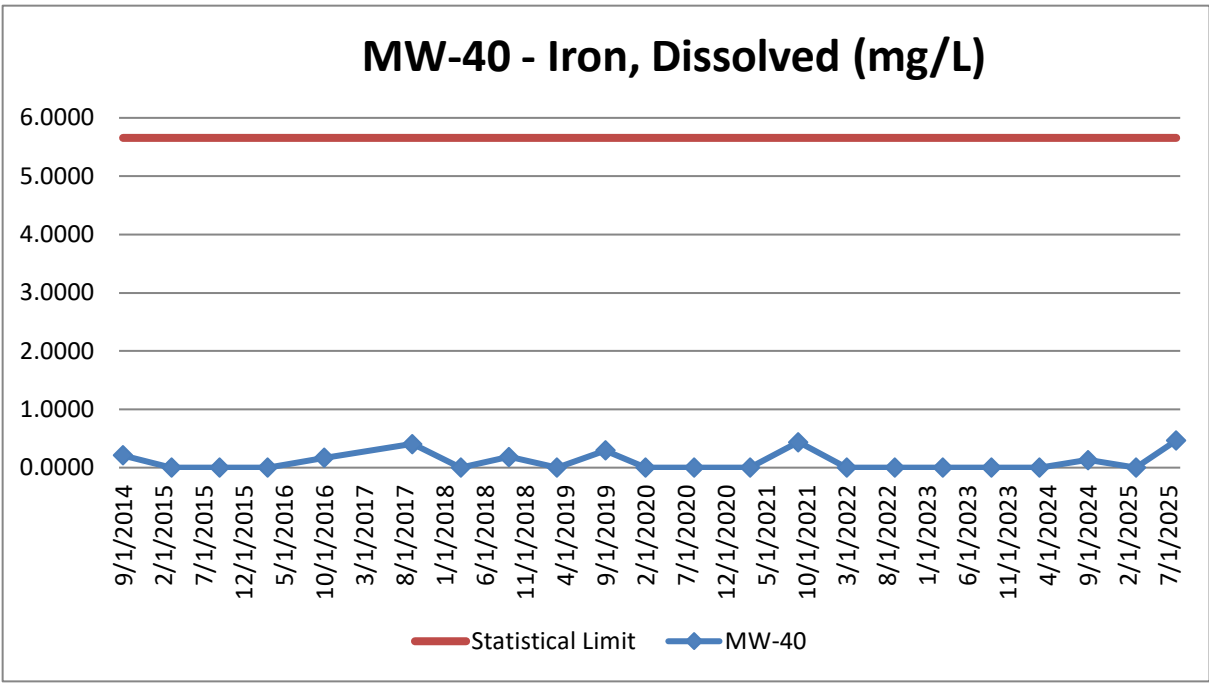
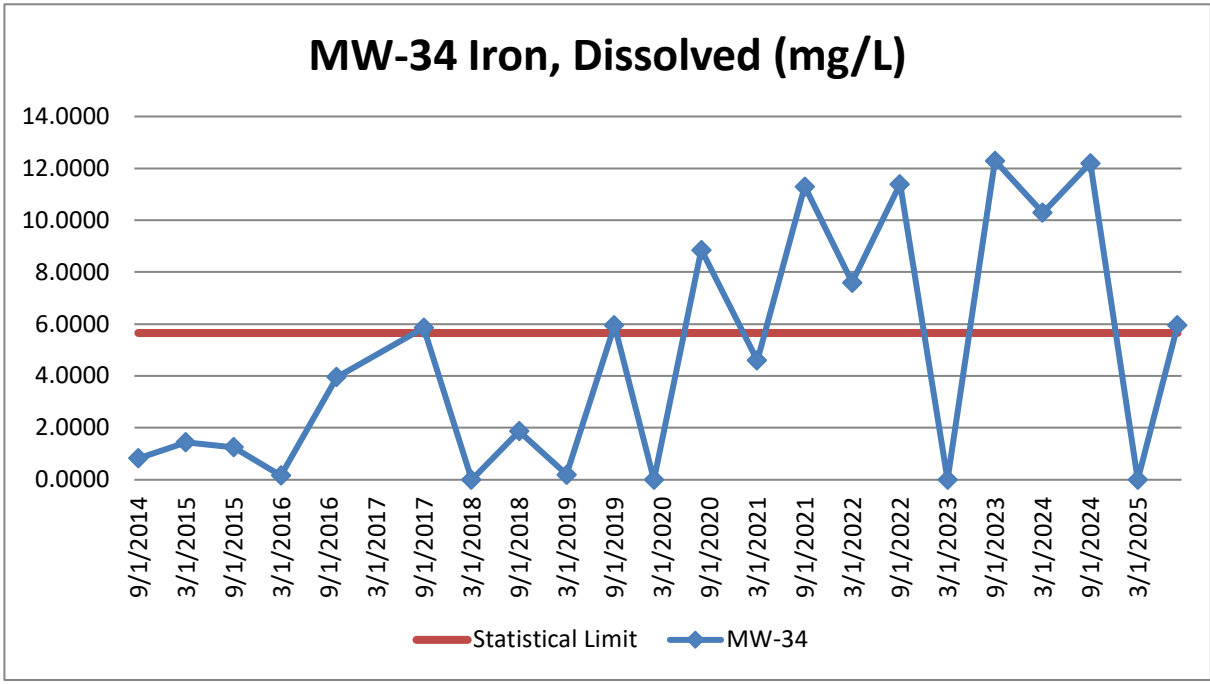
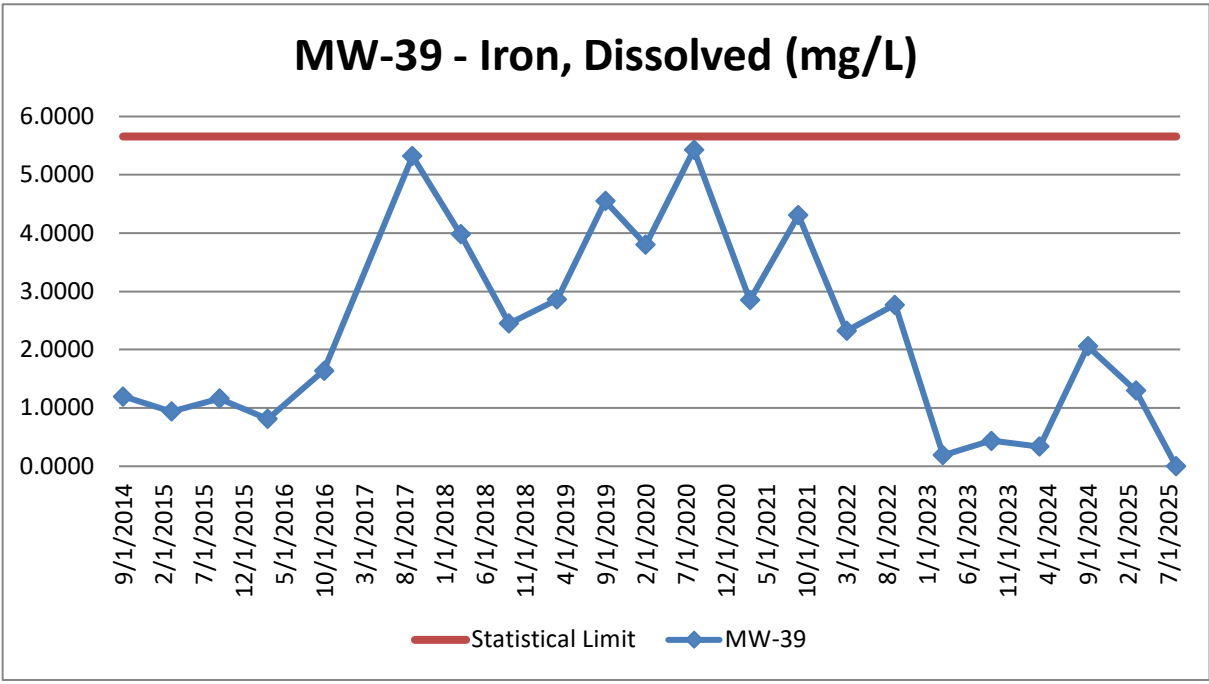
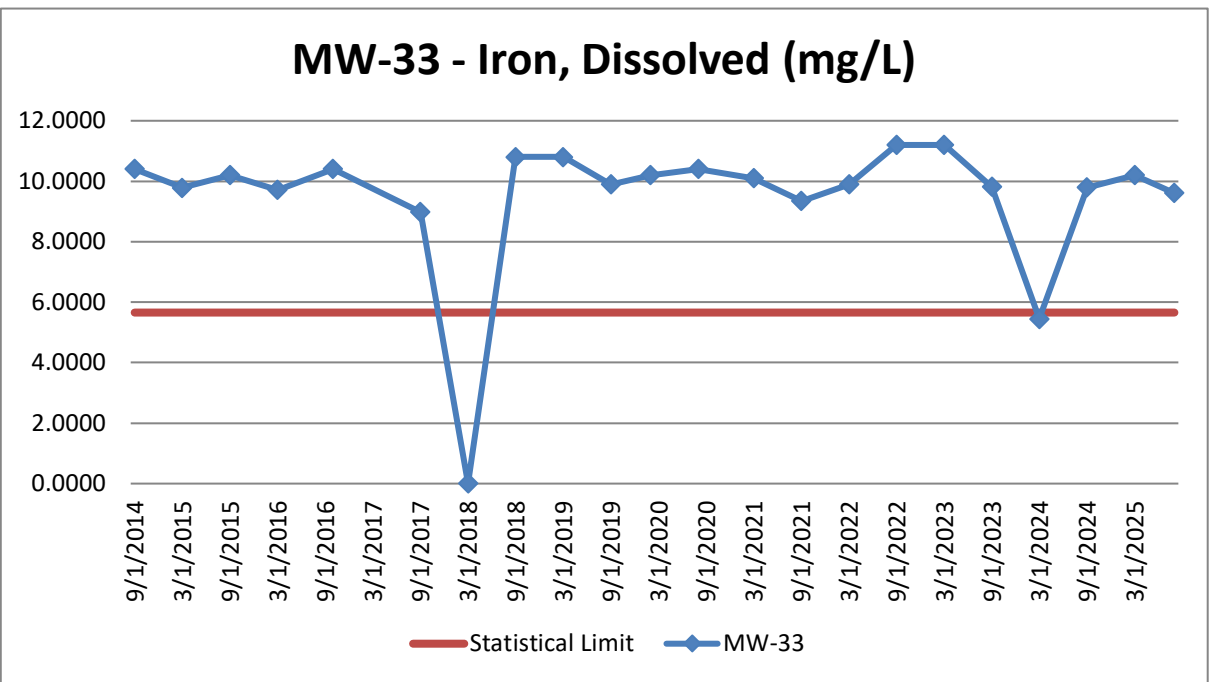
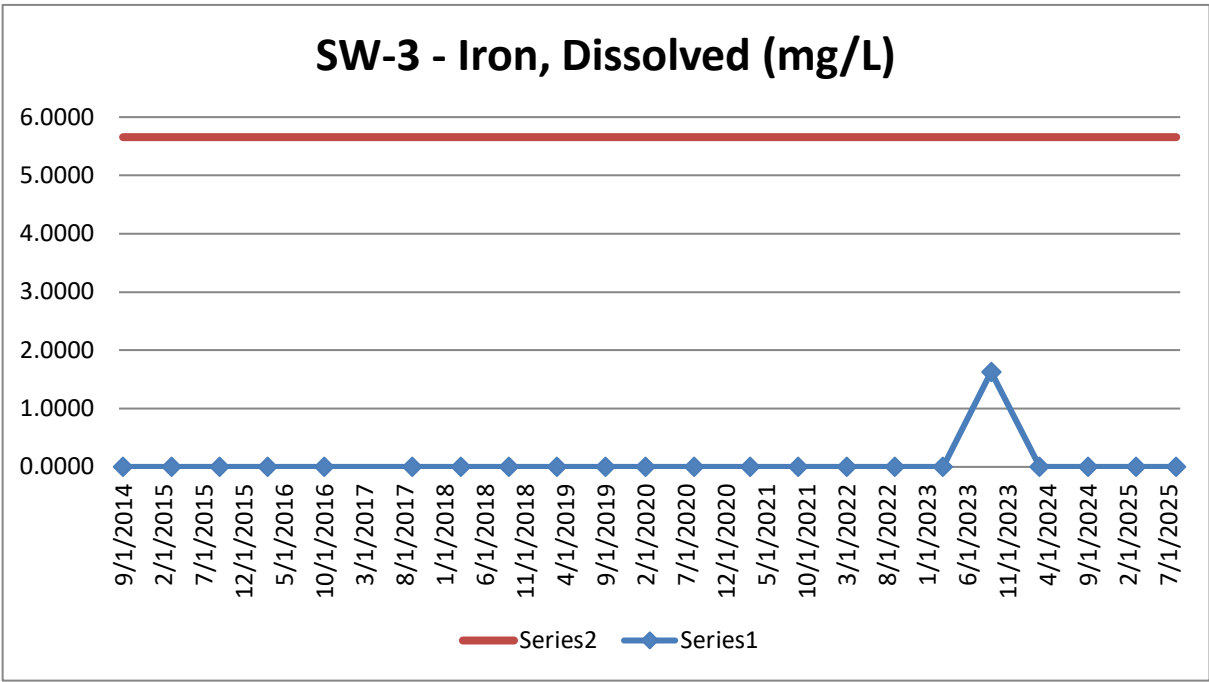


AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW							
				D.G.W SW 3	D.G.W MW 39	D.G.W MW 40	BOTH MW 25	BOTH MW 33	BOTH MW 34	BOTH MW35
03/16/1995	Conductivity, us/cm	--	1835	DRY			510	420	550	
09/13/1995	Conductivity, us/cm	--	1835	DRY			770	720	660	
03/28/1996	Conductivity, us/cm	--	1835	DRY			640	500	460	520
06/20/1996	Conductivity, us/cm	--	1835	DRY			NT	NT	NT	460
09/13/1996	Conductivity, us/cm	--	1835	DRY			60	500	570	440
12/16/1996	Conductivity, us/cm	--	1835	NT			NT	NT	NT	NT
03/19/1997	Conductivity, us/cm	--	1835	DRY			620	590	580	600
06/18/1997	Conductivity, us/cm	--	1835	NT			NT	NT	NT	380
08/30/1997	Conductivity, us/cm	--	1835	DRY			540	410	490	490
03/10/1998	Conductivity, us/cm	--	1835	DRY			510	360	470	390
09/21/1998	Conductivity, us/cm	--	1835	DRY			460	590	540	490
03/18/1999	Conductivity, us/cm	--	1835	DRY			1370	902	1438	1005
09/21/1999	Conductivity, us/cm	--	1835	DRY			460	590	540	490
03/21/2000	Conductivity, us/cm	--	1835	DRY			NT	NT	NT	NT
06/28/2000	Conductivity, us/cm	--	1835	DRY	1074	884	NT	NT	NT	NT
09/28/2000	Conductivity, us/cm	--	1835	DRY	1324	923	1083	1009	1209	DRY
12/27/2000	Conductivity, us/cm	--	1835	NT	1224	960	NT	NT	NT	NT
03/28/2001	Conductivity, us/cm	--	1835	DRY	1622	1266	1161	1730	3000	1246
09/02/2001	Conductivity, us/cm	--	1835	DRY	1354	885	1455	1098	1455	1889
03/19/2002	Conductivity, us/cm	--	1835	DRY	1470	1146	1490	1313	NT	1167
09/19/2002	Conductivity, us/cm	--	1835	DRY	1235	1081	1225	1182	1287	1209
03/14/2003	Conductivity, us/cm	--	1835	DRY	1201	926	833	732	1020	709
09/29/2003	Conductivity, us/cm	--	1835	DRY	1035	819	1241	890	1055	886
03/08/2004	Conductivity, us/cm	--	1835	DRY	1446	955	1360	1154	1237	1124
09/27/2004	Conductivity, us/cm	--	1835	DRY	1588	1310	1546	1300	1218	995
03/17/2005	Conductivity, us/cm	--	1835	DRY	1364	1044	1407	1228	1432	1275
09/22/2005	Conductivity, us/cm	--	1835	DRY	949	1049	1598	1160	929	852
03/17/2006	Conductivity, us/cm	--	1835	DRY	1422	1413	1685	1451	1775	1589
09/22/2006	Conductivity, us/cm	--	1835	DRY	1274	1067	1785	1225	1495	1097
03/14/2007	Conductivity, us/cm	--	1835	1540	1550	1336	1815	1560	1118	1084
09/22/2007	Conductivity, us/cm	--	1835	DRY	1346	1980	1713	1497	1374	1277
03/03/2008	Conductivity, us/cm	--	1835	DRY	1310	NT	1700	1433	993	773
09/05/2008	Conductivity, us/cm	--	1835	DRY	NT	NT	2564	1570	1416	970
03/09/2009	Conductivity, us/cm	--	1835	DRY	1174	960	1664	1238	747	1194
09/23/2009	Conductivity, us/cm	--	1835	DRY	1180	1390	1515	1180	1148	881
03/16/2010	Conductivity, us/cm	--	1835	1650	1480	1421	1460	1560	1250	1305
09/10/2010	Conductivity, us/cm	--	1835	1205	1142	1051	1257	1125	950	974
03/01/2011	Conductivity, us/cm	--	1835	1102	921	774	1127	1071	934	1302
09/22/2011	Conductivity, us/cm	--	1835	998	1159	1042	1060	950	962	715
03/02/2012	Conductivity, us/cm	--	1835	1430	1418	993	1312	1255	1112	1196
09/05/2012	Conductivity, us/cm	--	1835	998	1159	1042	1060	950	962	715
03/08/2013	Conductivity, us/cm	--	1835	DRY	1520	1250	1610	1460	1840	1810
09/13/2013	Conductivity, us/cm	--	1835	DRY	1440	1280	1590	1440	1260	910
03/06/2014	Conductivity, us/cm	--	1835	1450	1560	1130	1750	1380	1340	1380
09/09/2014	Conductivity, us/cm	--	1835	1630	1392	952	1960	1530	1350	980
03/11/2015	Conductivity, us/cm	--	1835	1350	1500	1280	1530	1330	1500	1370
09/09/2015	Conductivity, us/cm	--	1835	1195	1003	901	1198	1102	949	761
03/11/2016	Conductivity, us/cm	--	1835	1525	1200	1067	1240	1352	1149	1340
10/27/2016	Conductivity, us/cm	--	1835	DRY	1310	1150	1200	1200	1175	900
03/01/2018	Conductivity, us/cm	--	1835	1402	1886	1679	1487	1440	995	1476
09/19/2018	Conductivity, us/cm	--	1835	1342	1460	1201	1390	1262	1023	865
03/27/2019	Conductivity, us/cm	--	1835	1413	1622	1129	1104	1410	950	2282
09/05/2019	Conductivity, us/cm	--	1835	1235	1670	1205	1200	1242	1076	793
02/28/2020	Conductivity, us/cm	--	1835	1325	1675	1231	1364	1338		1956
08/31/2020	Conductivity, us/cm	--	1835	1180	1527	1337	1428	1204	1125	769
03/05/2021	Conductivity, us/cm	--	1835	1253	1886	1219	1361	1395	1518	1440
09/13/2021	Conductivity, us/cm	--	1835	DRY	1716	1294	1208	1256	1282	796
03/02/2022	Conductivity, us/cm	--	1835	1250	1860	1305	1130	1352	1682	1241
09/12/2022	Conductivity, us/cm	--	1835	1308	1641	1374	1536	1317	1175	809
03/24/2023	Conductivity, us/cm	--	1835	1329	1713	739	1323	1448	1398	2604
09/13/2023	Conductivity, us/cm	--	1835	NT	NT	NT	NT	NT	NT	NT
03/05/2024	Conductivity, us/cm	--	1835	DRY	2250	1590	1600	1815	1400	3818
09/03/2024	Conductivity, us/cm	--	1835	1509	2550	1584	1558	1576	1597	1923
03/07/2025	Conductivity, us/cm	--	1835	1629	2720	851	1688	1806	854	2760
08/28/2025	Conductivity, us/cm	--	1835	1600	2560	875	1575	1585	870	1580
Mean				1354	1491	1153	1295	1184	1141	1162
Standard Deviation (STD)				184	387	248	433	357	420	625
Mean + 2 STD				1721	2266	1649	2161	1898	1981	2412

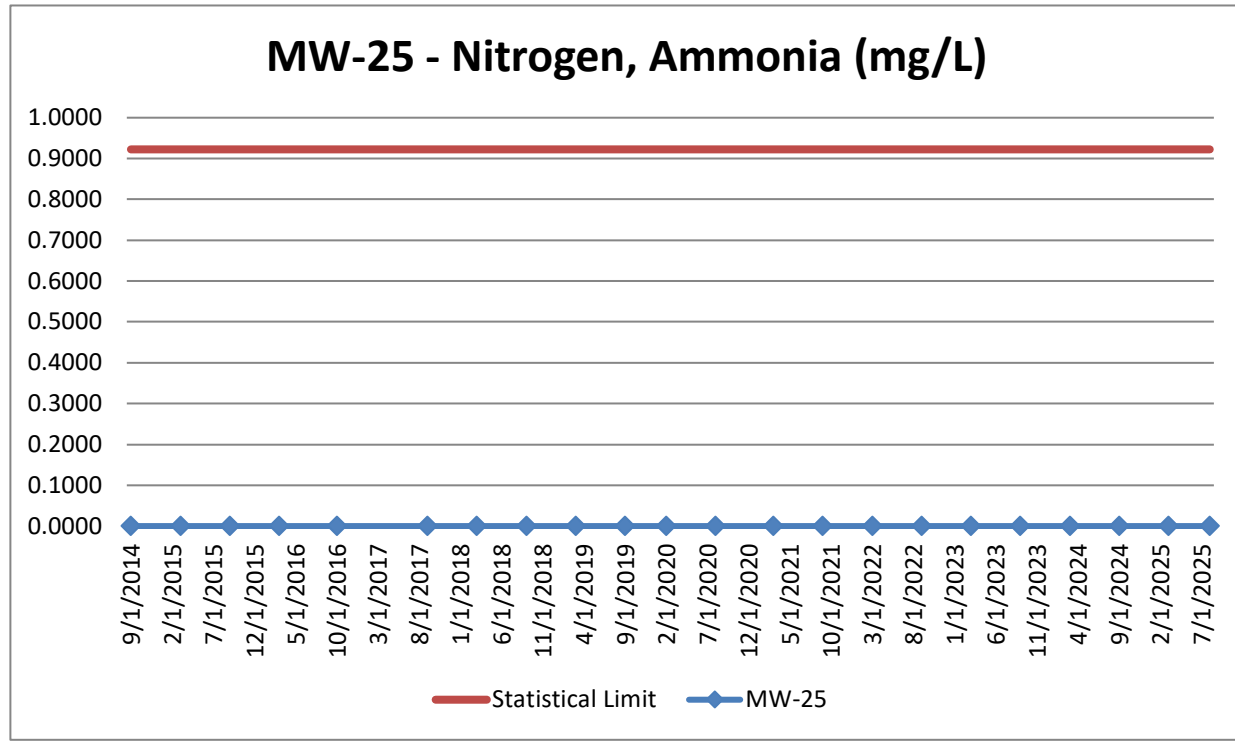
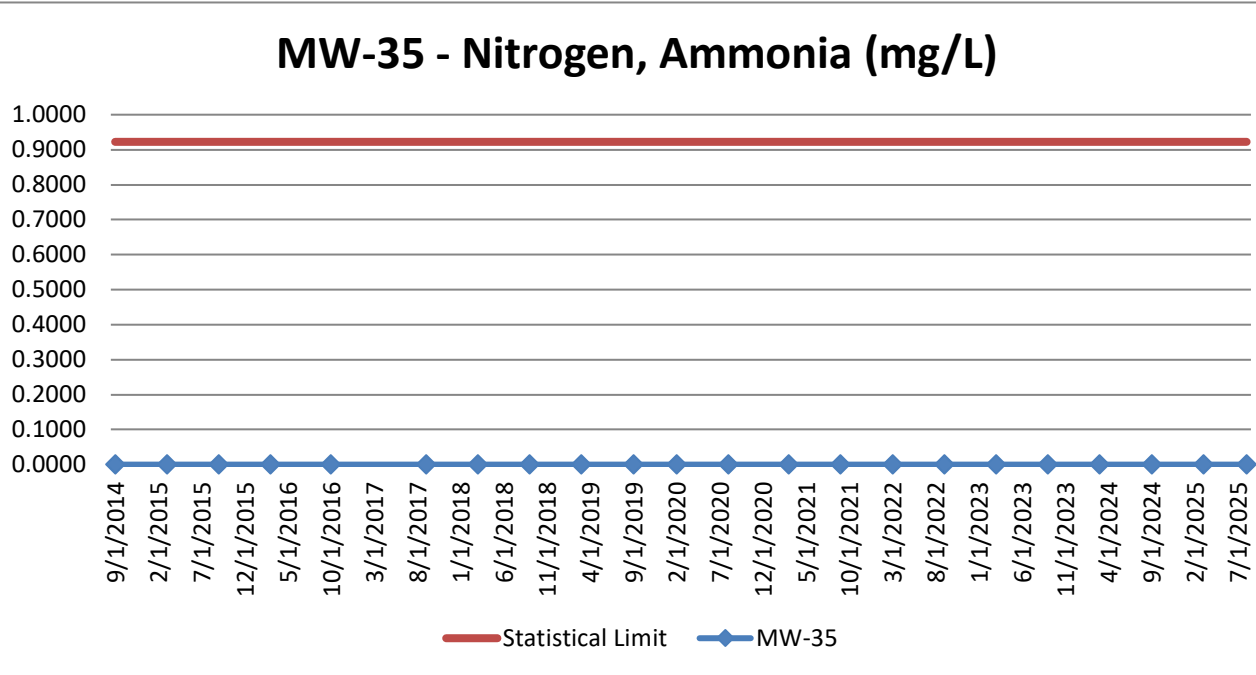
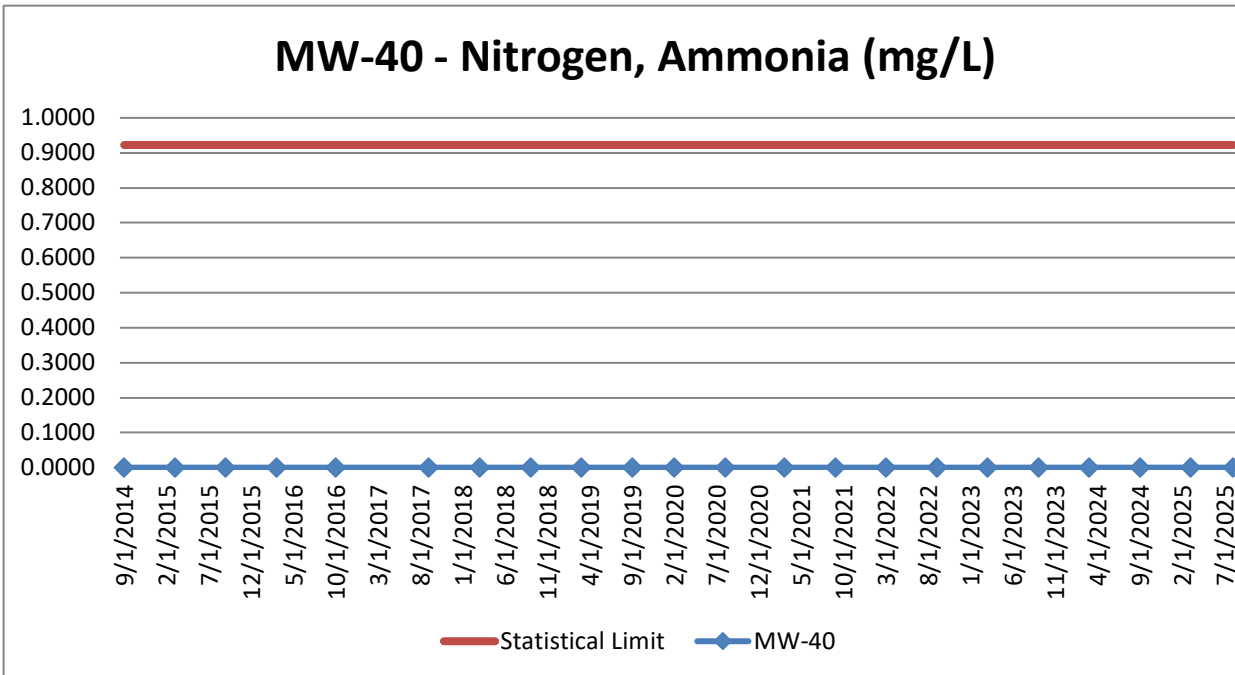
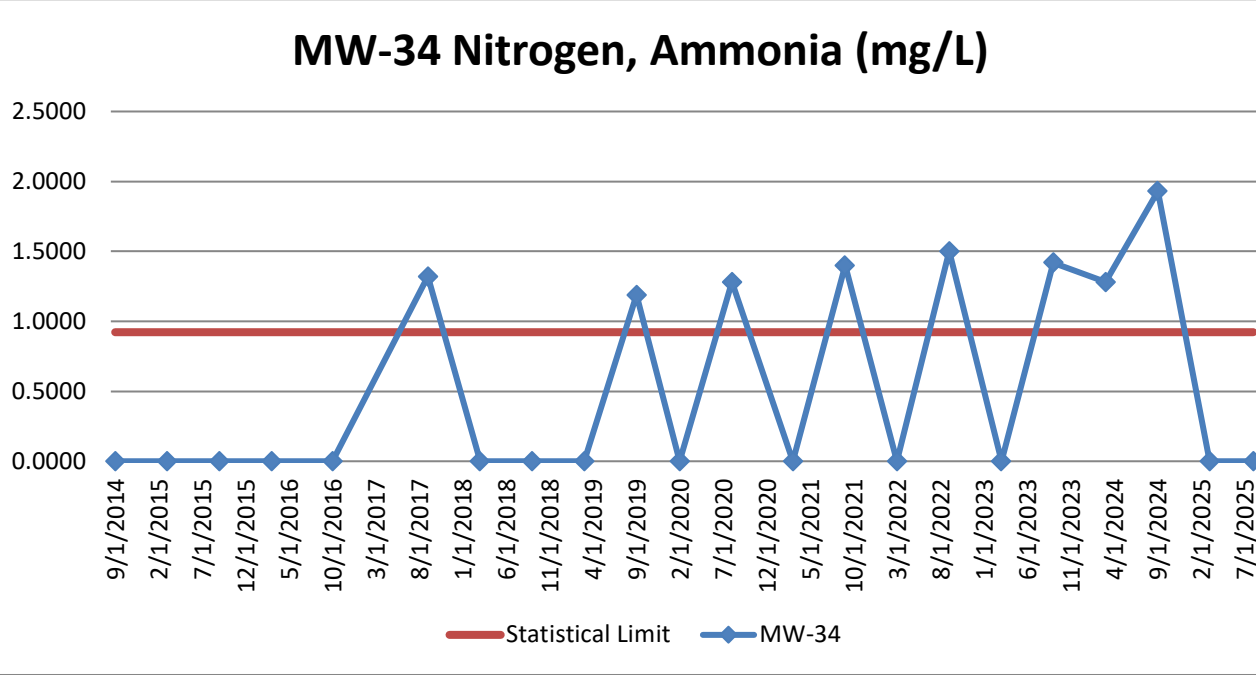
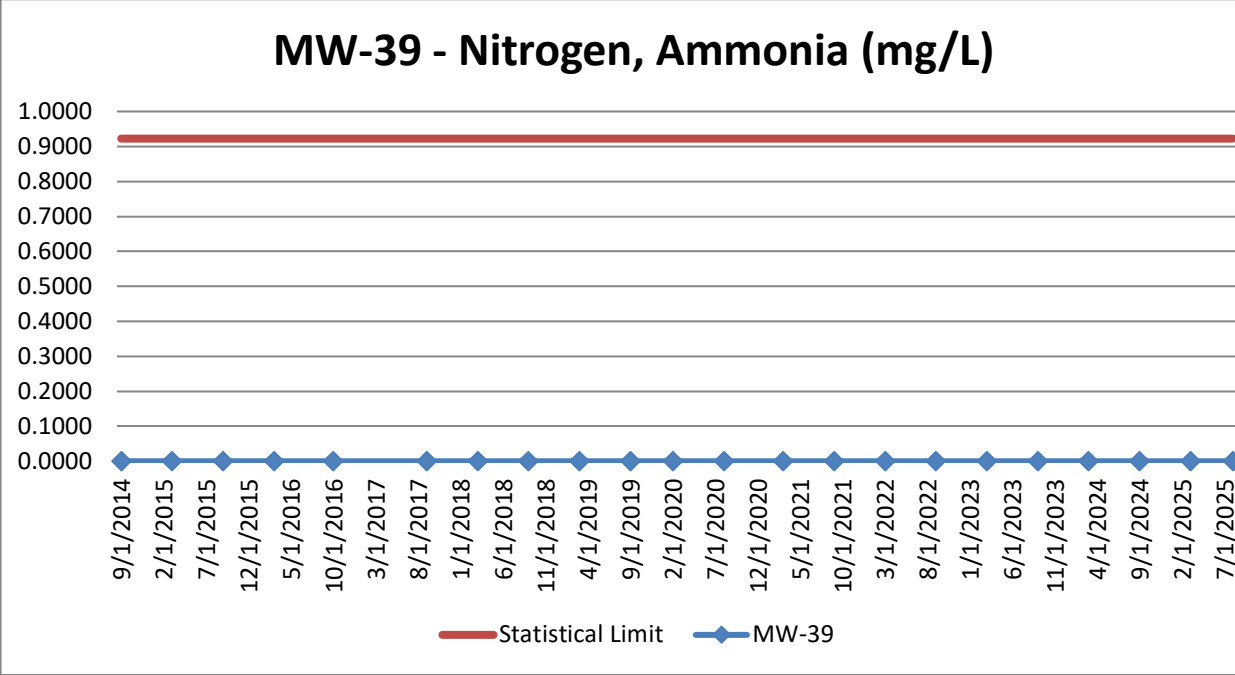
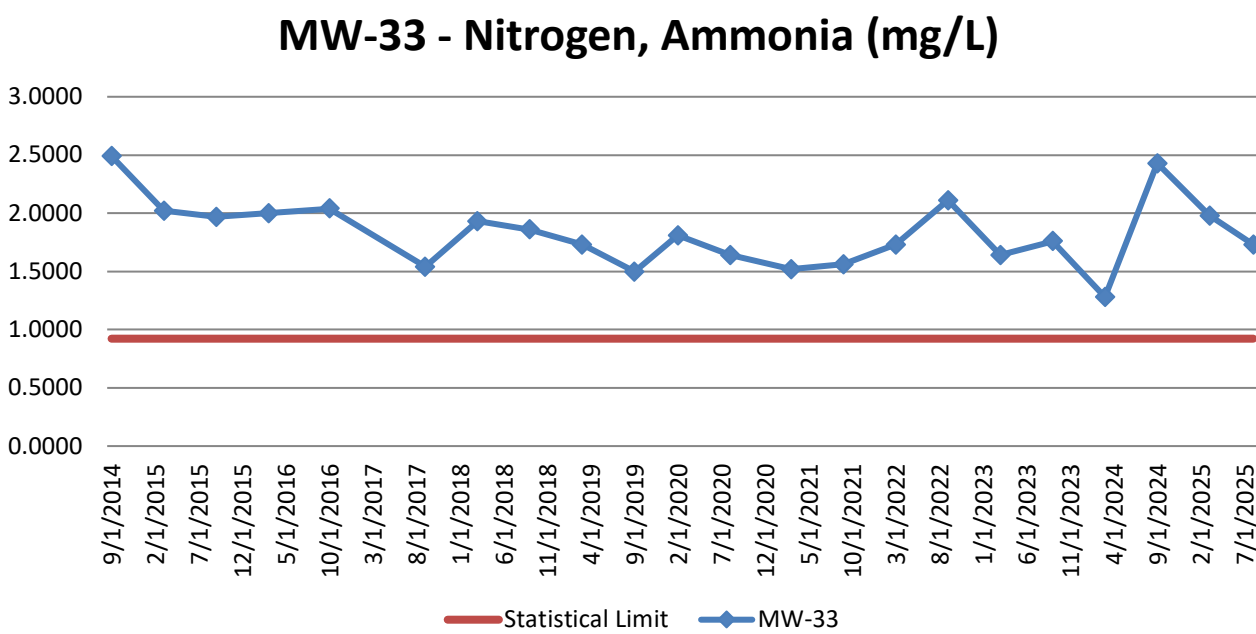
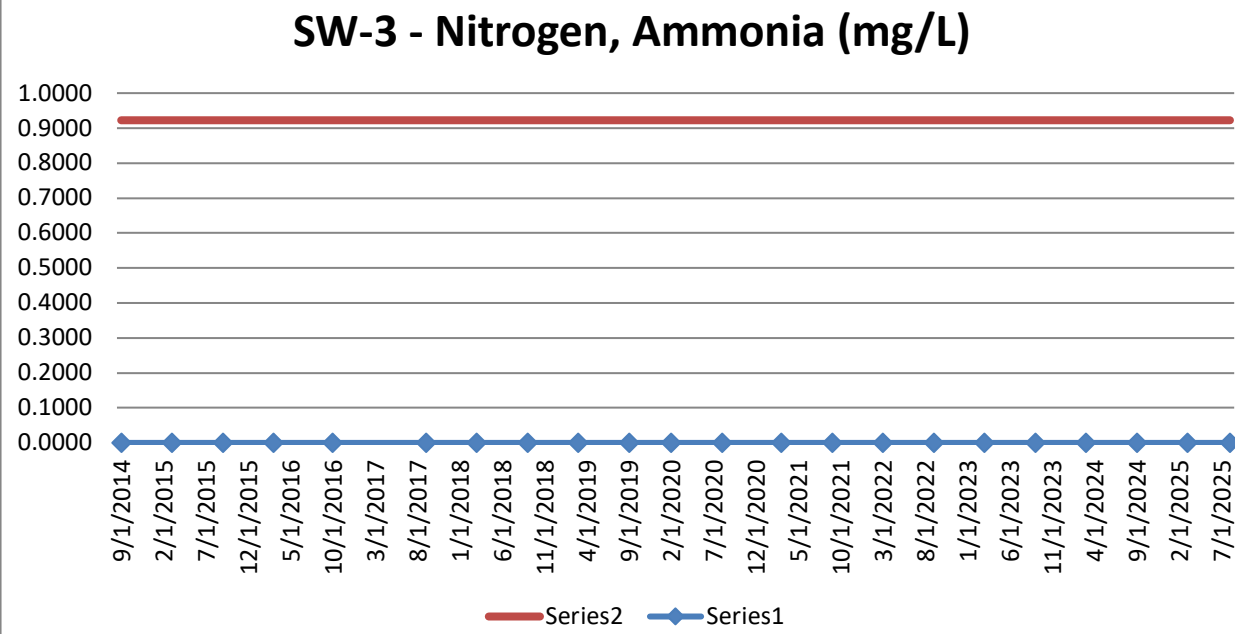




AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW							
				D.G.W SW 3	D.G.W MW 39	D.G.W MW 40	BOTH MW 25	BOTH MW 33	BOTH MW 34	BOTH MW35
mg/L										
04/23/1991	Nitrogen, Ammonia	30	0.9	<0.5			<0.5	---	<0.5	
10/15/1991	Nitrogen, Ammonia	30	0.9	<0.5			<0.5	---	<0.5	
01/23/1992	Nitrogen, Ammonia	30	0.9	<1.0			<1.0	<1.0	<1.0	
03/23/1992	Nitrogen, Ammonia	30	0.9	<1.0			<1.0	<1.0	<1.0	
09/30/1992	Nitrogen, Ammonia	30	0.9	DRY			<1	<1	<1	
03/05/1993	Nitrogen, Ammonia	30	0.9	DRY			<1	1.7	<1	
09/21/1993	Nitrogen, Ammonia	30	0.9	<1			<1	1.7	<1	
03/23/1994	Nitrogen, Ammonia	30	0.9	<1			<1	1.8	1.1	
09/16/1994	Nitrogen, Ammonia	30	0.9	NT			<1	1.8	1.3	
03/16/1995	Nitrogen, Ammonia	30	0.9	NT			<1	1.6	1	
09/13/1995	Nitrogen, Ammonia	30	0.9	NT			<1	1.5	1.2	
03/28/1996	Nitrogen, Ammonia	30	0.9	NT			<1	1.4	1.8	<1
06/20/1996	Nitrogen, Ammonia	30	0.9	NT			NT	NT	NT	<1
09/13/1996	Nitrogen, Ammonia	30	0.9	DRY			<1	1.6	1.4	<1
12/16/1996	Nitrogen, Ammonia	30	0.9	NT			NT	NT	NT	NT
03/19/1997	Nitrogen, Ammonia	30	0.9	DRY			<1	1.5	<1	<1
06/18/1997	Nitrogen, Ammonia	30	0.9	NT			NT	NT	NT	<1
08/30/1997	Nitrogen, Ammonia	30	0.9	DRY			<1	1.4	1.4	<1
03/10/1998	Nitrogen, Ammonia	30	0.9	DRY			<1	1.4	1.4	<1
09/21/1998	Nitrogen, Ammonia	30	0.9	DRY			<1	1.4	1.4	<1
03/18/1999	Nitrogen, Ammonia	30	0.9	DRY			<1	1.4	<1	<1
09/21/1999	Nitrogen, Ammonia	30	0.9	DRY			<1	1.5	<1	<1
03/21/2000	Nitrogen, Ammonia	30	0.9	DRY			<1	1.6	<1	NT
06/28/2000	Nitrogen, Ammonia	30	0.9	DRY	<1	<1	NT	NT	NT	NT
09/28/2000	Nitrogen, Ammonia	30	0.9	DRY	<1	<1	<1	1.35	<1	DRY
12/27/2000	Nitrogen, Ammonia	30	0.9	NT	<1	<1	NT	NT	NT	NT
03/28/2001	Nitrogen, Ammonia	30	0.9	DRY	<1	<1	<1	1.8	<1	<1
09/02/2001	Nitrogen, Ammonia	30	0.9	DRY	<1	<1	<1	1.6	<1	<1
03/19/2002	Nitrogen, Ammonia	30	0.9	DRY	<1	<1	<1	2.2	<1	<1
09/19/2002	Nitrogen, Ammonia	30	0.9	DRY	<1	<1	<1	<1	<1	<1
03/14/2003	Nitrogen, Ammonia	30	0.9	DRY	<1	<1	<1	1.4	<1	<1
09/29/2003	Nitrogen, Ammonia	30	0.9	DRY	<1	<1.0	<1.0	1.6	1.2	<1.0
03/08/2004	Nitrogen, Ammonia	30	0.9	DRY	<1	<1.0	<1.0	2	<1.0	<1.0
09/27/2004	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	2.2	1	<1.0
03/17/2005	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.5	<1.0	<1.0
09/22/2005	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	2.2	1	<1.0
03/17/2006	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.8	<1.0	<1.0
09/22/2006	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.8	<1.0	<1.0
03/14/2007	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0
09/22/2007	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.7	<1.0	<1.0
03/03/2008	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
09/05/2008	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	2.1	<1.0	<1.0
03/09/2009	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
09/23/2009	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.9	1.2	<1.0
03/16/2010	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.7	<1.0	<1.0
09/10/2010	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
03/01/2011	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	2	<1.0	<1.0
09/22/2011	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0
03/02/2012	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.7	<1.0	<1.0
09/05/2012	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0
03/08/2013	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.7	<1.0	<1.0
09/13/2013	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.8	<1.0	<1.0
03/06/2014	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	2.05	<1.0	<1.0
09/09/2014	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	2.49	<1.0	<1.0
03/11/2015	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	2.02	<1.0	<1.0
09/09/2015	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.97	<1.0	<1.0
03/11/2016	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	2	<1.0	<1.0
10/27/2016	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	2.04	<1.0	<1.0
09/07/2017	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.54	1.32	<1.0
03/01/2018	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.93	<1.0	<1.0
09/19/2018	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.86	<1.0	<1.0
03/27/2019	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.73	<1.0	<1.0
09/05/2019	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.5	1.19	<1.0
02/28/2020	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.81		<1.0
08/31/2020	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.64	1.28	<1.0
03/05/2021	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.52	<1.0	<1.0
09/13/2021	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.56	1.40	<1.0
03/02/2022	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.73	<1.0	<1.0
09/12/2022	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	2.11	1.50	<1.0
03/24/2023	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.64	<1.0	<1.0
09/13/2023	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.76	1.42	<1.0
03/05/2024	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.28	1.28	<1.0
09/03/2024	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	2.43	1.93	<1.0
03/07/2025	Nitrogen, Ammonia	30	0.9	DRY	<1.0	<1.0	<1.0	1.98	<1.0	<1.0
08/28/2025	Nitrogen, Ammonia	30	0.9	<1.0	<1.0	<1.0	<1.0	1.73	<1.0	<1.0
Mean				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.7	1.3	#DIV/0!
Standard Deviation (STD)				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.3	0.2	#DIV/0!
Mean + 2 STD				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2.3	1.8	#DIV/0!



AMES-STORY ENVIRONMENTAL LANDFILL

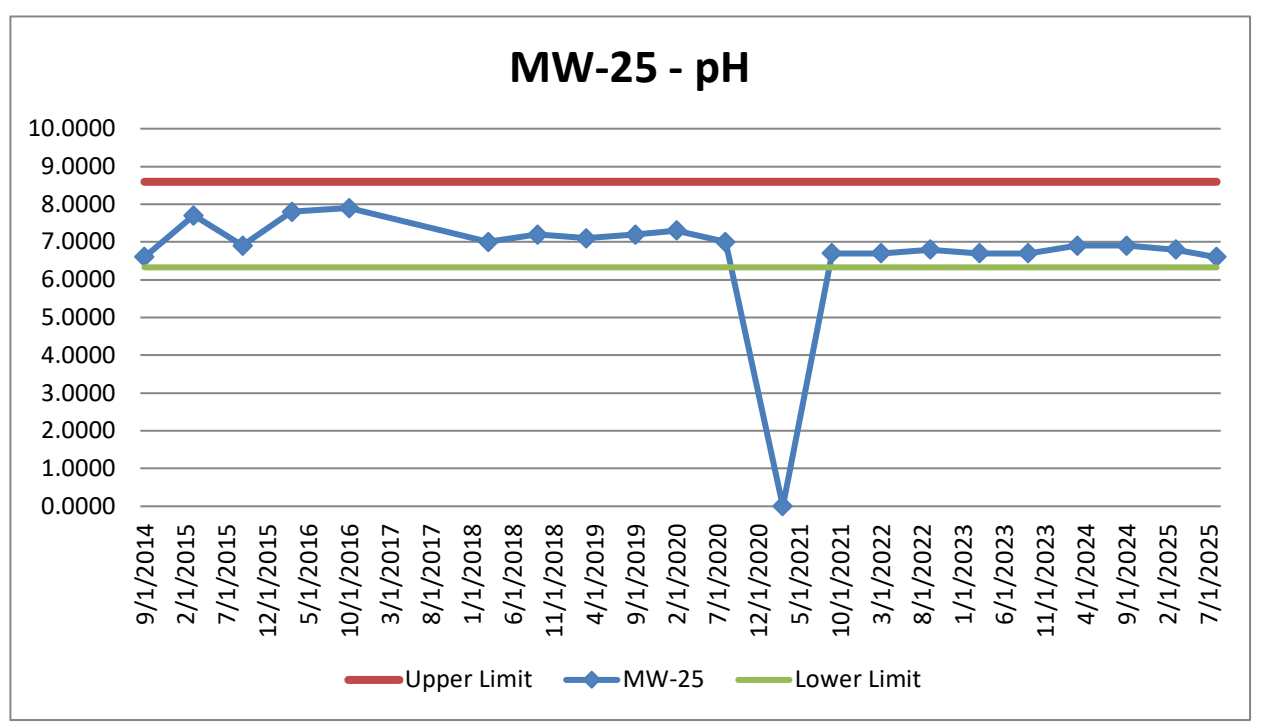
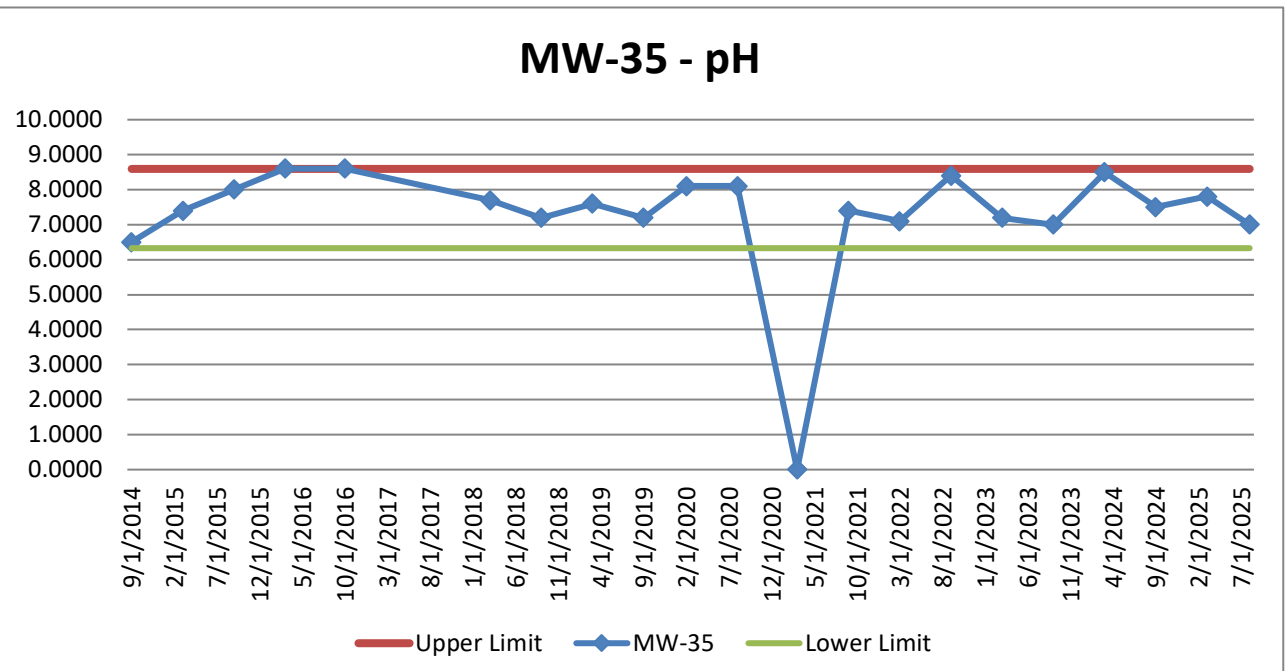
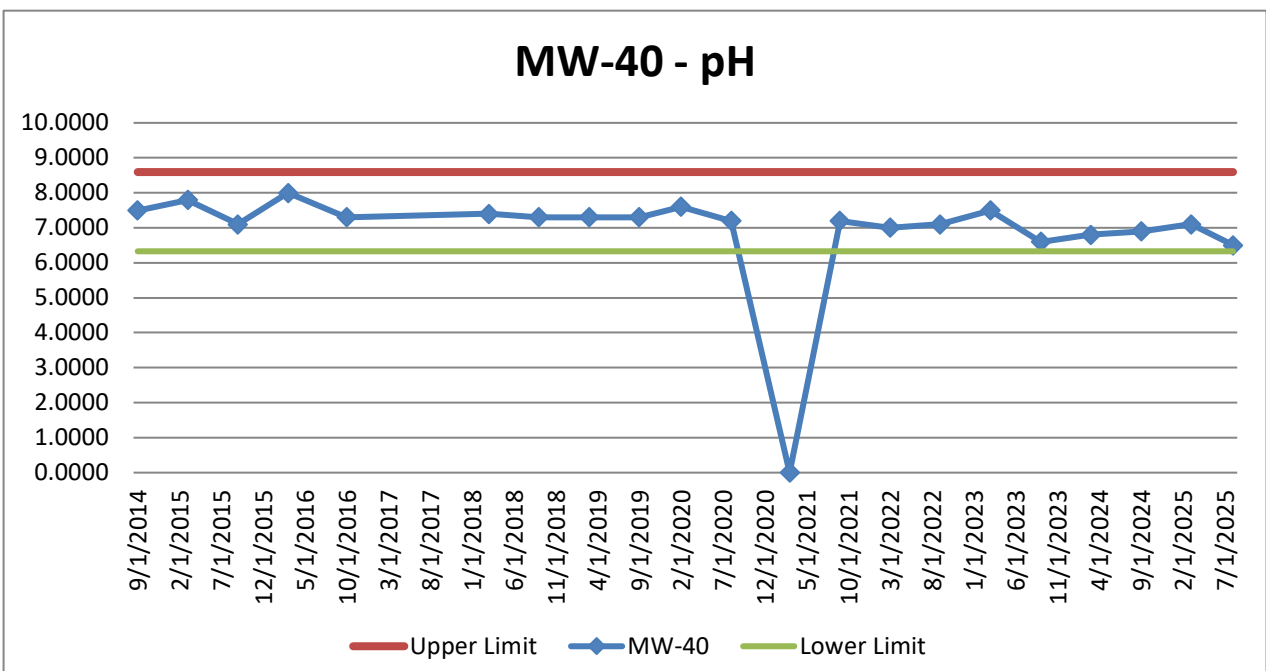
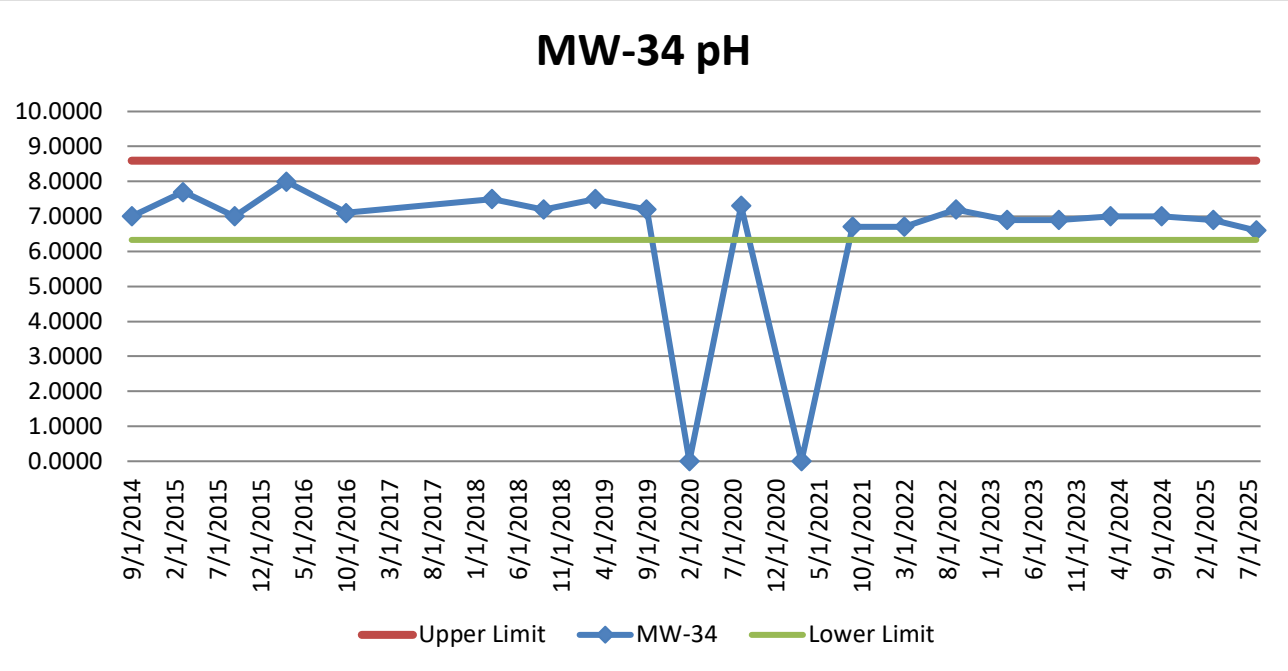
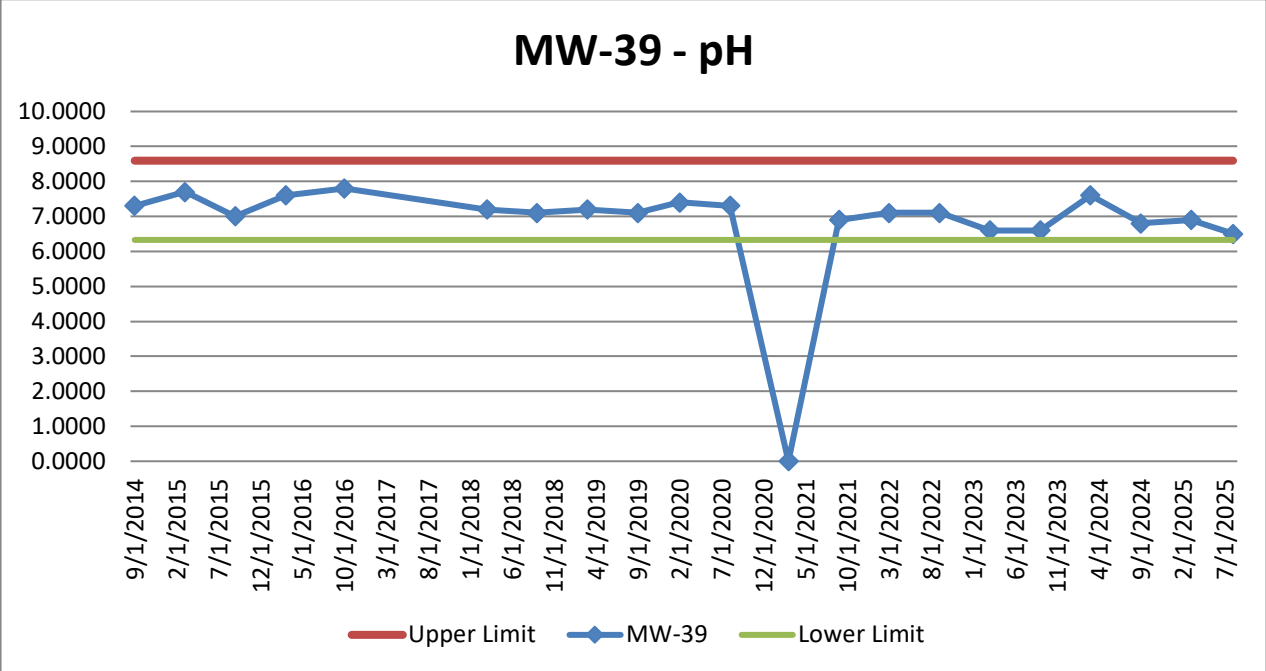
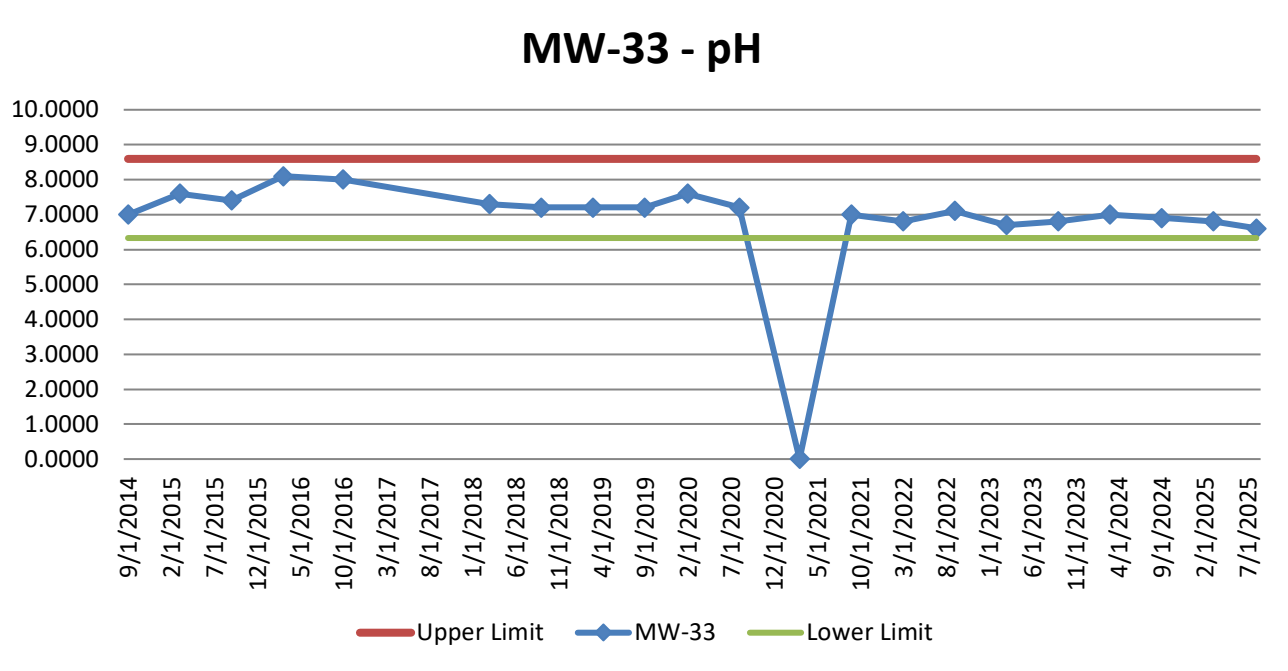
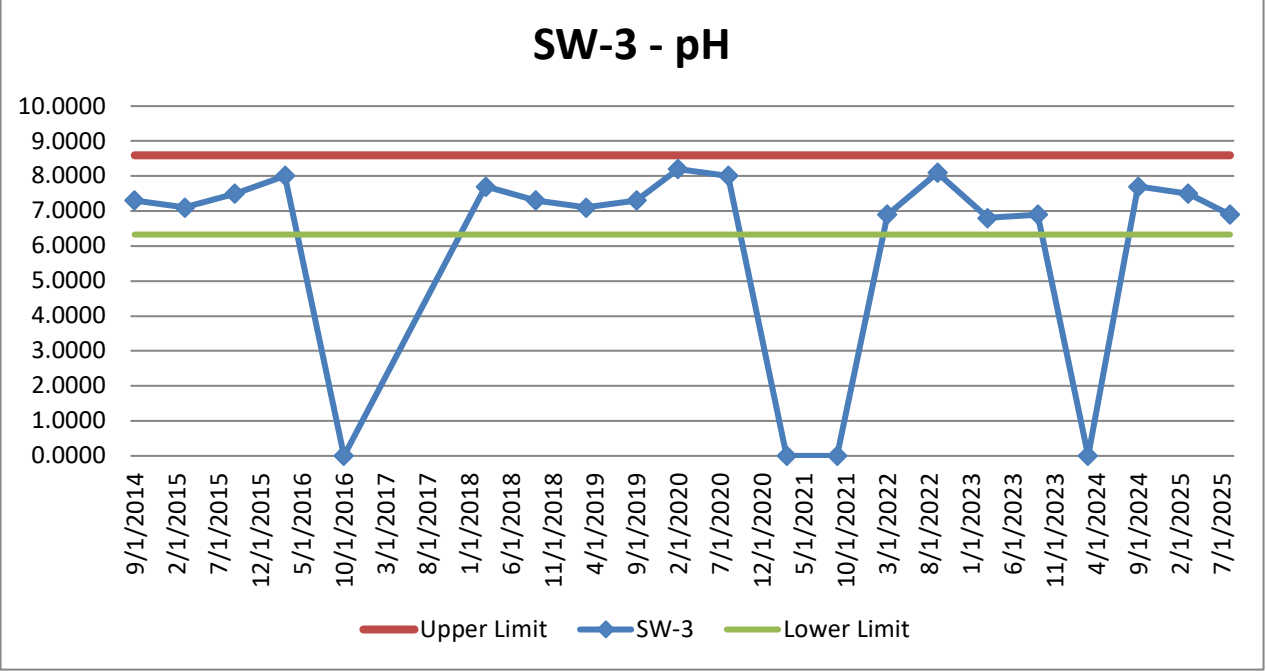
MONITORING WELL SAMPLING RESULTS

MONITORING WELL SAMPLING RESULTS												
WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM								
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Upgradient Results				Upgradient Results				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
04/23/1991	pH	6.3	8.6		7.01	6.99	NT		7.82	7.8	NT	NT
10/15/1991	pH	6.3	8.6		7.05	7.71	NT		7.76	6.96	NT	NT
01/23/1992	pH	6.3	8.6		7.16	7.41	NT		7.53	NT	NT	NT
03/23/1992	pH	6.3	8.6		7.61	7.32	NT		7.51	7.68	NT	NT
09/30/1992	pH	6.3	8.6		7.22	NT	NT		7.68	7.36	NT	NT
03/05/1993	pH	6.3	8.6		7.58	6.72	NT		7.73	NT	NT	NT
09/21/1993	pH	6.3	8.6		7.34	6.73	7		7.61	7.1	7	7.3
03/23/1994	pH	6.3	8.6		7.4	7.05	7.3		7.5	7.1	7.4	7.3
09/16/1994	pH	6.3	8.6		6.82	6.57	7		6.86	6.95	7.4	7.3
03/16/1995	pH	6.3	8.6		7.2	6.9	7.5		7.6	6.7	7.8	7.9
09/13/1995	pH	6.3	8.6		7.3	7	7.8		7.6	7.1	8.2	8
03/28/1996	pH	6.3	8.6	7.9	plugged	8.4	7.8	8	plugged	8.2	7.8	7.8
06/20/1996	pH	6.3	8.6	6.7		NT	NT	7		NT	NT	NT
09/13/1996	pH	6.3	8.6	7.8		7.7	7.6	8.3		8.3	7.9	7.9
12/16/1996	pH	6.3	8.6	NT		6.8	6.9	NT		7.2	6.8	6.7
03/19/1997	pH	6.3	8.6	7.7		7.7	7.7	8.2		7.7	7.4	7.3
06/18/1997	pH	6.3	8.6	7.5		7.8	8.4	8.2		7.8	7.8	7.6
08/30/1997	pH	6.3	8.6	8.1		8	8	7.7		7.8	6.8	6.7
03/10/1998	pH	6.3	8.6	7.8		8.1	8.3	7.8		7.8	8.2	8.1
09/21/1998	pH	6.3	8.6	7		7	6.4	7.2		7.2	3.2	2.8
03/18/1999	pH	6.3	8.6	7.3		7.7	7.2	7.4		7.8	6.9	7
09/21/1999	pH	6.3	8.6	7		7	7.2	7.2		7.2	7.4	7.7
03/21/2000	pH	6.3	8.6	NT		NT	7.9	NT		NT	8.1	7.9
06/28/2000	pH	6.3	8.6	NT		NT	7.1	NT		NT	7.3	7.1
09/28/2000	pH	6.3	8.6	7		7.4	6.8	7.5		7.1	7.3	7.3
12/27/2000	pH	6.3	8.6	NT		NT	8.2	NT		NT	8.5	8.5
03/28/2001	pH	6.3	8.6	7.3		7.8	6.8	7.5		7.4	7.9	7.5
09/02/2001	pH	6.3	8.6	7.7		NT	6.9	7.5		NT	7.4	7.7
03/19/2002	pH	6.3	8.6	6.8		7.4	6.5	NT		7.2	7.2	7.1
09/19/2002	pH	6.3	8.6	6.7		6.8	6.6	7.8		7.7	7.1	6.9
03/14/2003	pH	6.3	8.6	7.5		6.7	6.6	7.6		7	7	7.1
09/29/2003	pH	6.3	8.6	7.5		7.4	6.9	7.8		7.7	7.4	7.4
03/08/2004	pH	6.3	8.6	7.1		7.5	7.1	7		7.5	7.1	7.7
09/27/2004	pH	6.3	8.6	7.1		7.3	6.7	7.5		7.7	7.8	7.6
03/17/2005	pH	6.3	8.6	7.3		6.9	7.1	8		7.4	7.1	7.7
09/22/2005	pH	6.3	8.6	7.3		7.2	7.2	7.6		7.7	8	8.3
03/17/2006	pH	6.3	8.6	8		7.8	8.1	8.3		8.2	8.3	8.4
09/22/2006	pH	6.3	8.6	7.7		8	7.7	8.1		8.4	8.3	8.4
03/14/2007	pH	6.3	8.6	6.9		7.2	6.7	7.4		7.3	7.2	7.3
09/22/2007	pH	6.3	8.6	7.9		7.2	6.9	7.71		8.4	7.4	7.5
03/03/2008	pH	6.3	8.6	6.93		7	6.7	7.44		7.1	7.2	7.2
09/05/2008	pH	6.3	8.6	7		7	6.6	7.3		7.3	7.2	7.1
03/09/2009	pH	6.3	8.6	7.3		7.3	8	7.7		7.6	7.6	7.6
09/23/2009	pH	6.3	8.6	8.1		8.4	7.8	8.2		7.9	7.9	8
03/16/2010	pH	6.3	8.6	NT		8	7.3	NT		7.8	7.7	7.7
09/10/2010	pH	6.3	8.6	7.8		7	7.2	8		7	7.1	7.1
03/01/2011	pH	6.3	8.6	7.9		7.7	7.8	7.9		7.9	7.9	7.8
09/22/2011	pH	6.3	8.6	7.5		7.6	7.7	7.8		7.9	7.9	7.7
03/02/2012	pH	6.3	8.6	7.7		7.2	7.2	7.4		7.5	7.2	7.3
09/05/2012	pH	6.3	8.6	8		8	8	8.1		8.2	8.1	8.2
03/08/2013	pH	6.3	8.6	6.7		6.7	6.3	7		7	6.7	6.8
09/13/2013	pH	6.3	8.6	7.2		7.2	7	7.6		7.9	7.1	7.6
03/06/2014	pH	6.3	8.6	7.8		8.8	7.6	8.9		8.4	8.5	8.3
09/09/2014	pH	6.3	8.6	7.5		7.1	7.5	7.7		7.7	7.3	7.8
03/11/2015	pH	6.3	8.6	7.9		7.6	6.7	7.7		8	7.4	7.5
09/09/2015	pH	6.3	8.6	7.2		7.2	6.9	7.9		7.5	7.4	7.7
03/11/2016	pH	6.3	8.6	7.8		7.9	7.6	8.3		8.1	8.3	8.2
10/27/2016	pH	6.3	8.6	7.4		7.1	7	7.8		7.6	7.3	7.5
03/01/2018	pH	6.3	8.6	6.9		7.4	7.1	7.9		8	7.4	7.7
09/19/2018	pH	6.3	8.6	7		7.3	7.5	7		7.4	7.4	8.1
03/27/2019	pH	6.3	8.6	7.2		7.3	7.1	7.9		7.7	7.5	7.8
09/05/2019	pH	6.3	8.6	7.4		7.4	7.1	7.7		7.7	7.6	7.8
02/28/2020	pH	6.3	8.6	7.3		7.4	7.5	7.7		7.8	7.8	8.3
08/31/2020	pH	6.3	8.6	7.5		7.3	7.1	8.3		8.3	7.4	7.6
03/05/2021	pH	6.3	8.6									
09/13/2021	pH	6.3	8.6	6.9		6.8	6.9	7.5		8	7.1	7.2
03/02/2022	pH	6.3	8.6	6.8		6.9	6.9	7.4		7.6	7	7.3
09/12/2022	pH	6.3	8.6	7.1		7.3	6.9	8.1		8.8	7.5	8.2
03/24/2023	pH	6.3	8.6	NT		NT	7	NT		NT	6.9	NT
09/13/2023	pH	6.3	8.6	NT		6.7	NT	NT		NT	NT	6.8
03/05/2024	pH	6.3	8.6	7		NT	NT	NT		8.8	NT	NT
09/03/2024	pH	6.3	8.6	NT		NT	6.3	7.2		NT	NT	NT
03/07/2025	pH	6.3	8.6	NT		NT	NT	NT		NT		8.7
08/28/2025	pH	6.3	8.6	NT		6.6	NT	NT		6.7	NT	NT
Mean				7.4	7.2	7.3	7.2	7.7	7.6	7.6	7.4	7.5
Standard Deviation (STD)				0.4	0.2	0.5	0.5	0.4	0.2	0.5	0.7	0.8
Mean + 2 STD				8.2	7.7	8.3	8.2	8.5	8.1	8.6	8.8	9.1
Mean - 2 STD				6.6	6.8	6.4	6.2	6.9	7.1	6.7	6.0	6.0

AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW							
				D.G.W SW 3	D.G.W MW 39	D.G.W MW 40	BOTH MW 25	BOTH MW 33	BOTH MW 34	BOTH MW35
04/23/1991	pH	6.3	8.6	7.73			7.55	---	7.01	
10/15/1991	pH	6.3	8.6	7.80			7.60	---	7.03	
01/23/1992	pH	6.3	8.6	7.72			7.27	7.26	7.31	
03/23/1992	pH	6.3	8.6	7.45			7.39	7.37	7.32	
09/30/1992	pH	6.3	8.6	7.45			7.31	7.3	7.13	
03/05/1993	pH	6.3	8.6	DRY			7.41	7.42	7.34	
09/21/1993	pH	6.3	8.6	7.34			6.85	7.29	7.12	
03/23/1994	pH	6.3	8.6	7.39			7.16	7.18	7.4	
09/16/1994	pH	6.3	8.6	7.39			6.46	7.22	6.99	
03/16/1995	pH	6.3	8.6	DRY			7.7	7.6	7.7	
09/13/1995	pH	6.3	8.6	DRY			7.6	7.6	7.6	
03/28/1996	pH	6.3	8.6	Dry			7.9	7.9	8	8
06/20/1996	pH	6.3	8.6	NT			NT	NT	NT	7.5
09/13/1996	pH	6.3	8.6	DRY			7.7	7.7	8	8.1
12/16/1996	pH	6.3	8.6	NT			NT	NT	NT	NT
03/19/1997	pH	6.3	8.6	DRY			7.5	7.5	7.7	8.1
06/18/1997	pH	6.3	8.6	NT			NT	NT	NT	8.2
08/30/1997	pH	6.3	8.6	DRY			7.8	7.9	8	8
03/10/1998	pH	6.3	8.6	DRY			6.4	5.8	5.8	5.4
09/21/1998	pH	6.3	8.6	DRY			6.2	5.8	7.4	7.4
03/18/1999	pH	6.3	8.6	DRY			7.3	7.4	7.7	6.9
09/21/1999	pH	6.3	8.6	DRY			6.2	5.8	7.4	7.4
03/21/2000	pH	6.3	8.6	DRY			NT	NT	NT	NT
06/28/2000	pH	6.3	8.6	DRY	5.9	5.8	NT	NT	NT	NT
09/28/2000	pH	6.3	8.6	DRY	7.1	7.1	7.2	7.3	7.2	NT
12/27/2000	pH	6.3	8.6	NT	8	8.1	NT	NT	NT	NT
03/28/2001	pH	6.3	8.6	DRY	7.2	7.7	7.5	7.4	7.5	7.5
09/02/2001	pH	6.3	8.6	DRY	7.1	7.9	7.7	7.8	7.3	7.3
03/19/2002	pH	6.3	8.6	DRY	6.9	7.5	7	7.2	7	7.1
09/19/2002	pH	6.3	8.6	DRY	6.7	6.9	7.5	7	6.7	6.9
03/14/2003	pH	6.3	8.6	DRY	8	8.1	7.1	7.4	7.3	7.1
09/29/2003	pH	6.3	8.6	DRY	7.2	7.5	7.4	7.8	7.4	7.5
03/08/2004	pH	6.3	8.6	DRY	7.1	7.5	7.6	7.4	7.4	7.4
09/27/2004	pH	6.3	8.6	DRY	7	7.6	7	7.1	7.2	7.2
03/17/2005	pH	6.3	8.6	DRY	7.2	7.9	7.5	7.6	7.5	7.6
09/22/2005	pH	6.3	8.6	DRY	7.5	7.3	7	7.6	7.4	7.3
03/22/2006	pH	6.3	8.6	DRY	8.2	8.4	7.7	7.7	8	7.9
09/22/2006	pH	6.3	8.6	DRY	8.1	7.8	7.8	7.9	7.7	7.5
03/14/2007	pH	6.3	8.6	7.4	6.8	7	6.8	7	7.4	6.9
09/22/2007	pH	6.3	8.6	DRY	6.88	7.04	7.06	7.27	7.22	6.66
03/03/2008	pH	6.3	8.6	DRY	7.11	6.9	6.73	7.13	7.48	6.42
09/05/2008	pH	6.3	8.6	DRY	6.9	6.9	6.8	7.2	7.3	7.2
03/09/2009	pH	6.3	8.6	DRY	7.1	7.3	7	6.9	7.5	7.1
09/23/2009	pH	6.3	8.6	DRY	7.8	7.8	8.4	7.9	8.4	9.1
03/16/2010	pH	6.3	8.6	7.3	7.6	7.7	7.1	6.9	7.2	7.1
09/10/2010	pH	6.3	8.6	7.4	7.8	8	7.3	7.2	7.3	7.3
03/01/2011	pH	6.3	8.6	7.7	7.9	7.9	7.7	8	7.9	7.6
09/22/2011	pH	6.3	8.6	7.5	8	7.7	7.4	7.8	7.6	7.5
03/02/2012	pH	6.3	8.6	7.1	7.1	7.2	6.9	6.9	6.7	6.5
09/05/2012	pH	6.3	8.6	8	8	8	8.1	8	8.1	8.1
03/08/2013	pH	6.3	8.6	DRY	6.6	6.7	7.1	7.1	7.2	7.1
09/13/2013	pH	6.3	8.6	DRY	7	7.1	7.1	7.2	7.4	7.7
03/06/2014	pH	6.3	8.6	7.2	7.8	8.2	7.4	7.5	7.4	6.4
09/09/2014	pH	6.3	8.6	7.3	7.3	7.5	6.6	7	7	6.5
03/11/2015	pH	6.3	8.6	7.1	7.7	7.8	7.7	7.6	7.7	7.4
09/09/2015	pH	6.3	8.6	7.5	7	7.1	6.9	7.4	7	8
03/11/2016	pH	6.3	8.6	8	7.6	8	7.8	8.1	8	8.6
10/27/2016	pH	6.3	8.6	DRY	7.8	7.3	7.9	8	7.1	8.6
03/01/2018	pH	6.3	8.6	7.7	7.2	7.4	7	7.3	7.5	7.7
09/19/2018	pH	6.3	8.6	7.3	7.1	7.3	7.2	7.2	7.2	7.2
03/27/2019	pH	6.3	8.6	7.1	7.2	7.3	7.1	7.2	7.5	7.6
09/05/2019	pH	6.3	8.6	7.3	7.1	7.3	7.2	7.2	7.2	7.2
02/28/2020	pH	6.3	8.6	8.2	7.4	7.6	7.3	7.6		8.1
08/31/2020	pH	6.3	8.6	8	7.3	7.2	7	7.2	7.3	8.1
03/05/2021	pH	6.3	8.6							
09/13/2021	pH	6.3	8.6	DRY	6.9	7.2	6.7	7	6.7	7.4
03/02/2022	pH	6.3	8.6	6.9	7.1	7	6.7	6.8	6.7	7.1
09/12/2022	pH	6.3	8.6	8.1	7.1	7.1	6.8	7.1	7.2	8.4
03/24/2023	pH	6.3	8.6	6.8	6.6	7.5	6.7	6.7	6.9	7.2
09/13/2023	pH	6.3	8.6	6.9	6.6	6.6	6.7	6.8	6.9	7.0
03/05/2024	pH	6.3	8.6	DRY	7.6	6.8	6.9	7	7	8.5
09/03/2024	pH	6.3	8.6	7.7	6.8	6.9	6.9	6.9	7	7.5
03/07/2025	pH	6.3	8.6	7.5	6.9	7.1	6.8	6.8	6.9	7.8
08/28/2025	pH	6.3	8.6	6.9	6.5	6.5	6.6	6.6	6.6	7.0
Mean				7.5	7.2	7.4	7.2	7.3	7.3	7.5
Standard Deviation (STD)				0.4	0.5	0.5	0.5	0.5	0.4	0.6
Mean + 2 STD				8.2	8.2	8.4	8.1	8.2	8.2	8.7
Mean - 2 STD				6.7	6.3	6.4	6.3	6.3	6.5	6.2



MONITORING WELL SAMPLING RESULTS

[illegible]

AMES-STORY ENVIRONMENTAL LANDFILL

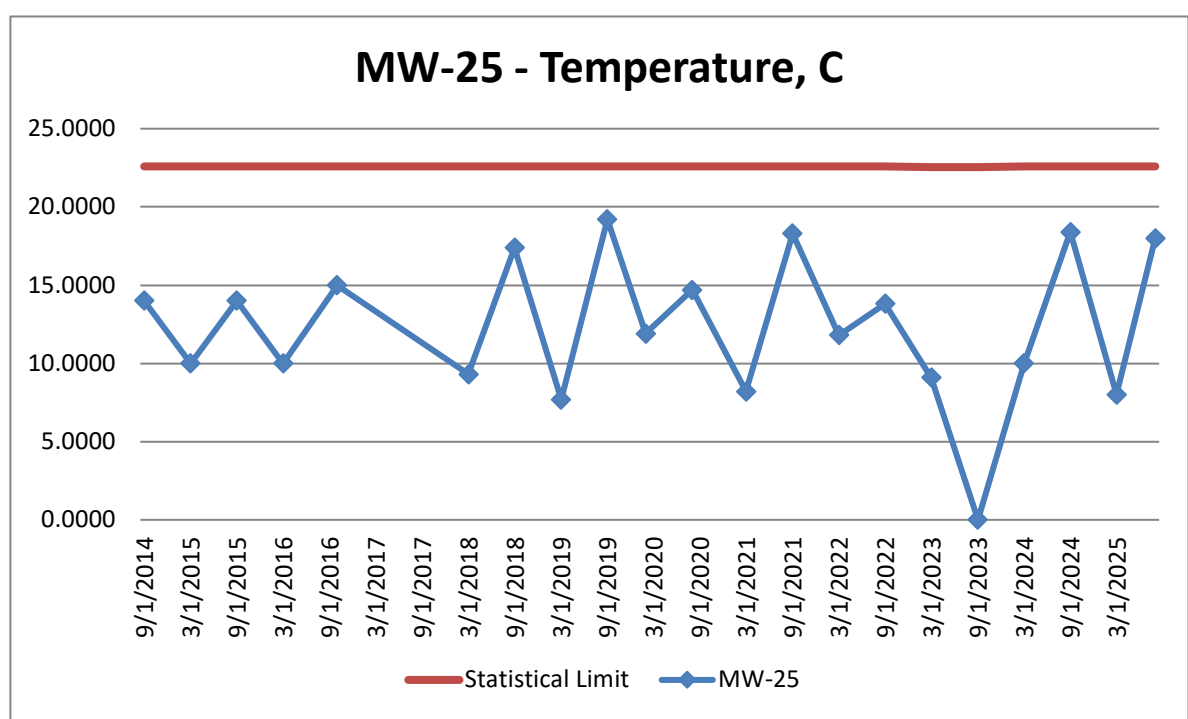
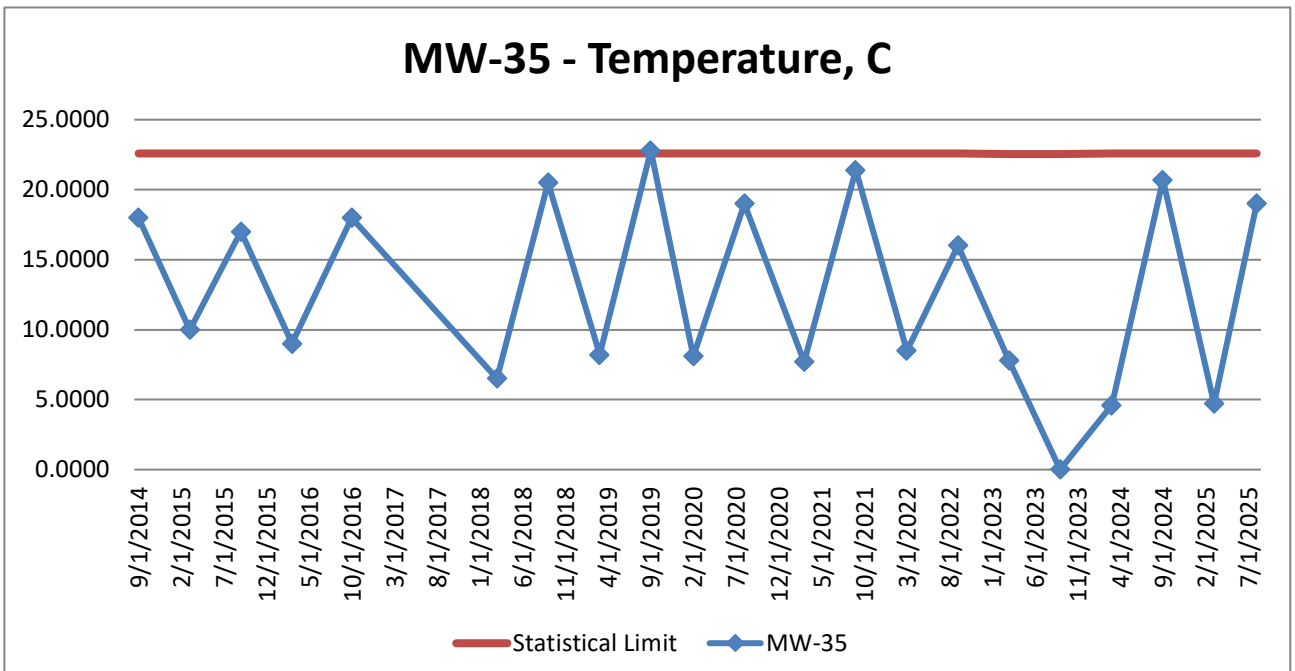
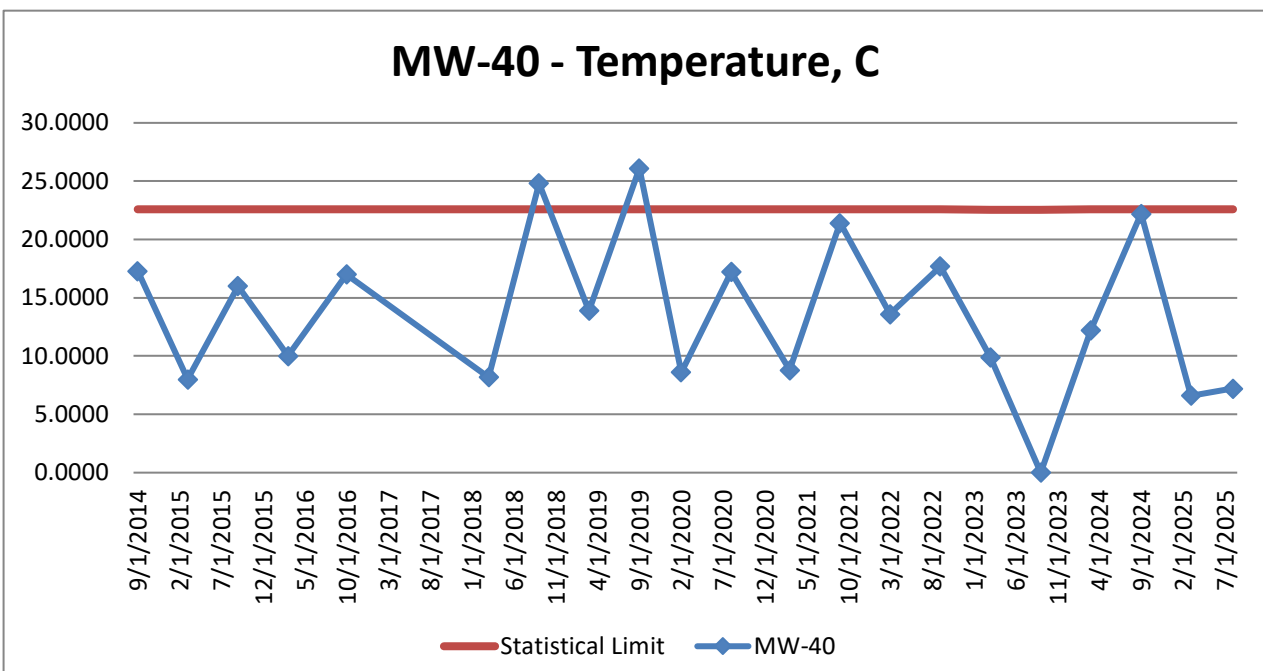
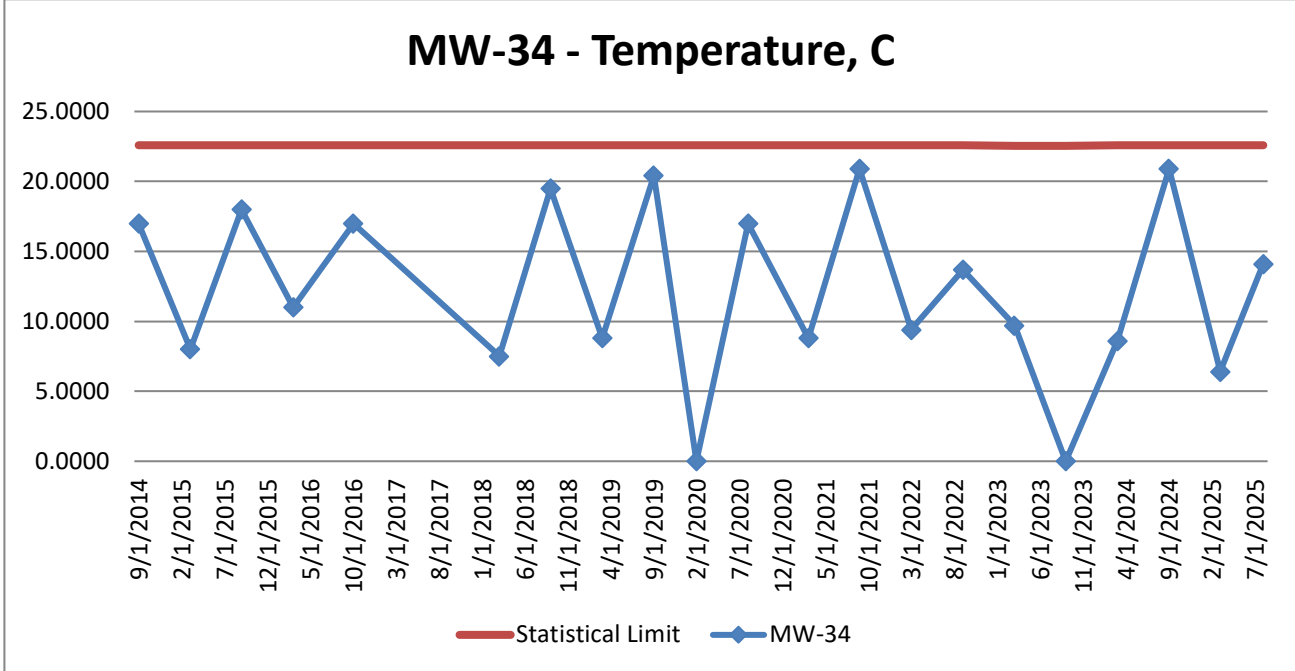
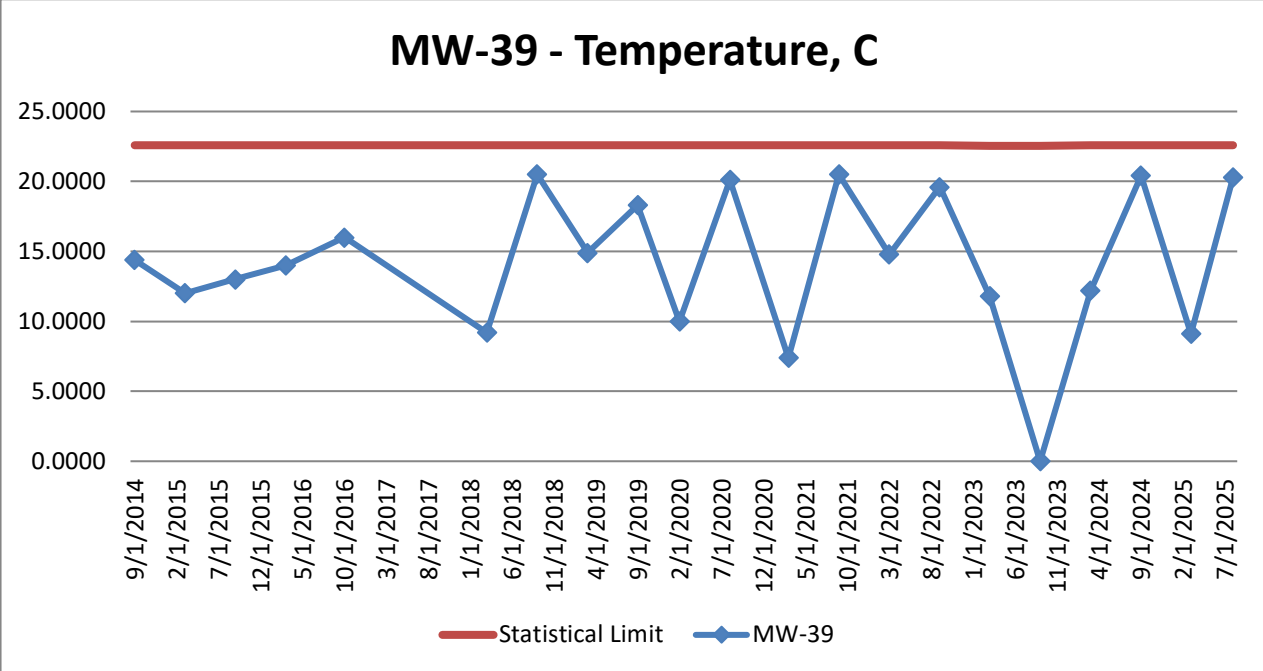
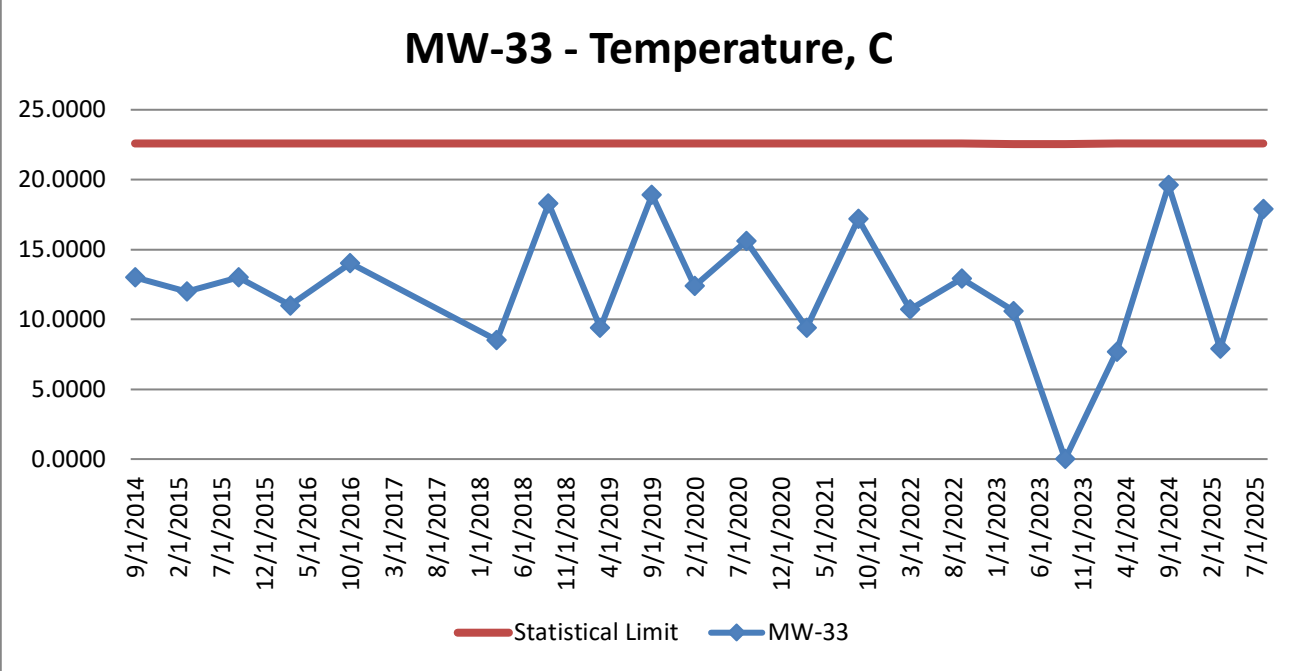
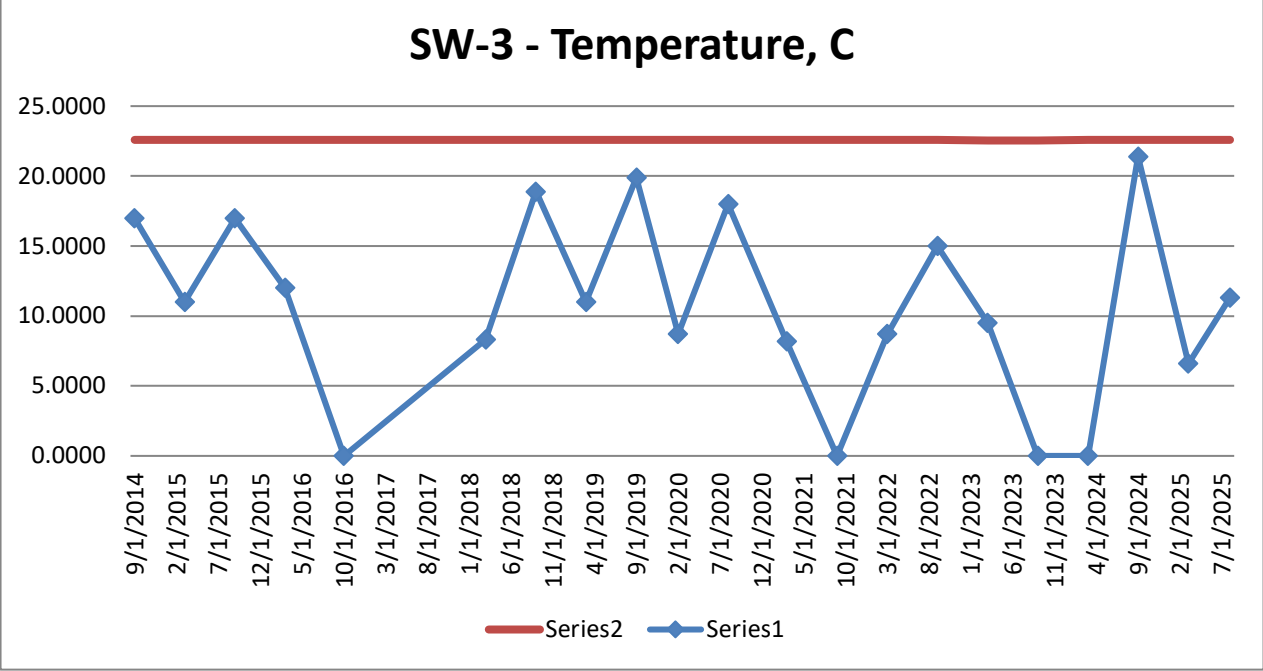
MONITORING WELL SAMPLING RESULTS

WATER TABLE SYSTEM								UPPER AQUIFER SAND LAYER SYSTEM				
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Upgradient Results				Upgradient Results				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
04/23/1991	Temperature, celsius	--	22.6		14.1	16.9	NT		11.4	12.7	NT	NT
10/15/1991	Temperature, celsius	--	22.6		13.6	12.4	NT		10.7	11.9	NT	NT
01/23/1992	Temperature, celsius	--	22.6		8.2	6.1	NT		8.4	NT	NT	NT
03/23/1992	Temperature, celsius	--	22.6		7.6	9.5	NT		11	10.5	NT	NT
09/30/1992	Temperature, celsius	--	22.6		10.6	NT	NT		11.5	12.1	NT	NT
03/05/1993	Temperature, celsius	--	22.6		8.8	5.2	NT		10.3	NT	NT	NT
09/21/1993	Temperature, celsius	--	22.6		17.3	17.5	14.2		14.4	14.6	10.9	10.4
03/23/1994	Temperature, celsius	--	22.6		11.6	10.2	9.2		12.1	8.2	8.4	9.3
09/16/1994	Temperature, celsius	--	22.6		18.7	21.3	18		14.8	17.1	15	14
03/16/1995	Temperature, celsius	--	22.6		7	5	6		8	6	NT	10
09/13/1995	Temperature, celsius	--	22.6		4.73	4.72	4.3		4.71	4.62	4.3	4.3
03/28/1996	Temperature, celsius	--	22.6	9	plugged	6	5	10	plugged	7	10	10
06/20/1996	Temperature, celsius	--	22.6	13		NT	NT	14		NT	NT	NT
09/13/1996	Temperature, celsius	--	22.6	17		19	17	12		17	14	13
12/16/1996	Temperature, celsius	--	22.6	NT		10	7	NT		12	7	8
03/19/1997	Temperature, celsius	--	22.6	9		6	4	10		8	7	7
06/18/1997	Temperature, celsius	--	22.6	14		15	14	13		14	15	14
08/30/1997	Temperature, celsius	--	22.6	20		20	23	14		17	18	16
03/10/1998	Temperature, celsius	--	22.6	8		6	8	10		8	11	8
09/21/1998	Temperature, celsius	--	22.6	16		18	19	11		14	15	15
03/18/1999	Temperature, celsius	--	22.6	8		5	12	10		6	11	11
09/21/1999	Temperature, celsius	--	22.6	16		18	21	11		14	13	13
03/21/2000	Temperature, celsius	--	22.6	NT		NT	11	NT		NT	9	9
06/28/2000	Temperature, celsius	--	22.6	NT		NT	19	NT		NT	NT	NT
09/28/2000	Temperature, celsius	--	22.6	19		17	20	15		18	16	15
12/27/2000	Temperature, celsius	--	22.6	NT		NT	13	NT		NT	14	13
03/28/2001	Temperature, celsius	--	22.6	8		6	10	10		8	13	13
09/02/2001	Temperature, celsius	--	22.6	17		NT	NT	14		NT	NT	NT
03/19/2002	Temperature, celsius	--	22.6	10		7	8	12		10	11	11
09/19/2002	Temperature, celsius	--	22.6	19		20	18	14		18	15	14
03/14/2003	Temperature, celsius	--	22.6	12		7	6	13		5	10	11
09/29/2003	Temperature, celsius	--	22.6	17		15	18	14		15	14	14
03/08/2004	Temperature, celsius	--	22.6	11		6	7	12		10	12	12
09/27/2004	Temperature, celsius	--	22.6	19		21	18	16		17	15	14
03/17/2005	Temperature, celsius	--	22.6	10		9	7	13		13	12	12
09/22/2005	Temperature, celsius	--	22.6	21		27	25	20		22	23	25
03/17/2006	Temperature, celsius	--	22.6	14		9	8	14		10	11	11
09/22/2006	Temperature, celsius	--	22.6	22		24	22	23		21	18	24
03/14/2007	Temperature, celsius	--	22.6	8		6	7	11		9	12	12
09/22/2007	Temperature, celsius	--	22.6	19.2		19	19.6	15.9		21	14.9	14.8
03/03/2008	Temperature, celsius	--	22.6	8		6	8	10.5		10	12	12
09/05/2008	Temperature, celsius	--	22.6	16.9		18.4	18.2	13.5		15.9	13.4	13.5
03/09/2009	Temperature, celsius	--	22.6	5		5	6	11		10	12	12
09/23/2009	Temperature, celsius	--	22.6	17		16	16	15		14	13	14
03/16/2010	Temperature, celsius	--	22.6	NT		8	8	NT		10	11	12
09/10/2010	Temperature, celsius	--	22.6	15		18	18	14		14	19	23
03/01/2011	Temperature, celsius	--	22.6	13		10	10	13		13	13	13
09/22/2011	Temperature, celsius	--	22.6	14		18	17	13		14	14	14
03/02/2012	Temperature, celsius	--	22.6	13		9	9	12		12	11	12
09/05/2012	Temperature, celsius	--	22.6	15		18	18	13		13	14	13
03/08/2013	Temperature, celsius	--	22.6	11		9	9	12		12	12	12
09/13/2013	Temperature, celsius	--	22.6	14		18	18	15		15	15	14
03/06/2014	Temperature, celsius	--	22.6	12		9	8	10		11	12	13
09/09/2014	Temperature, celsius	--	22.6	14		16.5	18.4	13		17.4	16.7	16
03/11/2015	Temperature, celsius	--	22.6	11		8	10	12		12	13	14
09/09/2015	Temperature, celsius	--	22.6	14		16	16	13		13	13	13
03/11/2016	Temperature, celsius	--	22.6	14		11	10	14		14	14	15
10/27/2016	Temperature, celsius	--	22.6	15		17	17	14		14	14	14
03/01/2018	Temperature, celsius	--	22.6	11.5		7.3	7.5	9.1		8	9.5	10.8
09/19/2018	Temperature, celsius	--	22.6	20.2		20.8	21.5	20.7		19.1	18.7	19.5
03/27/2019	Temperature, celsius	--	22.6	16.4		14.9	18.4	16.7		17.6	14.8	16.1
09/05/2019	Temperature, celsius	--	22.6	22.7		26	24.1	22.3		21.4	17.2	19.3
02/28/2020	Temperature, celsius	--	22.6	10		6.6	4.9	10.1		7.1	8.8	10.6
08/31/2020	Temperature, celsius	--	22.6	17		19	20.5	16		20	14.9	15.1
03/05/2021	Temperature, celsius	--	22.6	14.5		8.6	12.3	12.6		10.9	14.5	14.5
09/13/2021	Temperature, celsius	--	22.6	21.2		19.4	23.9	19.3		21.3	17.8	24.4
03/02/2022	Temperature, celsius	--	22.6	15.3		12.7	14	17		12.2	13.8	14.6
09/12/2022	Temperature, celsius	--	22.6	16		17	20.9	16.6		18.8	18.5	19.2
03/24/2023	Temperature, celsius	--	22.5	NT		NT	6.5	NT		NT	9.5	NT
09/13/2023	Temperature, celsius	--	22.5	NT		NT	NT	NT		NT	NT	NT
03/05/2024	Temperature, celsius	--	22.6	9		NT	NT	NT		7.6	NT	NT
09/03/2024	Temperature, celsius	--	22.6	NT		NT	20.3	20.3		NT	NT	NT
03/07/2025	Temperature, celsius	--	22.6	NT		NT	NT	NT		NT		9.4
08/28/2025	Temperature, celsius	--	22.6	NT		17.1	NT	NT		18	NT	NT
	Mean			14.2	11.1	13.1	13.7	13.8	10.7	13.1	13.2	13.5
	Standard Deviation (STD)			4.2	4.2	6.0	6.0	3.2	2.7	4.4	3.3	3.9
	Mean + 2 STD			22.5	19.5	25.2	25.7	20.2	16.1	21.9	19.8	21.4

AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW	D.G.W	D.G.W	D.G.W	BOTH	BOTH	BOTH	BOTH
				SW 3	MW 39	MW 40	MW 25	MW 33	MW 34	MW35
04/23/1991	Temperature, celsius	--	22.6	13.1			15.1	---	12.4	
10/15/1991	Temperature, celsius	--	22.6	14.7			14.6	---	16.2	
01/23/1992	Temperature, celsius	--	22.6	3.5			8.3	8.3	6.2	
03/23/1992	Temperature, celsius	--	22.6	5.5			7.2	7.3	6.5	
09/30/1992	Temperature, celsius	--	22.6	7.1			10.7	10.7	10.1	
03/05/1993	Temperature, celsius	--	22.6	DRY			6.9	6.9	6.1	
09/21/1993	Temperature, celsius	--	22.6	15.2			14.6	14.7	14.8	
03/23/1994	Temperature, celsius	--	22.6	11.8			9.4	11.7	12	
09/16/1994	Temperature, celsius	--	22.6	11.8			19.9	18.5	2.11	
03/16/1995	Temperature, celsius	--	22.6	DRY			7	7	6	
09/13/1995	Temperature, celsius	--	22.6	DRY			4.63	4.24	4.66	
03/28/1996	Temperature, celsius	--	22.6	DRY			7	7	7	6
06/20/1996	Temperature, celsius	--	22.6	NT			NT	NT	NT	13
09/13/1996	Temperature, celsius	--	22.6	Dry			15	16	16	16
12/16/1996	Temperature, celsius	--	22.6	NT			NT	NT	NT	NT
03/19/1997	Temperature, celsius	--	22.6	DRY			6	7	6	6
06/18/1997	Temperature, celsius	--	22.6	NT			NT	NT	NT	12
08/30/1997	Temperature, celsius	--	22.6	DRY			19	20	21	17
03/10/1998	Temperature, celsius	--	22.6	DRY			10	9	9	9
09/21/1998	Temperature, celsius	--	22.6	DRY			17	18	17	15
03/18/1999	Temperature, celsius	--	22.6	DRY			9	8	9	9
09/21/1999	Temperature, celsius	--	22.6	DRY			17	18	17	15
03/21/2000	Temperature, celsius	--	22.6	DRY			NT	NT	NT	NT
06/28/2000	Temperature, celsius	--	22.6	DRY	14	NT	NT	NT	NT	NT
09/28/2000	Temperature, celsius	--	22.6	DRY	16	17	17	16	17	NT
12/27/2000	Temperature, celsius	--	22.6	NT	13	11	NT	NT	NT	NT
03/28/2001	Temperature, celsius	--	22.6	DRY	11	8	9	9	6	7
09/02/2001	Temperature, celsius	--	22.6	DRY	15	17	14	13	17	15
03/19/2002	Temperature, celsius	--	22.6	DRY	10	8	10	11	10	10
09/19/2002	Temperature, celsius	--	22.6	DRY	18	17	NT	NT	19	16
03/14/2003	Temperature, celsius	--	22.6	DRY	13	10	9	10	10	10
09/29/2003	Temperature, celsius	--	22.6	DRY	15	16	15	14	19	17
03/08/2004	Temperature, celsius	--	22.6	DRY	12	8	9	12	7	5
09/27/2004	Temperature, celsius	--	22.6	DRY	18	18	15	15	18	16
03/17/2005	Temperature, celsius	--	22.6	DRY	11	9	9	9	8	9
09/22/2005	Temperature, celsius	--	22.6	DRY	22	22	17	17	18	20
03/17/2006	Temperature, celsius	--	22.6	DRY	16	10	10	11	14	8
09/22/2006	Temperature, celsius	--	22.6	DRY	17	20	17	16	21	18
03/14/2007	Temperature, celsius	--	22.6	6	9	6	8	9	4	6
09/22/2007	Temperature, celsius	--	22.6	DRY	15.1	16.1	17	16.6	21.1	16.8
03/03/2008	Temperature, celsius	--	22.6	DRY	9.2	8	7.2	7.5	2.5	6.7
09/05/2008	Temperature, celsius	--	22.6	DRY	12.7	15.7	14.1	14	16.6	16
03/09/2009	Temperature, celsius	--	22.6	DRY	11	6	8	7	3	7
09/23/2009	Temperature, celsius	--	22.6	DRY	14	15	14	14	16	14
03/16/2010	Temperature, celsius	--	22.6	11	10	9	8	9	6	8
09/10/2010	Temperature, celsius	--	22.6	17	15	16	15	15	19	20
03/01/2011	Temperature, celsius	--	22.6	8	13	11	10	11	9	9
09/22/2011	Temperature, celsius	--	22.6	16	14	16	13	13	16	18
03/02/2012	Temperature, celsius	--	22.6	6	13	10	10	10	7	8
09/22/2011	Temperature, celsius	--	22.6	18	16	17	14	13	18	17
03/08/2013	Temperature, celsius	--	22.6	DRY	13	9	10	11	10	10
09/13/2013	Temperature, celsius	--	22.6	DRY	14	15	13	14	17	15
03/06/2014	Temperature, celsius	--	22.6	7	12	9	8	11	8	7
09/09/2014	Temperature, celsius	--	22.6	17	14.4	17.3	14	13	17	18
03/11/2015	Temperature, celsius	--	22.6	11	12	8	10	12	8	10
09/09/2015	Temperature, celsius	--	22.6	17	13	16	14	13	18	17
03/11/2016	Temperature, celsius	--	22.6	12	14	10	10	11	11	9
10/27/2016	Temperature, celsius	--	22.6	DRY	16	17	15	14	17	18
03/01/2018	Temperature, celsius	--	22.6	8.3	9.2	8.2	9.3	8.5	7.5	6.5
09/19/2018	Temperature, celsius	--	22.6	18.9	20.5	24.8	17.4	18.3	19.5	20.5
03/27/2019	Temperature, celsius	--	22.6	11	14.9	13.9	7.7	9.4	8.8	8.2
09/05/2019	Temperature, celsius	--	22.6	19.9	18.3	26.1	19.2	18.9	20.4	22.8
02/28/2020	Temperature, celsius	--	22.6	8.7	10	8.6	11.9	12.4		8.1
08/31/2020	Temperature, celsius	--	22.6	18	20.1	17.2	14.7	15.6	17	19
03/05/2021	Temperature, celsius	--	22.6	8.2	7.4	8.8	8.2	9.4	8.8	7.7
09/13/2021	Temperature, celsius	--	22.6	DRY	20.5	21.4	18.3	17.2	20.9	21.4
03/02/2022	Temperature, celsius	--	22.6	8.7	14.8	13.6	11.8	10.7	9.4	8.5
09/12/2022	Temperature, celsius	--	22.6	15	19.6	17.7	13.8	12.9	13.7	16
03/24/2023	Temperature, celsius	--	22.5	9.5	11.8	9.9	9.1	10.6	9.7	7.8
09/13/2023	Temperature, celsius	--	22.5	NT	NT	NT	NT	NT	NT	NT
03/05/2024	Temperature, celsius	--	22.6	DRY	12.2	12.2	10	7.7	8.6	4.6
09/03/2024	Temperature, celsius	--	22.6	21.4	20.4	22.2	18.4	19.6	20.9	20.7
03/07/2025	Temperature, celsius	--	22.6	6.6	9.1	6.6	8	7.9	6.4	4.7
08/28/2025	Temperature, celsius	--	22.6	11.3	20.3	7.2	18	17.9	14.1	19
Mean				11.9	14.2	13.4	12.1	12.2	12.3	12.5
Standard Deviation (STD)				4.7	3.5	5.1	3.9	3.8	5.5	5.2
Mean + 2 STD				21.3	21.2	23.7	19.9	19.8	23.4	22.9



AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

		ACTION	MEAN +							
		LEVEL	2 STD	D.G.W	D.G.W	D.G.W	BOTH	BOTH	BOTH	BOTH
DATE	PARAMETER		AW	SW 3	MW 39	MW 40	MW 25	MW 33	MW 34	MW35
mg/L										
04/23/1991	Total Organic Halogens	--	0.082	0.031			0.033	---	0.05	
10/15/1991	Total Organic Halogens	--	0.082	<0.01			<0.01	---	<0.01	
01/23/1992	Total Organic Halogens	--	0.082	<0.01			<0.01	<0.01	<0.01	
03/23/1992	Total Organic Halogens	--	0.082	0.04			0.92	0.99	0.01	
09/30/1992	Total Organic Halogens	--	0.082	DRY			0.02	<0.01	0.01	
03/05/1993	Total Organic Halogens	--	0.082	NT			NT	NT	NT	
09/21/1993	Total Organic Halogens	--	0.082	0.02			0.02	0.05	0.02	
03/23/1994	Total Organic Halogens	--	0.082	NT			NT	NT	NT	
09/16/1994	Total Organic Halogens	--	0.082	NT			0.024	0.024	<0.01	
03/16/1995	Total Organic Halogens	--	0.082	NT			0.02	0.04	0.02	
09/13/1995	Total Organic Halogens	--	0.082	NT			NT	NT	NT	
03/28/1996	Total Organic Halogens	--	0.082	NT			NT	NT	NT	NT
06/20/1996	Total Organic Halogens	--	0.082	NT			NT	NT	NT	NT
09/13/1996	Total Organic Halogens	--	0.082	DRY			0.02	0.01	0.01	0.03
12/16/1996	Total Organic Halogens	--	0.082	NT			NT	NT	NT	NT
03/19/1997	Total Organic Halogens	--	0.082	NT			NT	NT	NT	NT
06/18/1997	Total Organic Halogens	--	0.082	NT			NT	NT	NT	NT
08/30/1997	Total Organic Halogens	--	0.082	DRY			<0.01	<0.01	<0.01	<0.01
03/10/1998	Total Organic Halogens	--	0.082	NT			NT	NT	NT	NT
09/21/1998	Total Organic Halogens	--	0.082	DRY			0.02	0.02	<0.01	0.03
03/18/1999	Total Organic Halogens	--	0.082	DRY			NT	NT	NT	NT
09/21/1999	Total Organic Halogens	--	0.082	DRY			0.02	0.02	0.01	0.02
03/21/2000	Total Organic Halogens	--	0.082	DRY			NT	NT	NT	NT
06/28/2000	Total Organic Halogens	--	0.082	DRY	NT	NT	NT	NT	NT	NT
09/28/2000	Total Organic Halogens	--	0.082	DRY	0.02	<0.01	0.02	0.02	0.02	DRY
12/27/2000	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
03/28/2001	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/02/2001	Total Organic Halogens	--	0.082	DRY	0.017	<0.01	0.065	0.021	0.03	0.028
03/19/2002	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/19/2002	Total Organic Halogens	--	0.082	DRY	<0.01	0.015	0.019	0.02	0.021	0.034
03/14/2003	Total Organic Halogens	--	0.082	DRY	NT	NT	NT	NT	NT	NT
09/29/2003	Total Organic Halogens	--	0.082	DRY	NT	<0.010	<0.010	<0.010	0.012	<0.010
03/08/2004	Total Organic Halogens	--	0.082	DRY	NT	NT	NT	NT	NT	NT
09/27/2004	Total Organic Halogens	--	0.082	DRY	<0.010	0.01	0.034	0.034	0.012	0.029
03/17/2005	Total Organic Halogens	--	0.082	DRY	NT	NT	NT	NT	NT	NT
09/22/2005	Total Organic Halogens	--	0.082	DRY	<0.010	0.079	0.035	0.115	0.053	0.029
03/17/2006	Total Organic Halogens	--	0.082	DRY	NT	NT	NT	0.019	NT	NT
09/22/2006	Total Organic Halogens	--	0.082	DRY	0.063	<0.010	0.036	0.032	0.056	0.016
03/14/2007	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/22/2007	Total Organic Halogens	--	0.082	DRY	0.012	<0.010	0.045	0.019	0.026	0.02
03/03/2008	Total Organic Halogens	--	0.082	DRY	NT	NT	NT	NT	NT	NT
09/05/2008	Total Organic Halogens	--	0.082	DRY	<0.010	<0.010	0.039	0.021	0.023	0.015
03/09/2009	Total Organic Halogens	--	0.082	DRY	NT	NT	NT	NT	NT	NT
09/23/2009	Total Organic Halogens	--	0.082	DRY	<0.010	<0.010	0.049	0.021	0.032	0.015
03/16/2010	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/10/2010	Total Organic Halogens	--	0.082	0.022	0.023	<0.010	0.033	0.016	0.020	0.046
03/01/2011	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/22/2011	Total Organic Halogens	--	0.082	0.032	0.015	<0.010	0.041	<0.010	0.013	0.034
03/02/2012	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/05/2012	Total Organic Halogens	--	0.082	0.028	<0.010	0.011	0.028	0.015	<0.010	0.022
03/08/2013	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/13/2013	Total Organic Halogens	--	0.082	DRY	0.013	0.012	0.037	0.028	0.020	0.039
03/06/2014	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/09/2014	Total Organic Halogens	--	0.082	0.032	0.023	0.02	0.023	0.023	0.024	0.039
03/11/2015	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/09/2015	Total Organic Halogens	--	0.082	0.028	0.026	0.014	0.026	0.024	0.023	0.042
03/11/2016	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
10/27/2016	Total Organic Halogens	--	0.082	DRY	0.017	0.025	0.055	0.020	0.025	0.033
09/07/2017	Total Organic Halogens	--	0.082	0.025	<0.010	0.016	0.029	0.020	0.010	0.016
03/01/2018	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/19/2018	Total Organic Halogens	--	0.082	0.041	0.016	0.033	<0.010	0.024	<0.010	0.015
03/27/2019	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/05/2019	Total Organic Halogens	--	0.082	0.022	0.011	0.012	0.024	0.01	0.015	0.016
02/28/2020	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
08/31/2020	Total Organic Halogens	--	0.082	0.014	<0.010	0.011	0.01	<0.010	<0.010	0.023
03/05/2021	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/13/2021	Total Organic Halogens	--	0.082	DRY	0.02	<0.010	0.026	0.012	0.025	0.024
03/02/2022	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/12/2022	Total Organic Halogens	--	0.082	0.047	0.011	0.013	0.025	0.027	0.015	<.010
03/24/2023	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/13/2023	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
03/05/2024	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
09/03/2024	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
03/07/2025	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
08/28/2025	Total Organic Halogens	--	0.082	NT	NT	NT	NT	NT	NT	NT
	Mean			0.029	0.021	0.021	0.060	0.061	0.022	0.027
	Standard Deviation (STD)			0.009	0.013	0.018	0.160	0.180	0.013	0.009
	Mean + 2 STD			0.047	0.046	0.057	0.380	0.420	0.047	0.045

AMES-STORY ENVIRONMENTAL LANDFILL

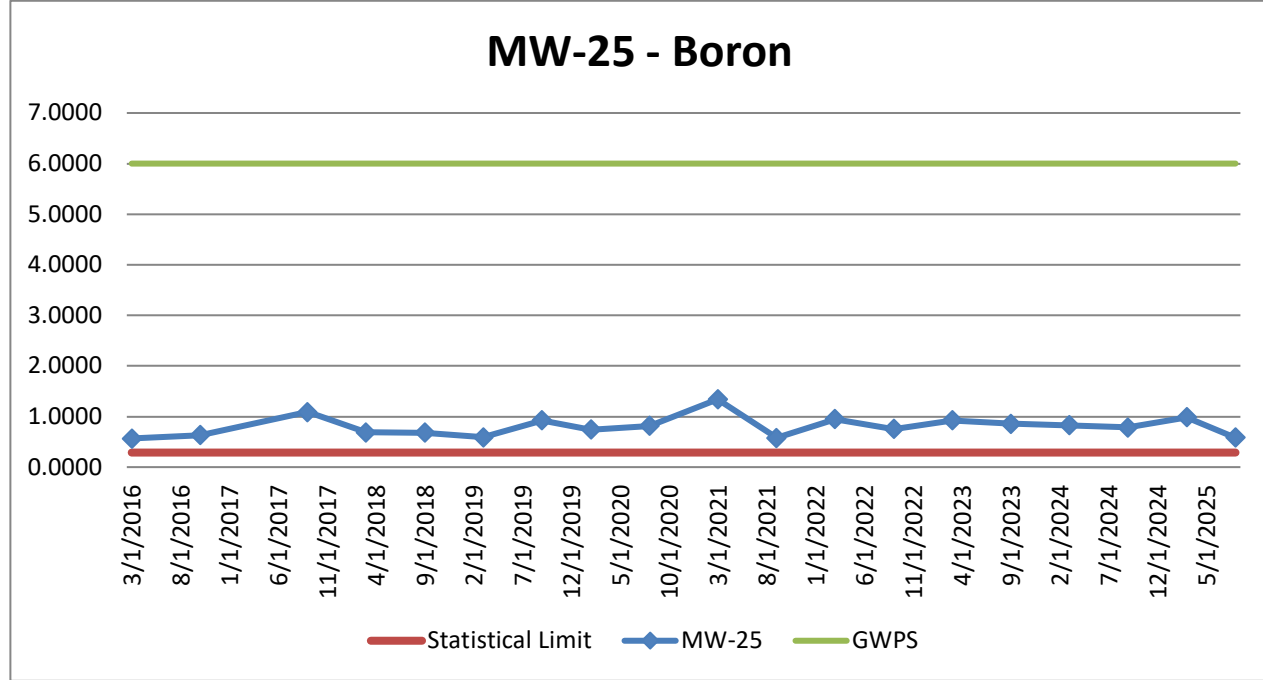
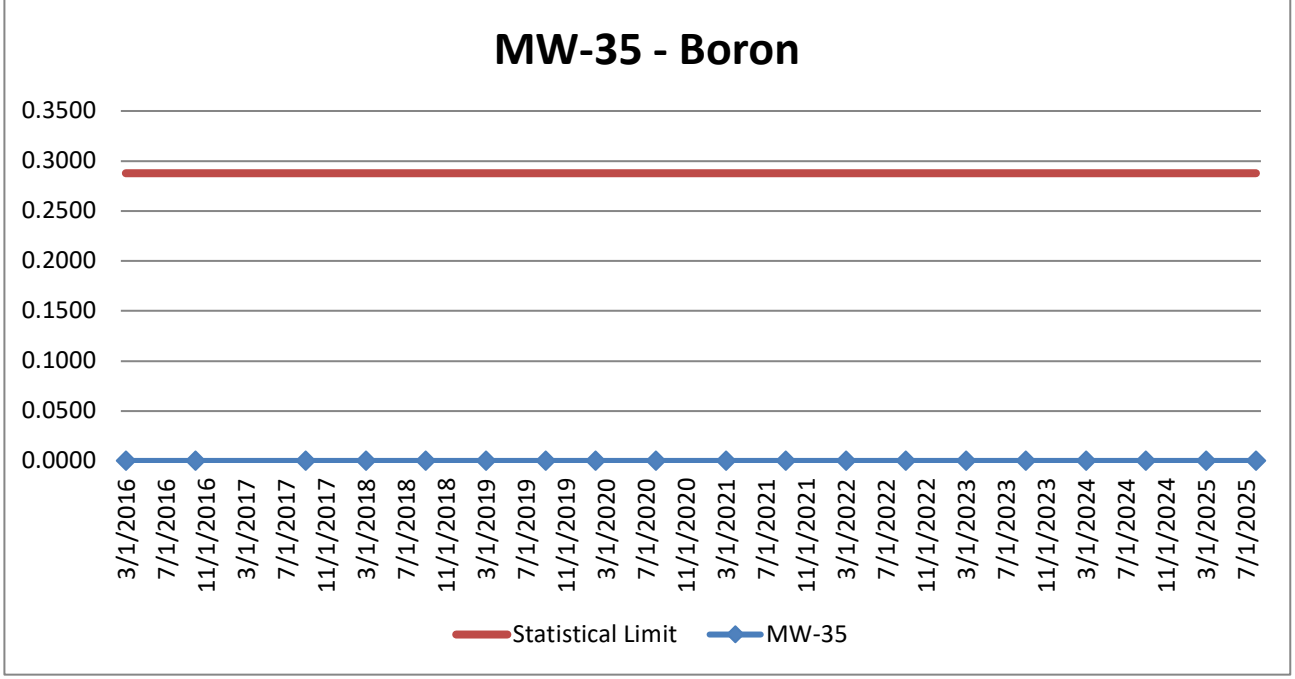
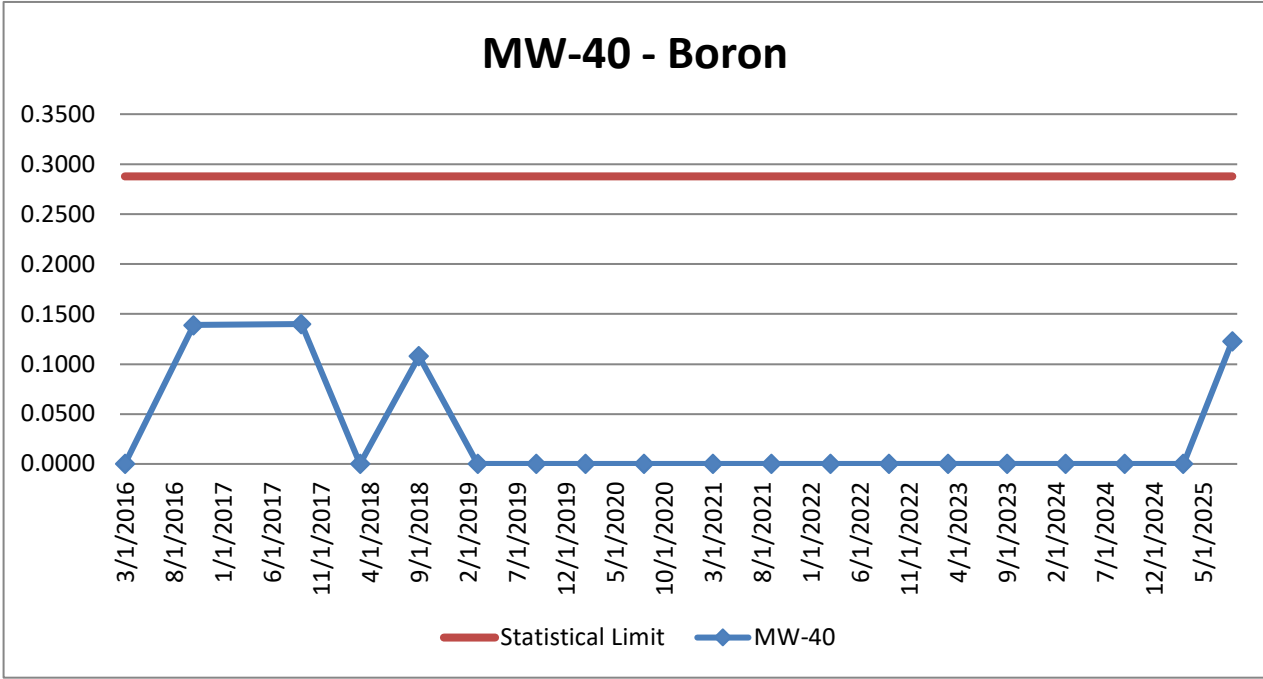
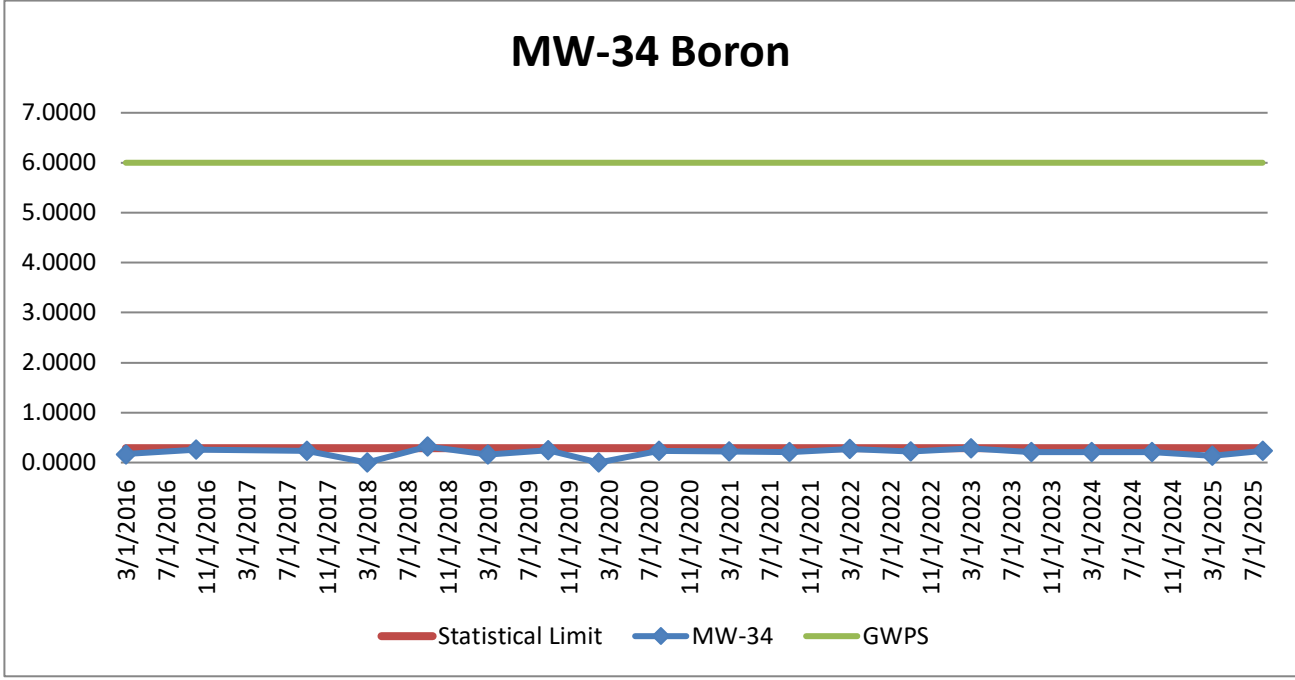
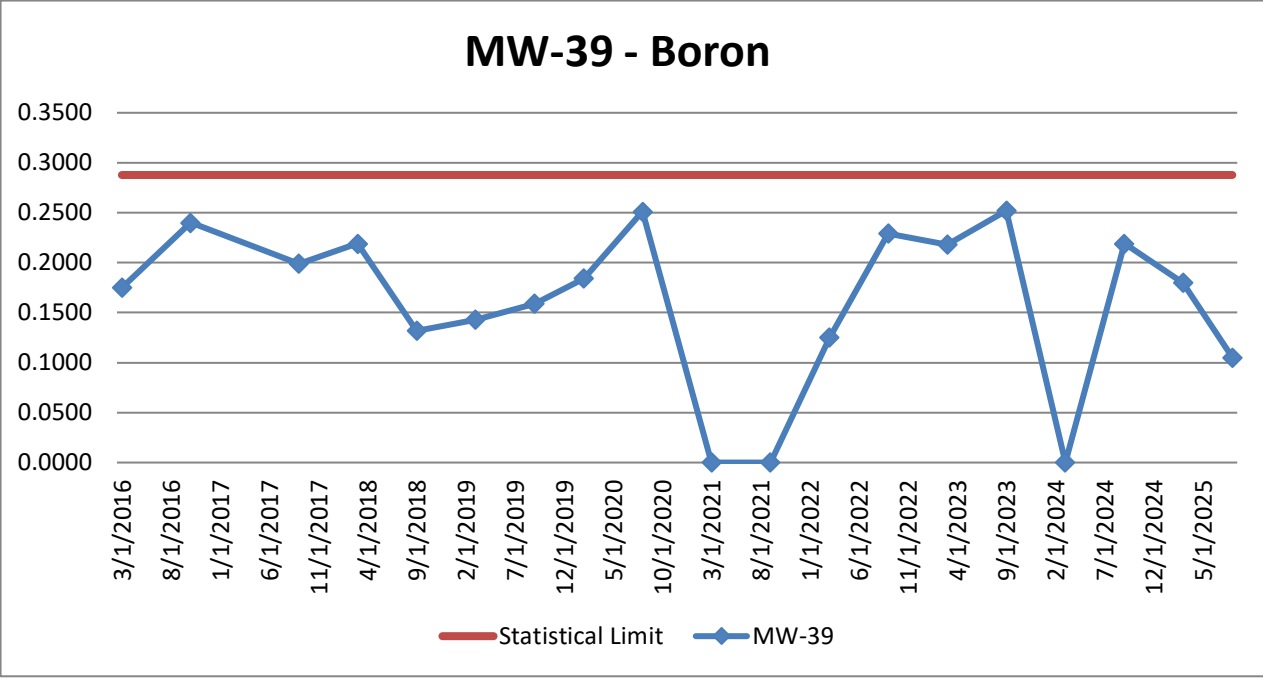
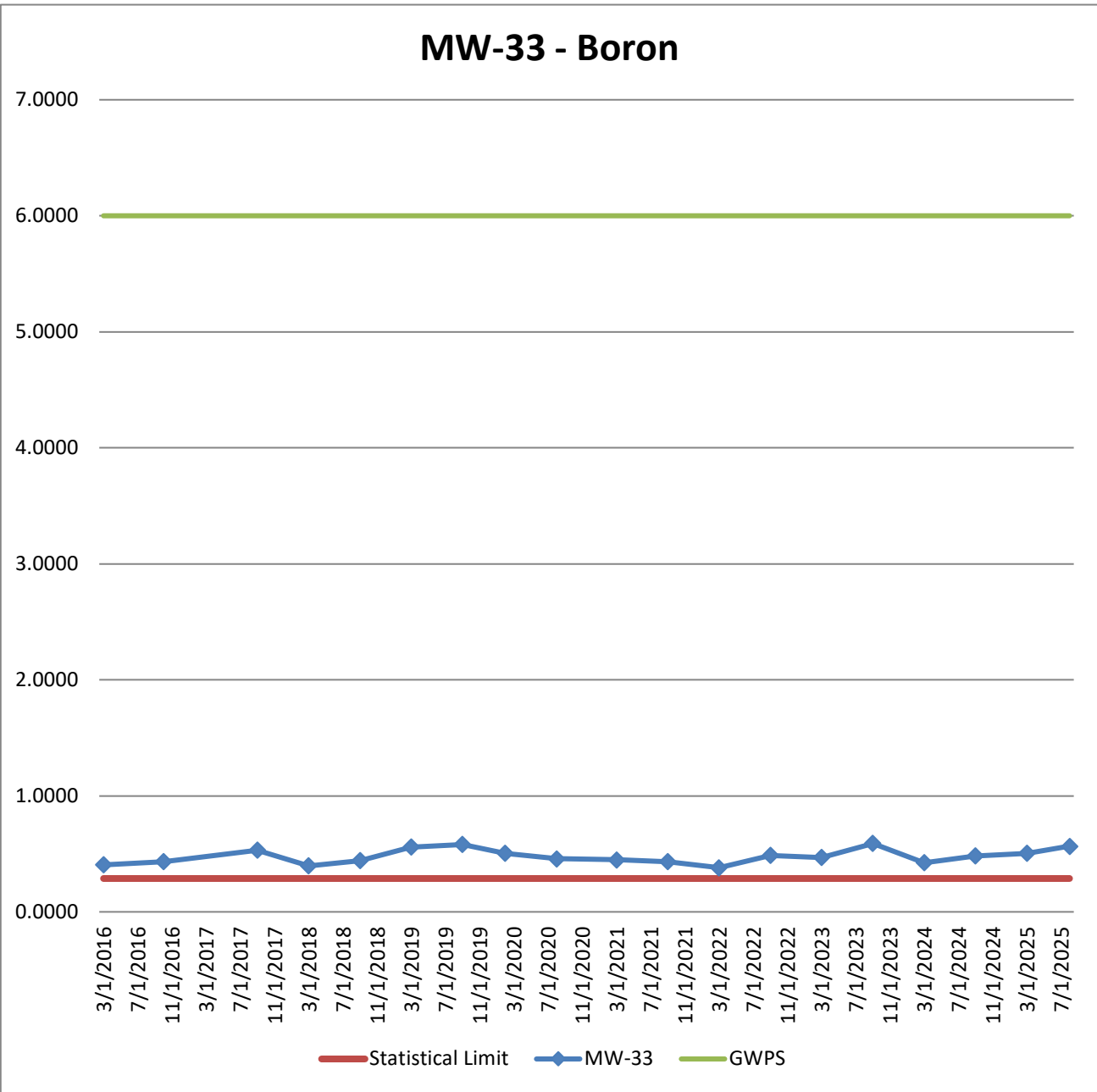
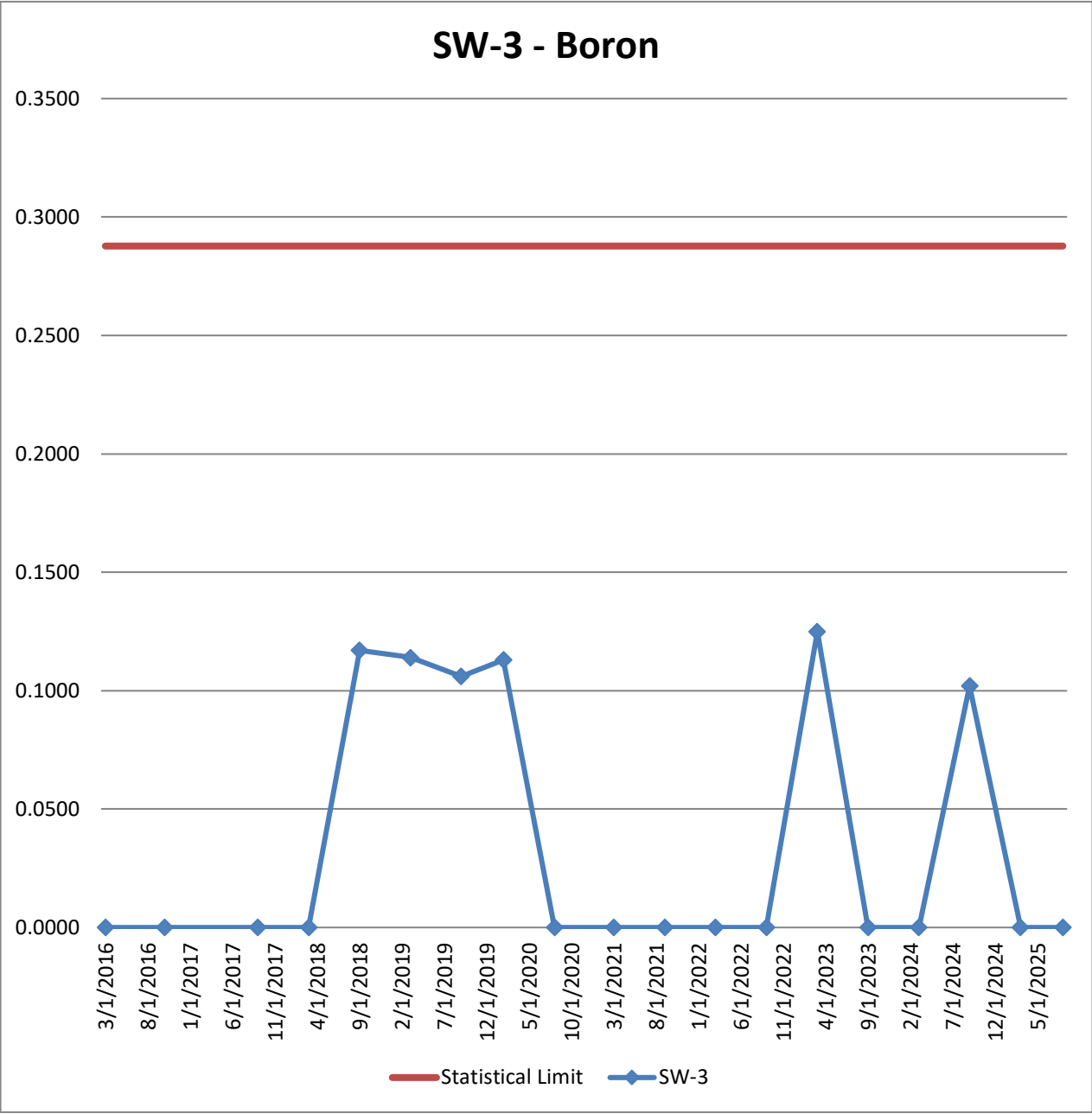
MONITORING WELL SAMPLING RESULTS

WATER TABLE SYSTEM								UPPER AQUIFER SAND LAYER SYSTEM				
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Upgradient Results				Upgradient Results				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
	mg/L											
03/11/2016	Boron, Total	6	0.288	<0.1		0.176	<0.1	0.151		<0.1	<0.1	<0.1
10/27/2016	Boron, Total	6	0.288	<0.1		0.277	0.106	0.14		<0.1	<0.1	<0.1
09/07/2017	Boron, Total	6	0.288	<0.1		0.262	<0.1	0.143		<0.1	<0.1	<0.1
03/01/2018	Boron, Total	6	0.288	<0.1		0.168	<0.1	0.117		<0.1	<0.1	<0.1
09/19/2018	Boron, Total	6	0.288	<0.1		0.256	<0.1	0.180		<0.1	<0.1	<0.1
03/27/2019	Boron, Total	6	0.288	<0.1		0.0175	<0.1	0.149		<0.1	<0.1	<0.1
09/05/2019	Boron, Total	6	0.288	<0.1		0.343	<0.1	0.138		<0.1	<0.1	<0.1
02/28/2020	Boron, Total	6	0.288	<0.1		0.218	<0.1	0.143		<0.1	<0.1	<0.1
08/31/2020	Boron, Total	6	0.288	<0.1		0.31	<0.1	0.141		<0.1	<0.1	<0.1
03/05/2021	Boron, Total	6	0.288	<0.1		0.317	<0.1	0.125		<0.1	<0.1	<0.1
09/13/2021	Boron, Total	6	0.288	<0.1		0.389	<0.1	0.124		<0.1	<0.1	<0.1
03/02/2022	Boron, Total	6	0.288	<0.1		0.256	<0.1	0.110		<0.1	<0.1	<0.1
09/12/2022	Boron, Total	6	0.288	<0.1		0.467	<0.1	0.130		<0.1	<0.1	<0.1
03/24/2023	Boron, Total	6	0.288	NT		NT	<0.1	NT		NT	<0.1	NT
09/13/2023	Boron, Total	6	0.288	NT		0.338	NT	NT		NT	NT	0.114
03/05/2024	Boron, Total	6	0.288	0.05		NT	NT	NT		0.05	NT	NT
09/03/2024	Boron, Total	6	0.288	NT		NT	0.109	0.133		NT	NT	NT
03/07/2025	Boron, Total	6	0.288	NT		NT	NT	NT		NT	0.05	0.05
08/28/2025	Boron, Total	6	0.288	NT		0.488	NT	NT		<0.1	NT	NT

AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW							
				D.G.W SW 3	D.G.W MW 39	D.G.W MW 40	BOTH MW 25	BOTH MW 33	BOTH MW 34	BOTH MW35
	mg/L									
03/11/2016	Boron, Total	6	0.288	<0.1	0.175	<0.1	0.567	0.407	0.167	<0.1
10/27/2016	Boron, Total	6	0.288	Dry	0.240	0.139	0.630	0.431	0.258	<0.1
09/07/2017	Boron, Total	6	0.288	<0.1	0.199	0.14	1.090	0.532	0.236	<0.1
03/01/2018	Boron, Total	6	0.288	<0.1	0.219	<0.1	0.689	0.396	<0.1	<0.1
09/19/2018	Boron, Total	6	0.288	0.117	0.132	0.108	0.682	0.440	0.320	<0.1
03/27/2019	Boron, Total	6	0.288	0.114	0.143	<0.1	0.587	0.559	0.162	<0.1
09/05/2019	Boron, Total	6	0.288	0.106	0.159	<0.1	0.921	0.581	0.247	<0.1
02/28/2020	Boron, Total	6	0.288	0.113	0.184	<0.1	0.743	0.503		<0.1
08/31/2020	Boron, Total	6	0.288	<0.1	0.251	<0.1	0.817	0.457	0.236	<0.1
03/05/2021	Boron, Total	6	0.288	<0.1	<0.1	<0.1	1.340	0.448	0.220	<0.1
09/13/2021	Boron, Total	6	0.288	Dry	<0.1	<0.1	0.579	0.433	0.209	<0.1
03/02/2022	Boron, Total	6	0.288	<0.1	0.125	<0.1	0.948	0.381	0.270	<0.1
09/12/2022	Boron, Total	6	0.288	<0.1	0.229	<0.1	0.750	0.485	0.219	<0.1
03/24/2023	Boron, Total	6	0.288	0.125	0.218	<0.1	0.921	0.470	0.285	<0.1
09/13/2023	Boron, Total	6	0.288	<0.1	0.252	<0.1	0.859	0.589	0.213	<0.1
03/05/2024	Boron, Total	6	0.288	Dry	<0.1	<0.1	0.828	0.425	0.211	<0.1
09/03/2024	Boron, Total	6	0.288	0.102	0.219	<0.1	0.786	0.481	0.208	<0.1
03/07/2025	Boron, Total	6	0.288	<0.1	0.18	<0.1	0.984	0.503	0.140	<0.1
08/28/2025	Boron, Total	6	0.288	<0.1	0.105	0.123	0.586	0.565	0.235	<0.1



AMES-STORY ENVIRONMENTAL LANDFILL

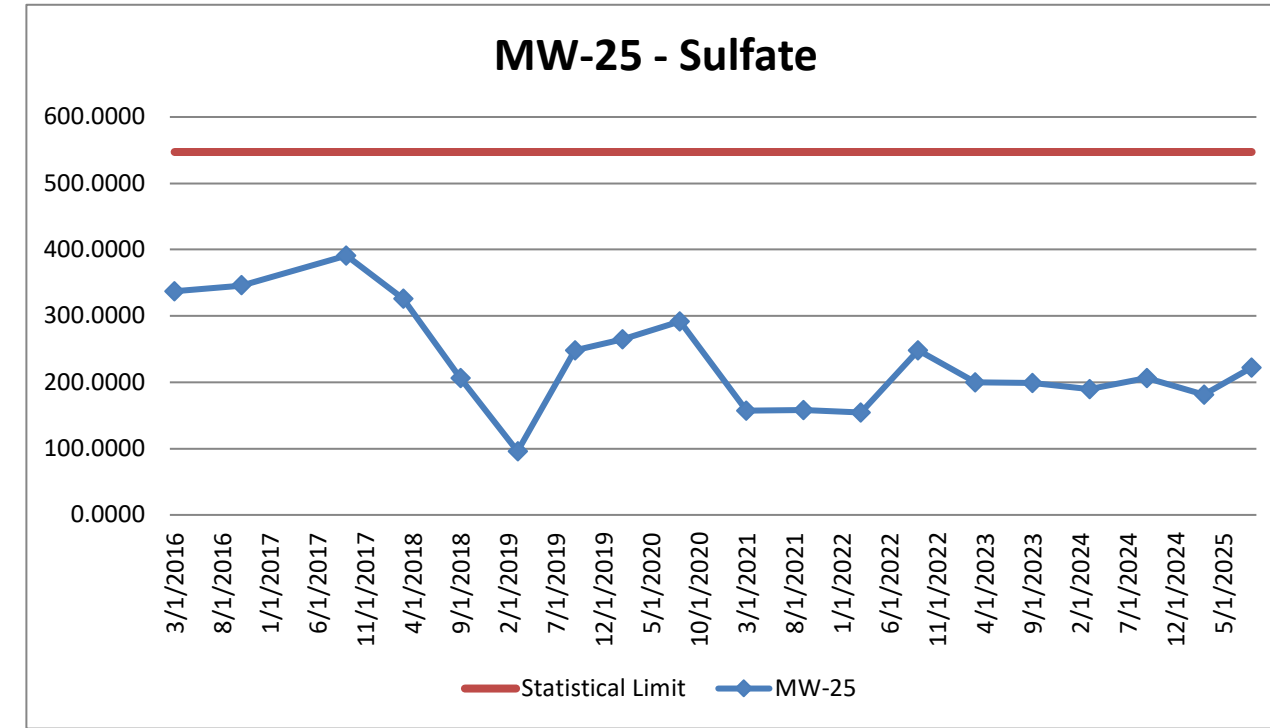
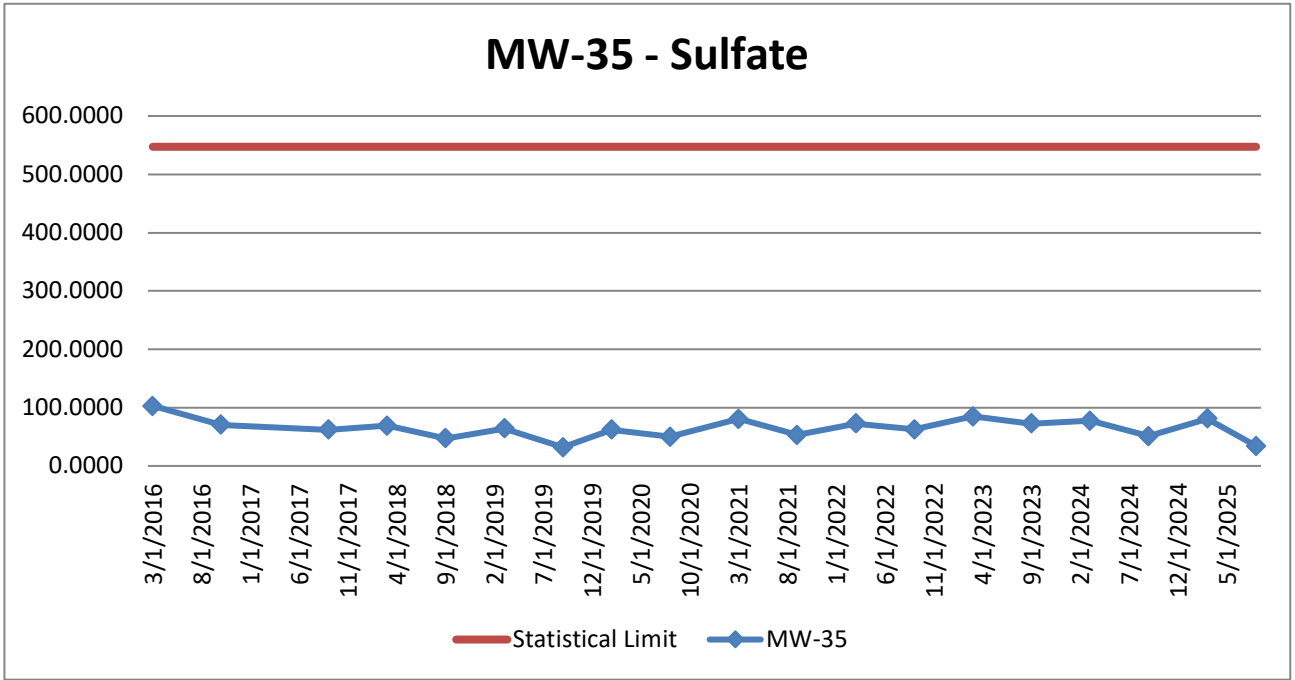
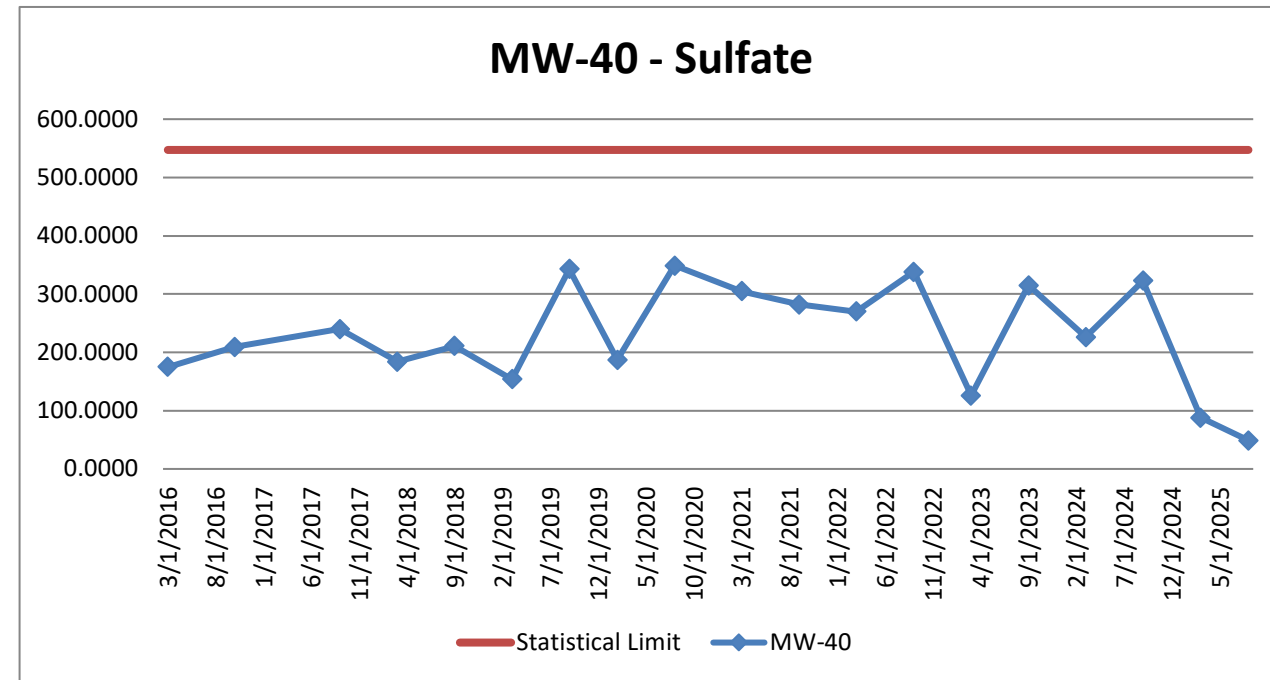
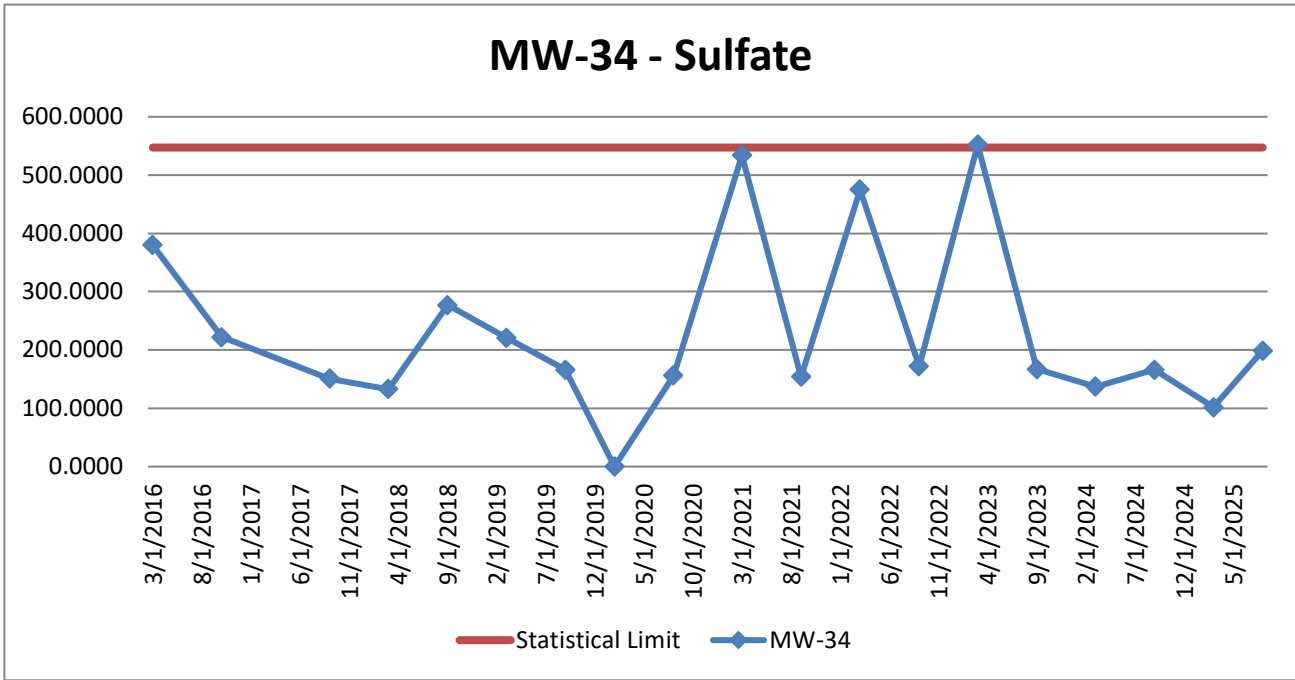
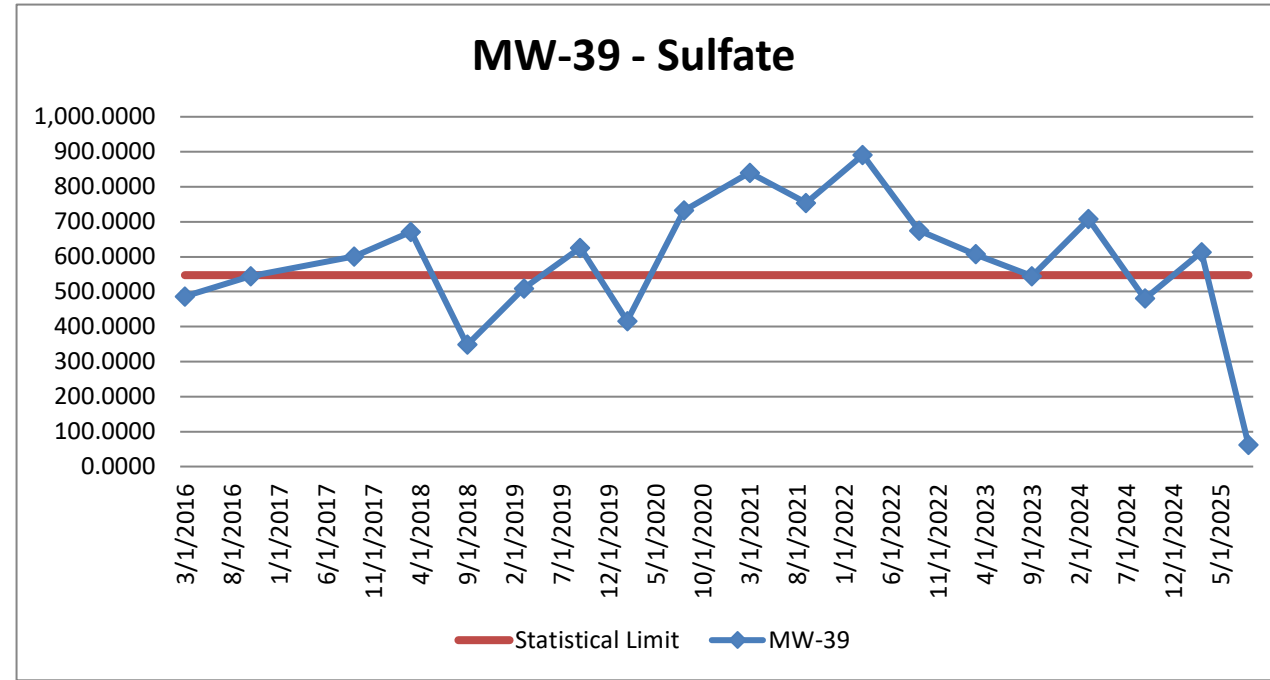
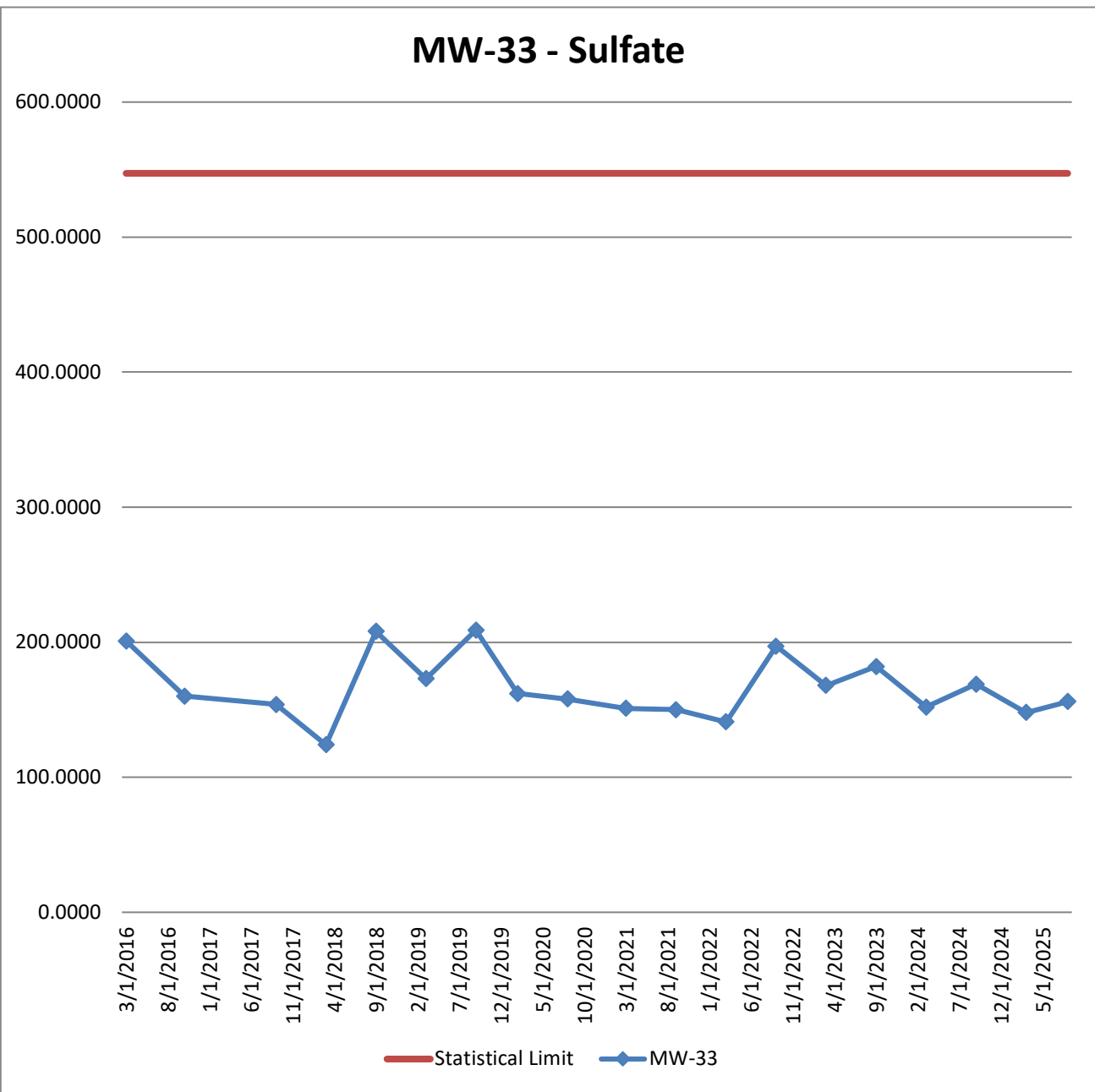
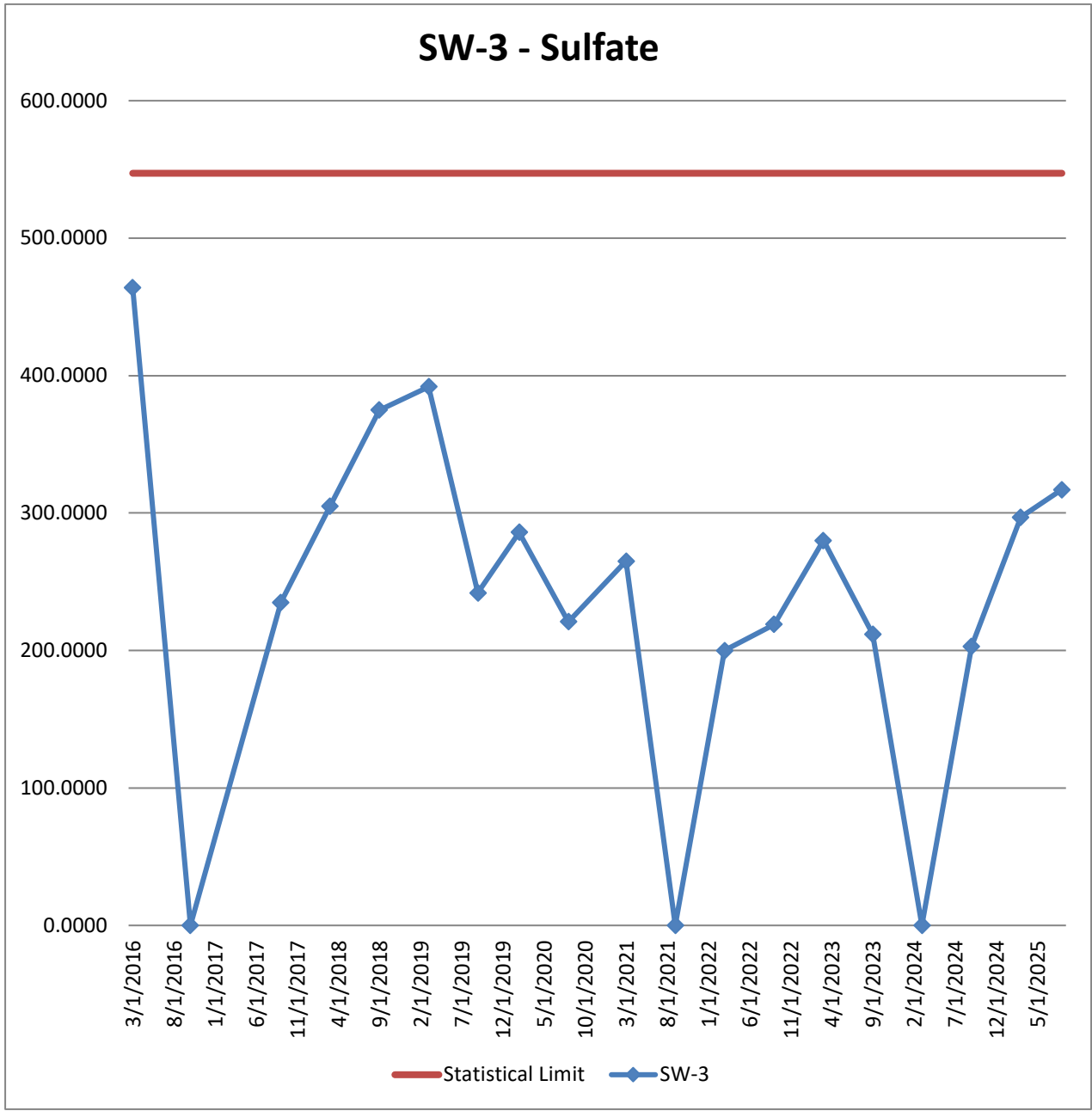
MONITORING WELL SAMPLING RESULTS

WATER TABLE SYSTEM								UPPER AQUIFER SAND LAYER SYSTEM				
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Upgradient Results				Upgradient Results				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
	mg/L											
03/11/2016	Sulfate	--	547.22	597		529	133	16.9		71.4	71.6	26.1
10/27/2016	Sulfate	--	547.22	514		524	102	11		74.5	79.1	42
09/07/2017	Sulfate	--	547.22	470		407	76.6	9.2		67	70	42.8
03/01/2018	Sulfate	--	547.22	600		539	76.9	10.5		68.1	69.1	40.9
09/19/2018	Sulfate	--	547.22	468		512	53.3	9		70.9	73.2	45
03/27/2019	Sulfate	--	547.22	550		532	44.2	10.9		64.2	71.2	44.9
09/05/2019	Sulfate	--	547.22	442		315	33.3	13.7		56.4	75.1	44.8
02/28/2020	Sulfate	--	547.22	518		440	40.7	8.7		64.8	70	42.5
08/31/2020	Sulfate	--	547.22	436		357	29.9	13.6		67.4	69.6	41.4
03/05/2021	Sulfate	--	547.22	546		361	49.5	9.5		65.1	69.6	41.7
09/13/2021	Sulfate	--	547.22	371		377	54.4	11		70.7	70.2	43.3
03/02/2022	Sulfate	--	547.22	378		477	88.6	10		70.8	71.3	41.6
09/12/2022	Sulfate	--	547.22	363		323	147	12.6		71.4	70.5	33
03/24/2023	Sulfate	--	547.22	NT		NT	315	NT		NT	74.6	NT
09/13/2023	Sulfate	--	547.22	NT		418	NT	NT		NT	NT	46.4
03/05/2024	Sulfate	--	547.22	422		NT	NT	NT		62.4	NT	NT
09/03/2024	Sulfate	--	547.22	NT		NT	327	11.6		NT	NT	NT
03/07/2025	Sulfate	--	547.22	NT		NT	NT	NT		NT	81.7	42
08/28/2025	Sulfate	--	547.22	NT		422	NT	NT		67.8	NT	NT

AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

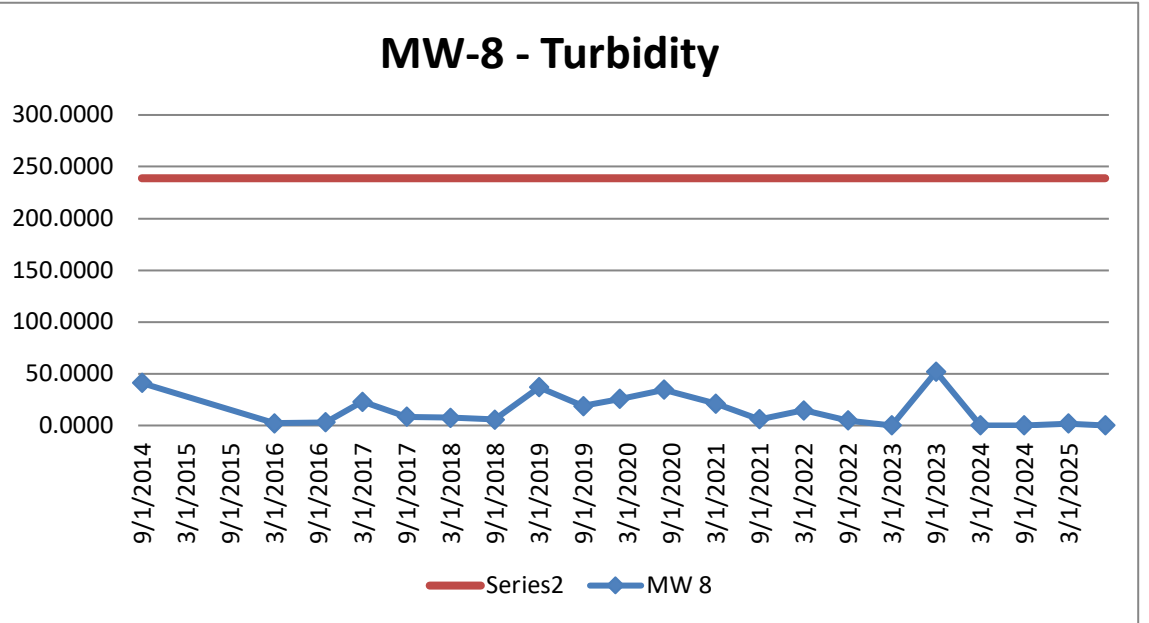
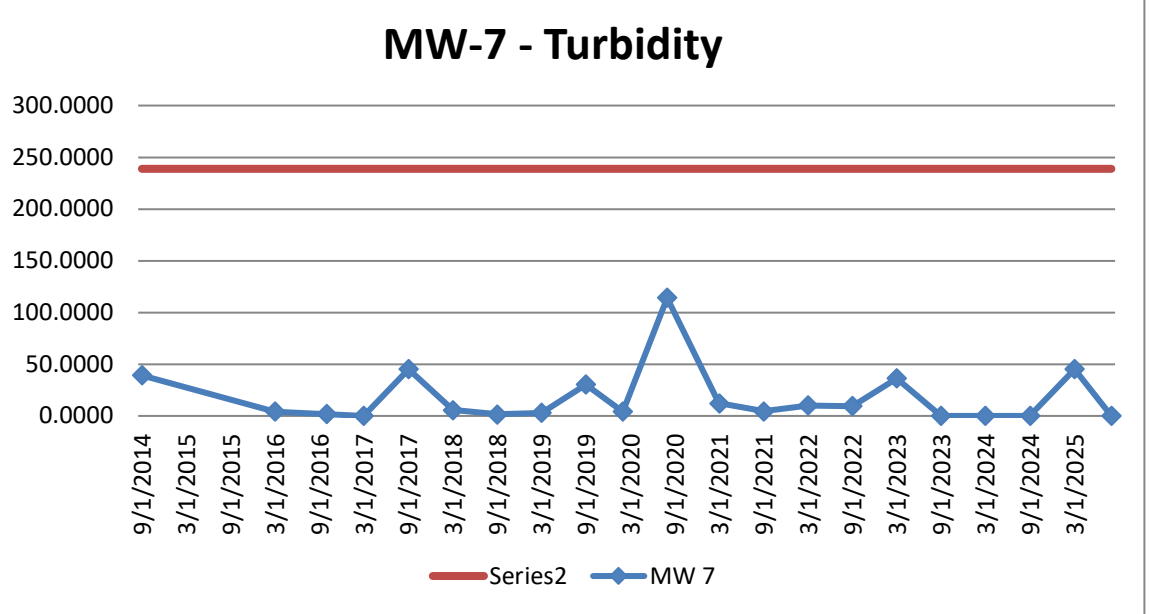
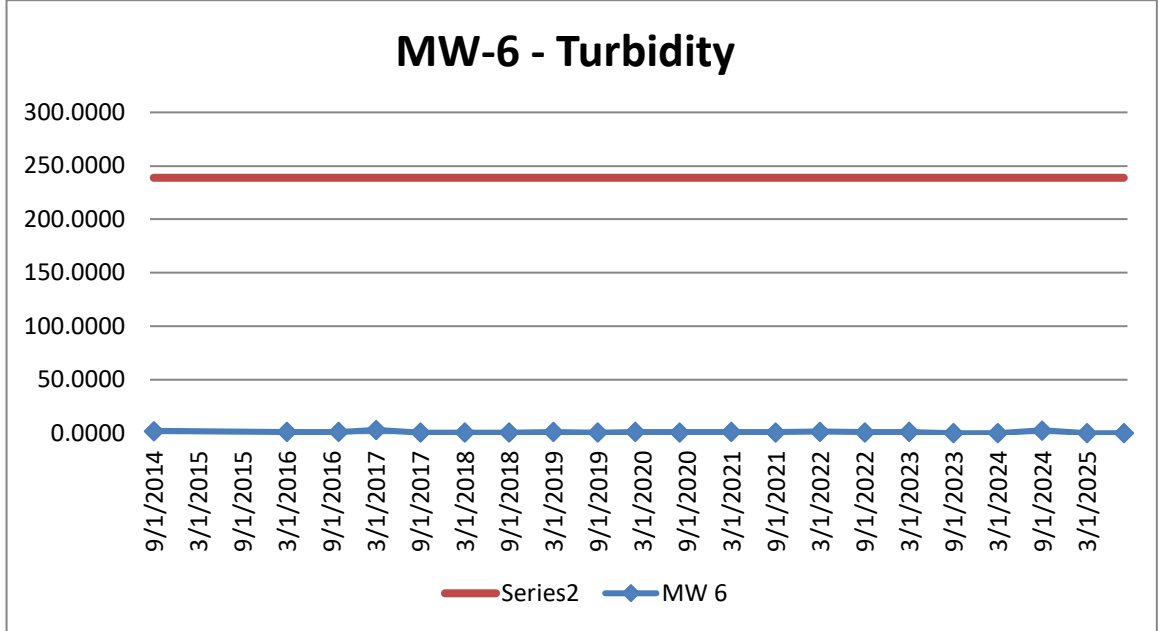
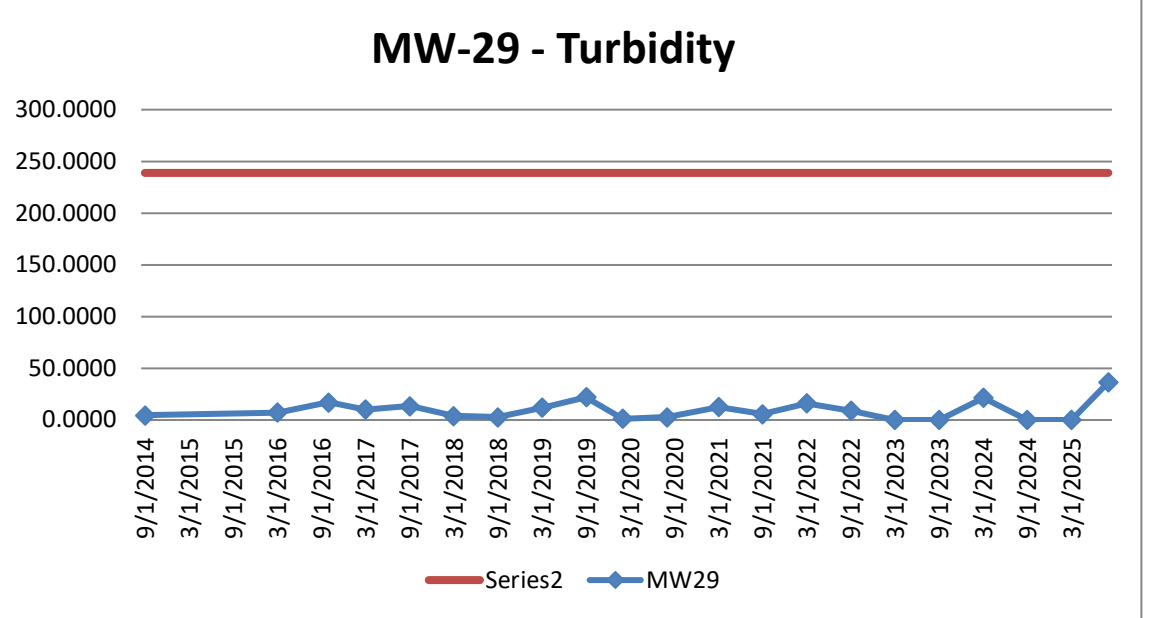
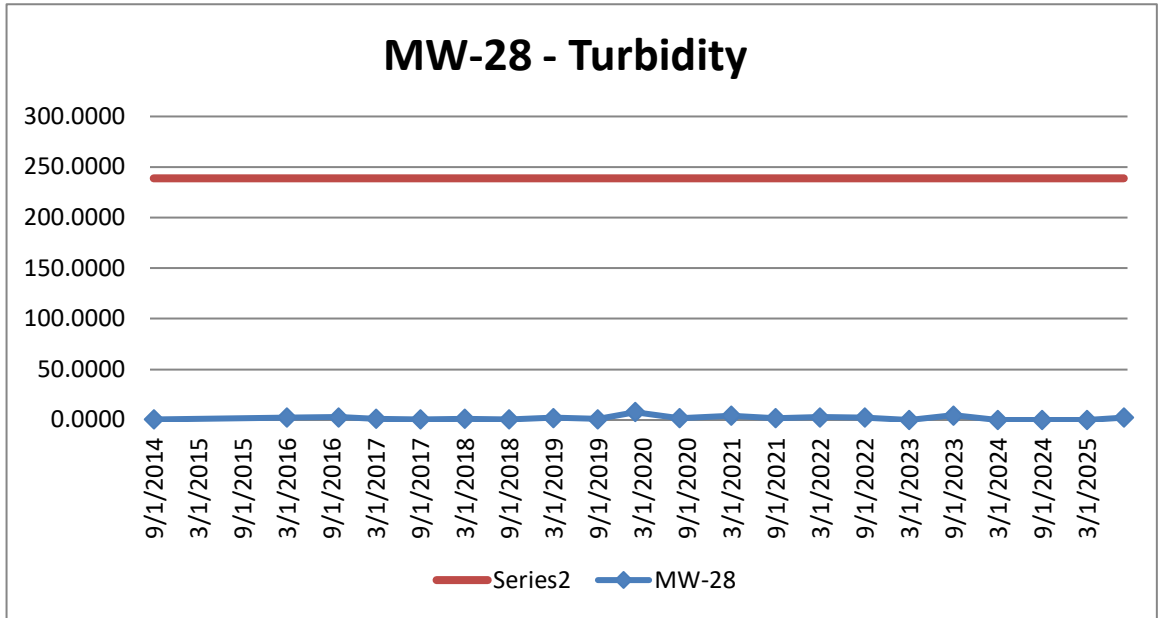
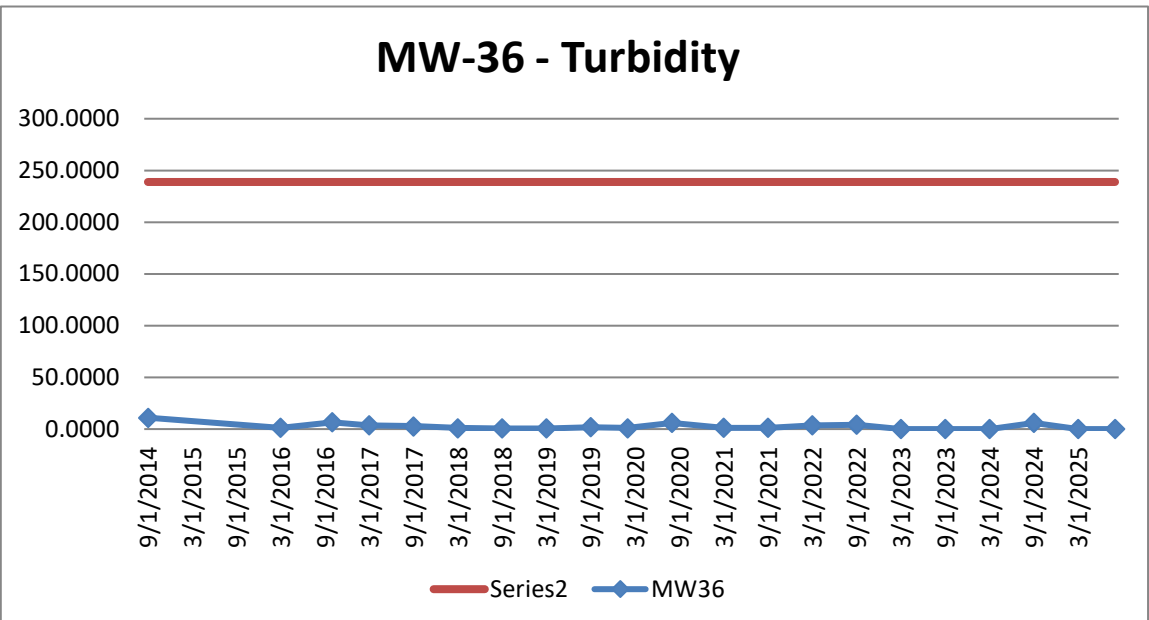
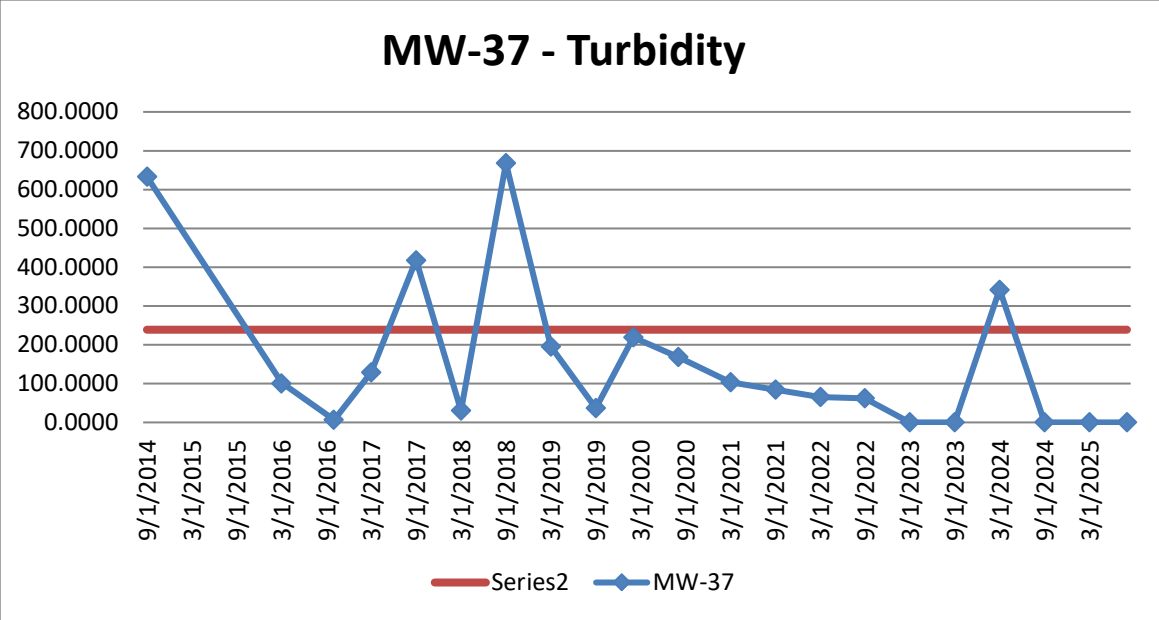
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW	D.G.W	D.G.W	D.G.W	BOTH	BOTH	BOTH	BOTH
				SW 3	MW 39	MW 40	MW 25	MW 33	MW 34	MW35
	mg/L									
03/11/2016	Sulfate	--	547.22	464	486	175	337	201	380	103
10/27/2016	Sulfate	--	547.22	Dry	545	209	346	160	222	70.6
09/07/2017	Sulfate	--	547.22	235	601	240	391	154	151	62.2
03/01/2018	Sulfate	--	547.22	305	671	184	326	124	133	68.8
09/19/2018	Sulfate	--	547.22	375	348	211	206	208	277	47.4
03/27/2019	Sulfate	--	547.22	392	509	154	95.9	173	221	64.3
09/05/2019	Sulfate	--	547.22	242	625	343	248	209	166	32.1
02/28/2020	Sulfate	--	547.22	286	416	187	265	162		62.2
08/31/2020	Sulfate	--	547.22	221	732	349	292	158	156	49.9
03/05/2021	Sulfate	--	547.22	265	840	305	157	151	534	80.4
09/13/2021	Sulfate	--	547.22	Dry	754	282	158	150	154	53.4
03/02/2022	Sulfate	--	547.22	200	891	270	154	141	475	72.7
09/12/2022	Sulfate	--	547.22	219	675	338	248	197	172	62.8
03/24/2023	Sulfate	--	547.22	280	607	126	200	168	552	85.2
09/13/2023	Sulfate	--	547.22	212	544	315	199	182	167	72.8
03/05/2024	Sulfate	--	547.22	Dry	707	226	190	152	137	77.2
09/03/2024	Sulfate	--	547.22	203	480	323	206	169	166	51
03/07/2025	Sulfate	--	547.22	297	613	88.1	181	148	102	81.1
08/28/2025	Sulfate	--	547.22	317	61.9	49	222	156	199	34.1



AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

				WATER TABLE SYSTEM				UPPER AQUIFER SAND LAYER SYSTEM				
DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD WT	Upgradient Results				Upgradient Results				
				U.G.W MW-37	U.G.W MW-22	U.G.W MW-28	U.G.W MW 6	U.A.W MW36	U.A.W MW27	U.A.W MW29	U.A.W MW 7	U.A.W MW 8
mg/L												
09/09/2014	Turbidity, NTU	--	238.86	632.4		0.44	2.03	11.02		4.43	39.1	40.9
03/11/2016	Turbidity, NTU	--	238.86	101		2.26	1.13	0.97		7.08	3.95	2.14
10/27/2016	Turbidity, NTU	--	238.86	6.65		2.69	1.34	6.36		16.9	1.68	3.12
03/27/2017	Turbidity, NTU	--	238.86	129		1.25	3.15	3.79		10.1	NT	23
09/07/2017	Turbidity, NTU	--	238.86	418.2		0.72	0.59	2.72		13.34	45.19	8.35
03/01/2018	Turbidity, NTU	--	238.86	30.1		1.23	0.7	0.91		3.91	5.64	7.51
09/19/2018	Turbidity, NTU	--	238.86	668		0.42	0.63	0.71		2.61	1.43	5.81
03/27/2019	Turbidity, NTU	--	238.86	195.1		2.11	1.28	0.83		11.76	3.02	36.95
09/05/2019	Turbidity, NTU	--	238.86	36.19		0.95	0.56	1.84		22.06	30.36	18.85
02/28/2020	Turbidity, NTU	--	238.86	218.7		7.68	1.21	0.93		1.14	4.15	25.68
08/31/2020	Turbidity, NTU	--	238.86	168		1.68	0.83	6		2.74	114	34.58
03/05/2021	Turbidity, NTU	--	238.86	103.4		4.28	1.28	1.4		12.29	12.26	21.07
09/13/2021	Turbidity, NTU	--	238.86	84.39		1.79	0.94	1.23		5.66	4.53	5.87
03/02/2022	Turbidity, NTU	--	238.86	64.75		2.73	1.49	3.7		15.86	10.21	14.62
09/12/2022	Turbidity, NTU	--	238.86	61.68		2.66	0.94	4.15		9.12	9.36	4.7
03/24/2023	Turbidity, NTU	--	238.86	NT		NT	1.33	NT		NT	36.31	NT
09/13/2023	Turbidity, NTU	--	238.86	NT		4.61	NT	NT		NT	NT	51.95
03/05/2024	Turbidity, NTU	--	238.86	342		NT	NT	NT		21.29	NT	NT
09/03/2024	Turbidity, NTU	--	238.86	NT		NT	2.62	5.93		NT	NT	NT
03/07/2025	Turbidity, NTU	--	238.86	NT		NT	NT	NT		NT	45.2	1.69
08/28/2025	Turbidity, NTU	--	238.86	NT		2.23	NT	NT		36.54	NT	NT



AMES-STORY ENVIRONMENTAL LANDFILL

MONITORING WELL SAMPLING RESULTS

DATE	PARAMETER	ACTION LEVEL	MEAN + 2 STD AW	D.G.W	D.G.W	D.G.W	BOTH	BOTH	BOTH	BOTH
				SW 3	MW 39	MW 40	MW 25	MW 33	MW 34	MW35
	mg/L									
09/09/2014	Turbidity, NTU	--	238.86	20.6	0.43	0.33	7.05	12.99	2.9	3.51
03/11/2016	Turbidity, NTU	--	238.86	0.48	7.06	50.5	3.61	30.25	14.73	218.4
10/27/2016	Turbidity, NTU	--	238.86	Dry	5.94	1.86	4.83	35.7	4.33	69
03/27/2017	Turbidity, NTU	--	238.86	Dry	91.9	11.1	NT	NT	NT	10.2
09/07/2017	Turbidity, NTU	--	238.86	0.33	1.64	0.51	9.04	1.35	3.61	21.34
03/01/2018	Turbidity, NTU	--	238.86	0.3	101.4	75.68	2.3	2.15	220.6	7.68
09/19/2018	Turbidity, NTU	--	238.86	0.59	15.44	0.69	3.4	2.75	39.59	43.9
03/27/2019	Turbidity, NTU	--	238.86	23.27	1.57	24.96	6.55	0.81	5.45	83.93
09/05/2019	Turbidity, NTU	--	238.86	1.01	5.87	1.9	4.6	12.8	1.99	5.09
02/28/2020	Turbidity, NTU	--	238.86	0.51	111.5	27.05	1.38	1.15		1.55
08/31/2020	Turbidity, NTU	--	238.86	0.97	244	1.58	233	61.6	9.89	2.16
03/05/2021	Turbidity, NTU	--	238.86	1.17	335.3	1.57	7.65	20.26	166.2	49.23
09/13/2021	Turbidity, NTU	--	238.86	Dry	63.82	4.18	1.39	76.83	17.37	1.54
03/02/2022	Turbidity, NTU	--	238.86	1.44	22.76	3.79	7.48	10.57	38.19	91.77
09/12/2022	Turbidity, NTU	--	238.86	0.8	127	1.9	7.84	42.05	1.52	1.45
03/24/2023	Turbidity, NTU	--	238.86	1.01	3.26	2.87	1.39	5.14	63.48	146.9
09/13/2023	Turbidity, NTU	--	238.86	34.47	86.03	1.92	2.7	6.81	30.75	2.14
03/05/2024	Turbidity, NTU	--	238.86	Dry	45.96	63.3	1.28	4.97	56.12	485.2
09/03/2024	Turbidity, NTU	--	238.86	2.53	3.49	24.36	1.98	4.51	88.06	7.49
03/07/2025	Turbidity, NTU	--	238.86	2.92	154.9	30.61	14.35	3.49	15.69	399.3
08/28/2025	Turbidity, NTU	--	238.86	93.25	3.95	3.66	3.1	2.8	4.93	9.24

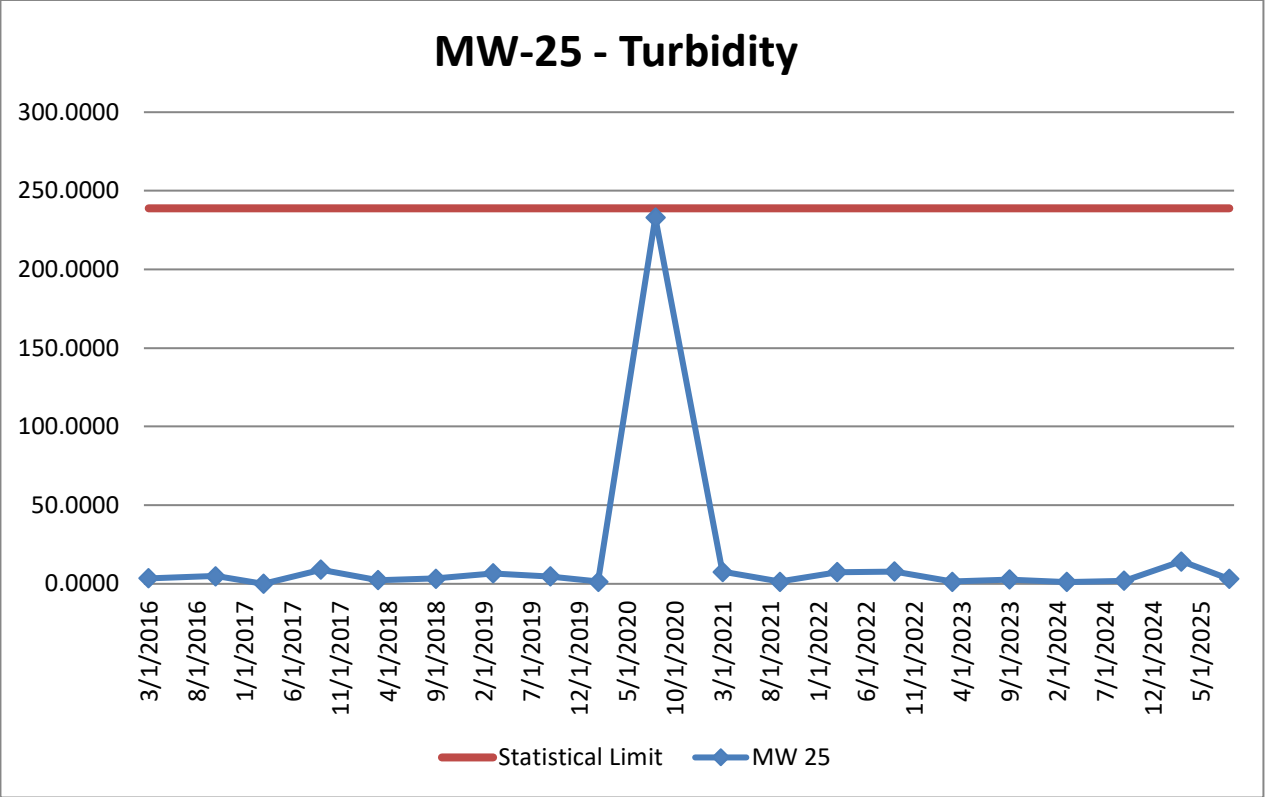
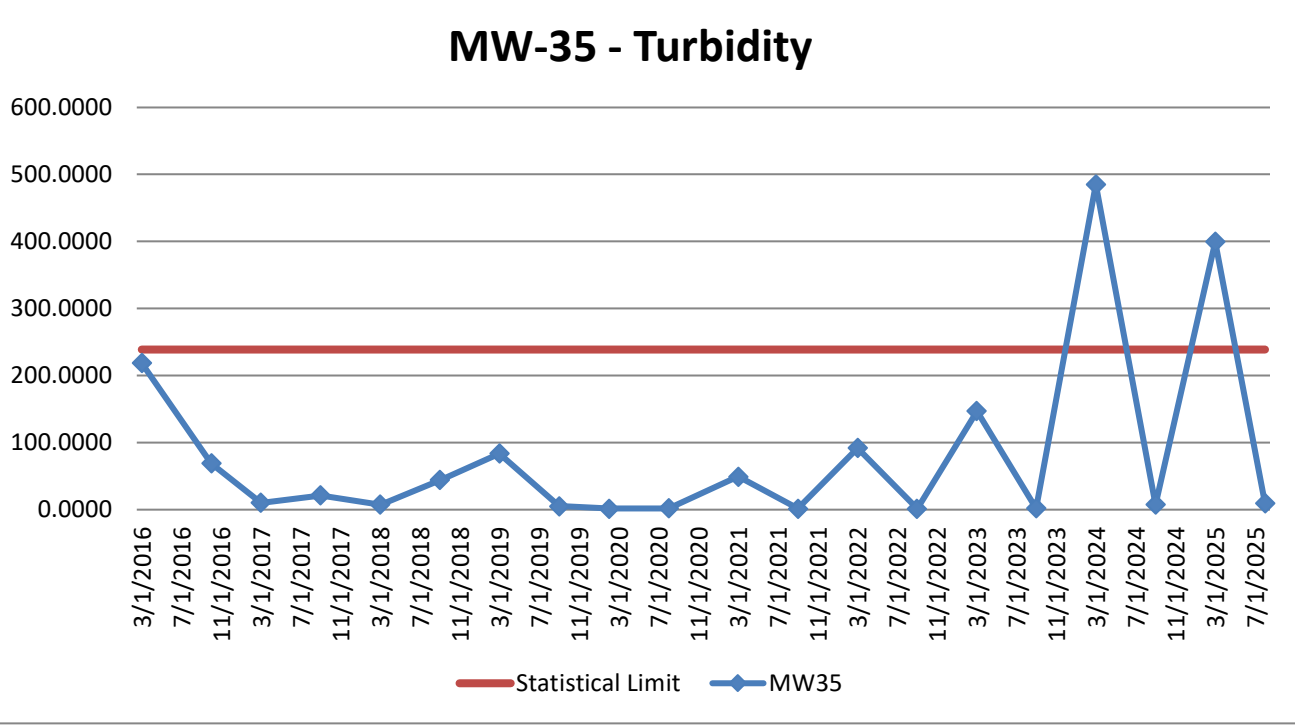
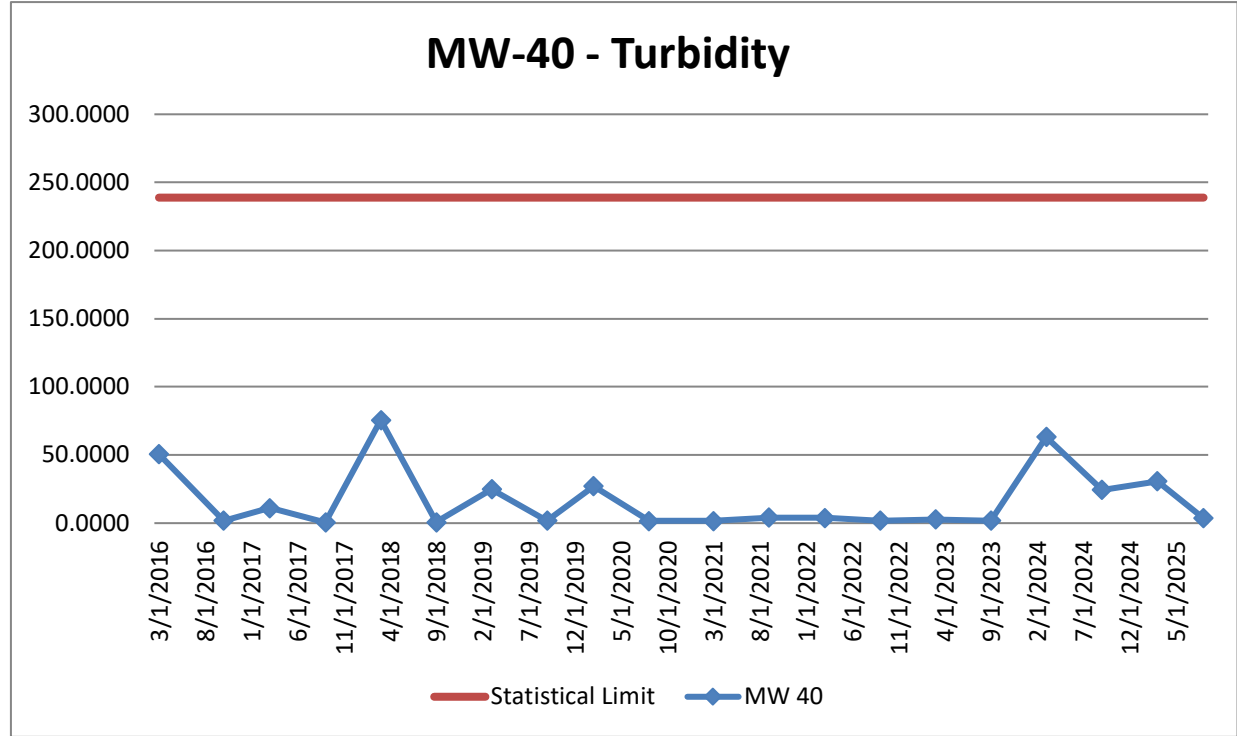
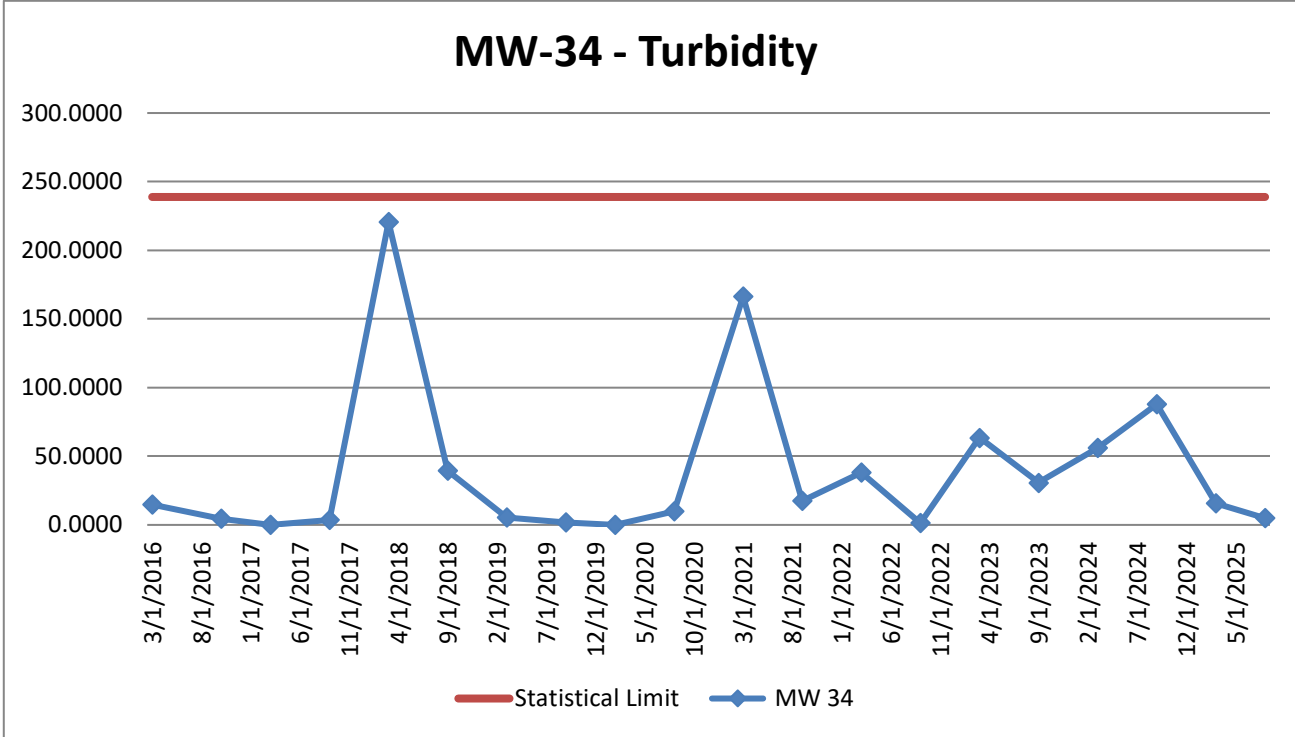
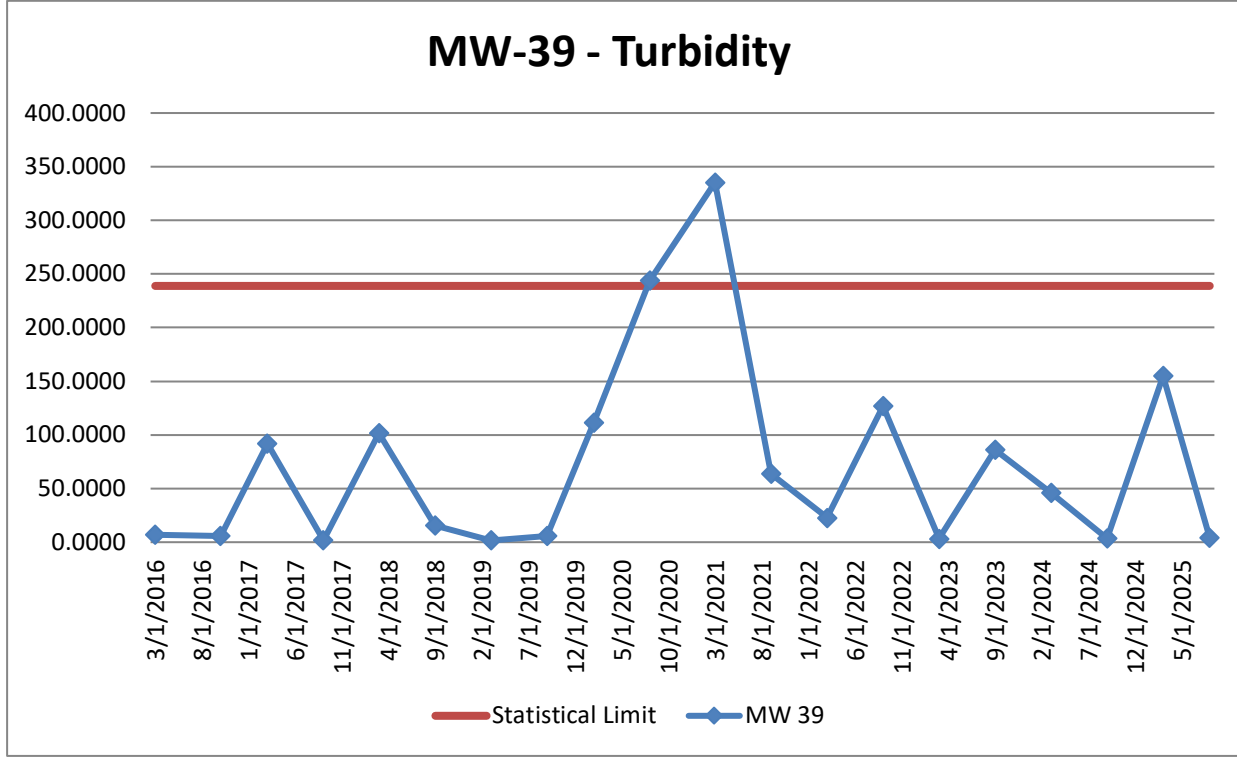
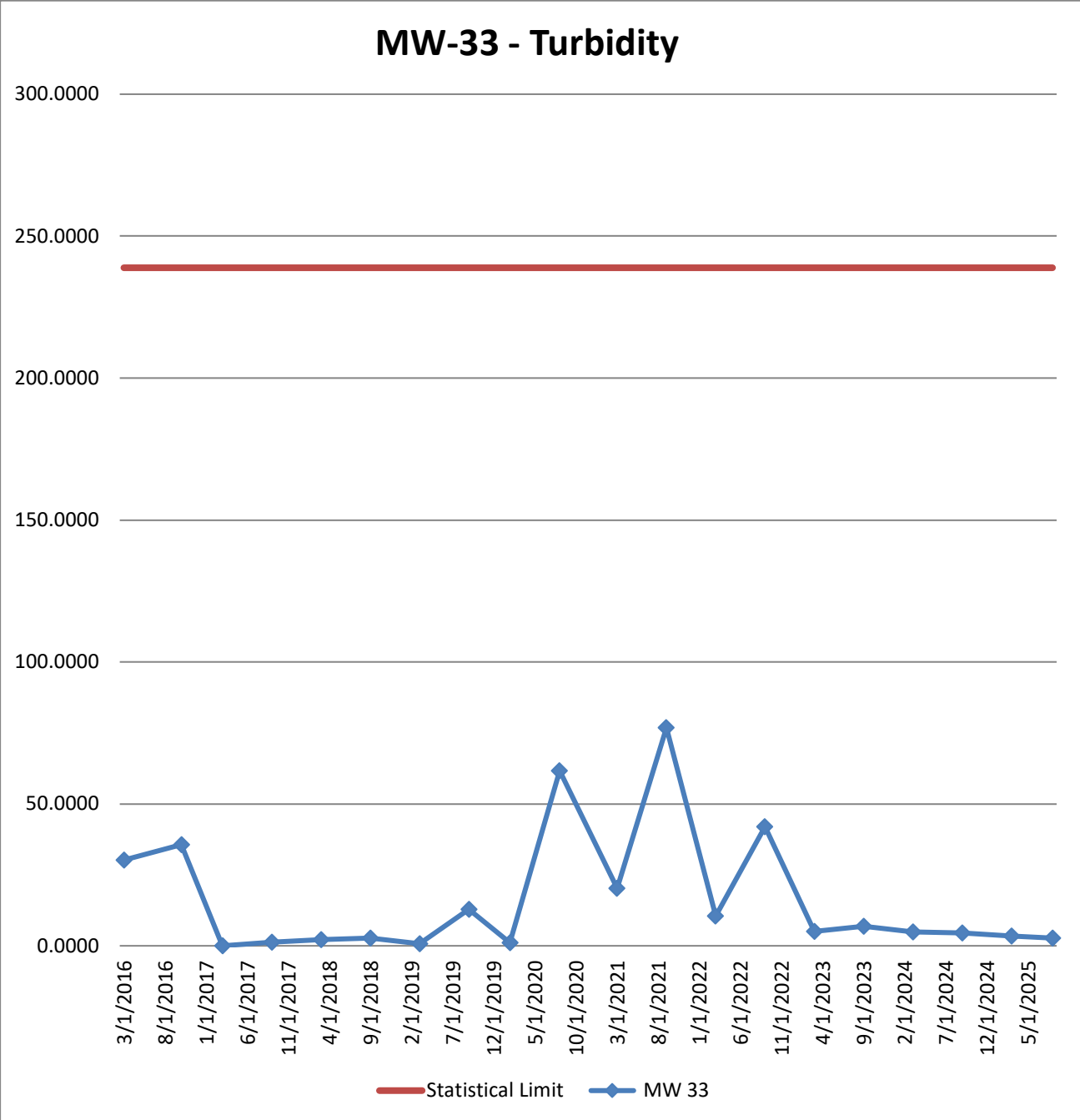
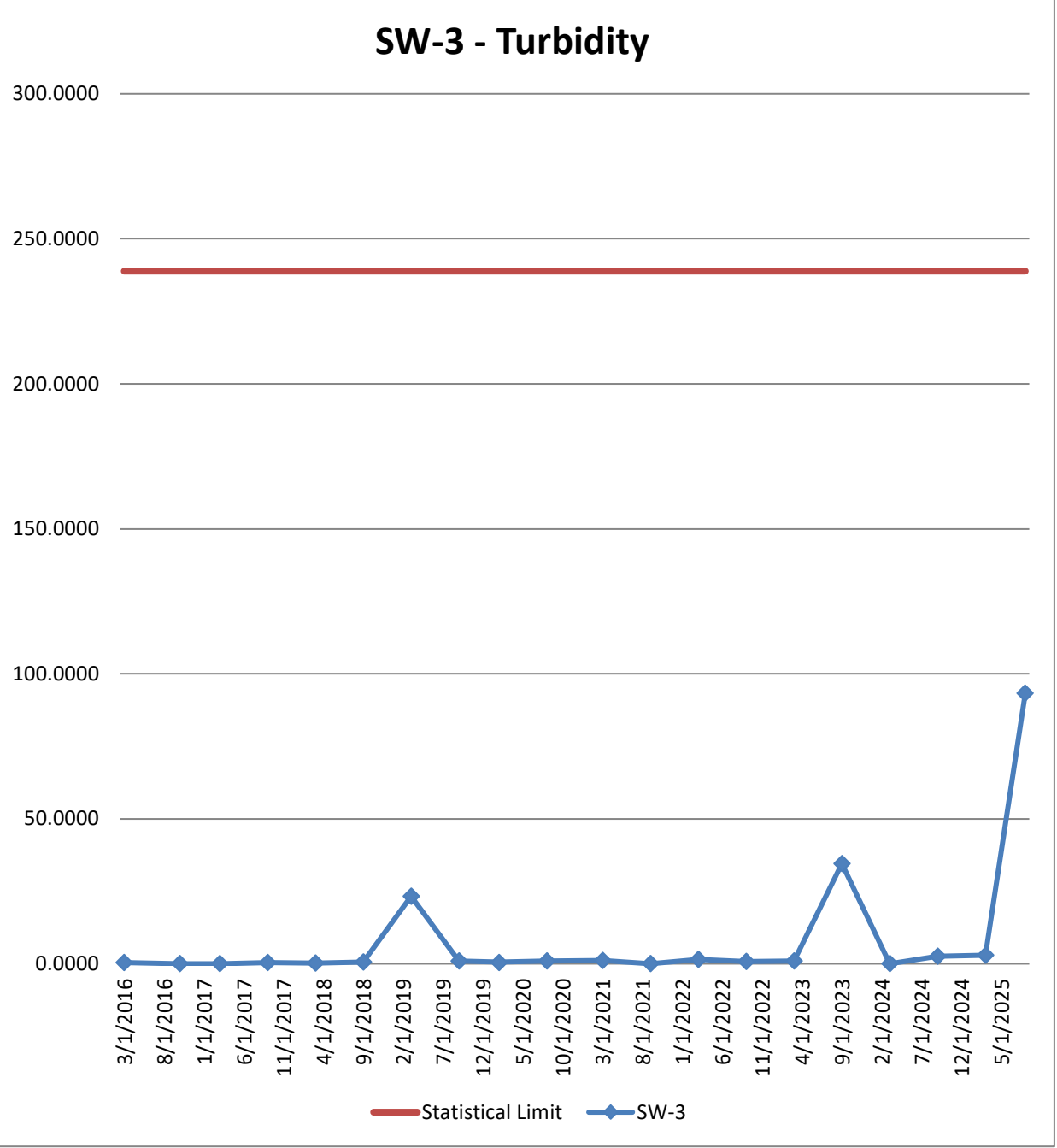
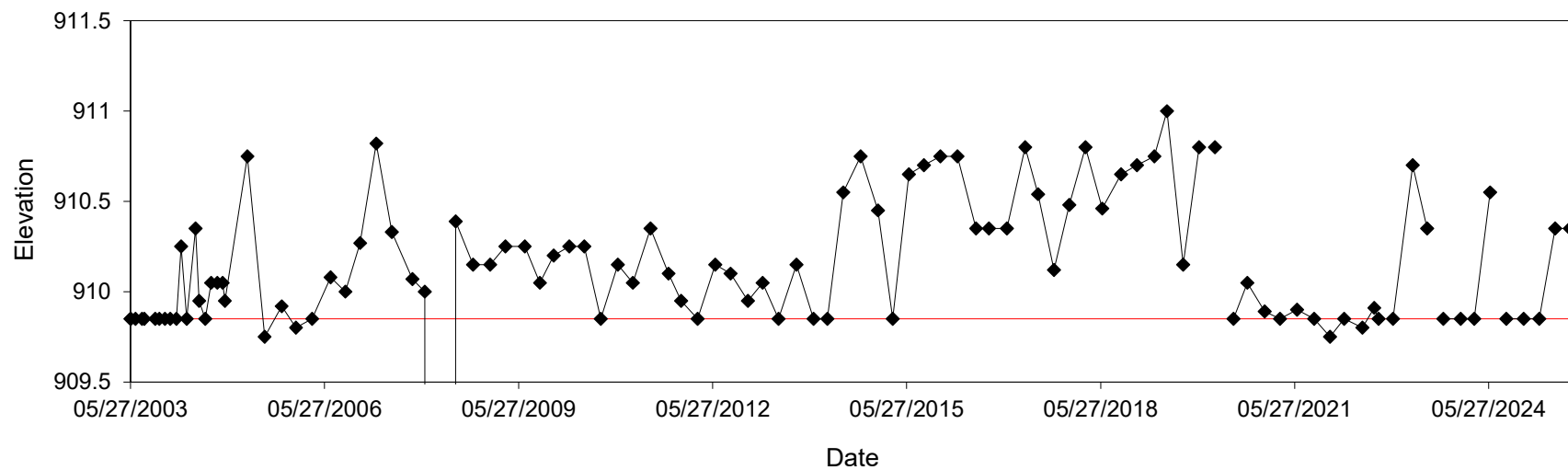


Table 11 – Corrective Action Trend Analysis
NOT APPLICABLE

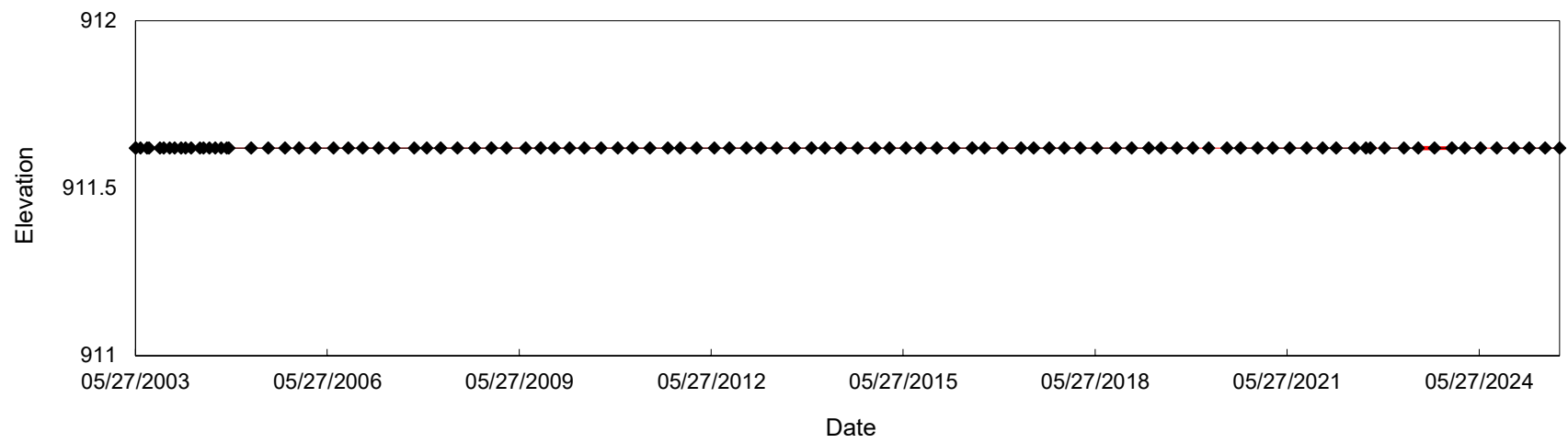
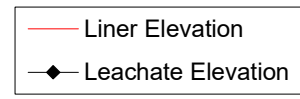
Table 12 – Leachate Elevation & Thickness Summary

Leachate vs. Liner LPZ-1

— Liner Elevation
—◆— LPZ-1

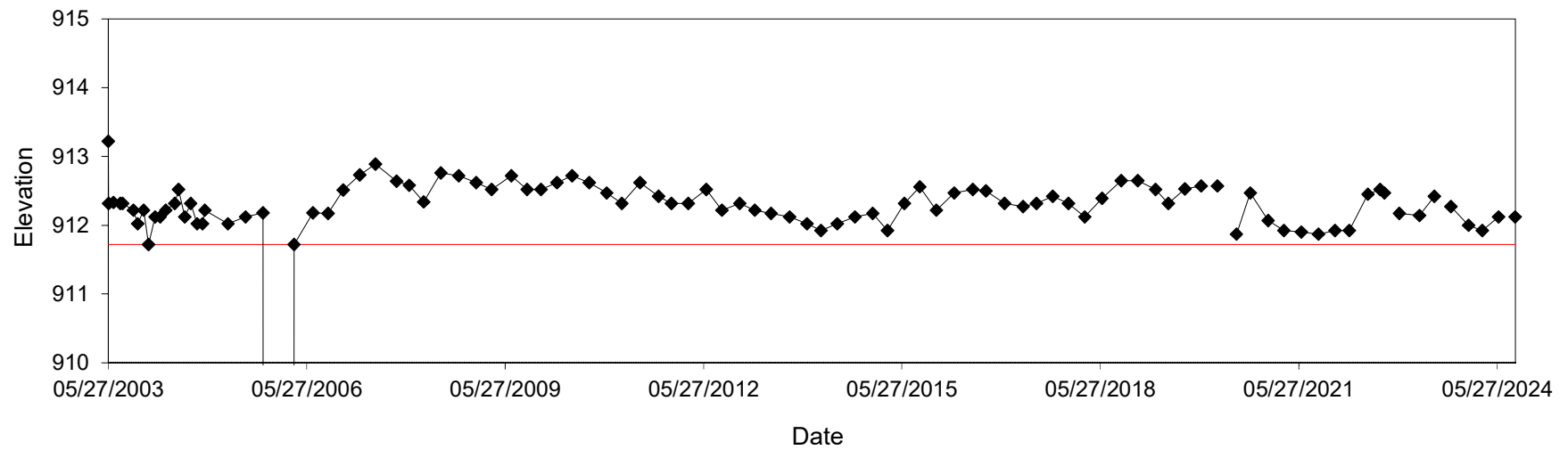


Leachate vs. Liner LPZ-2

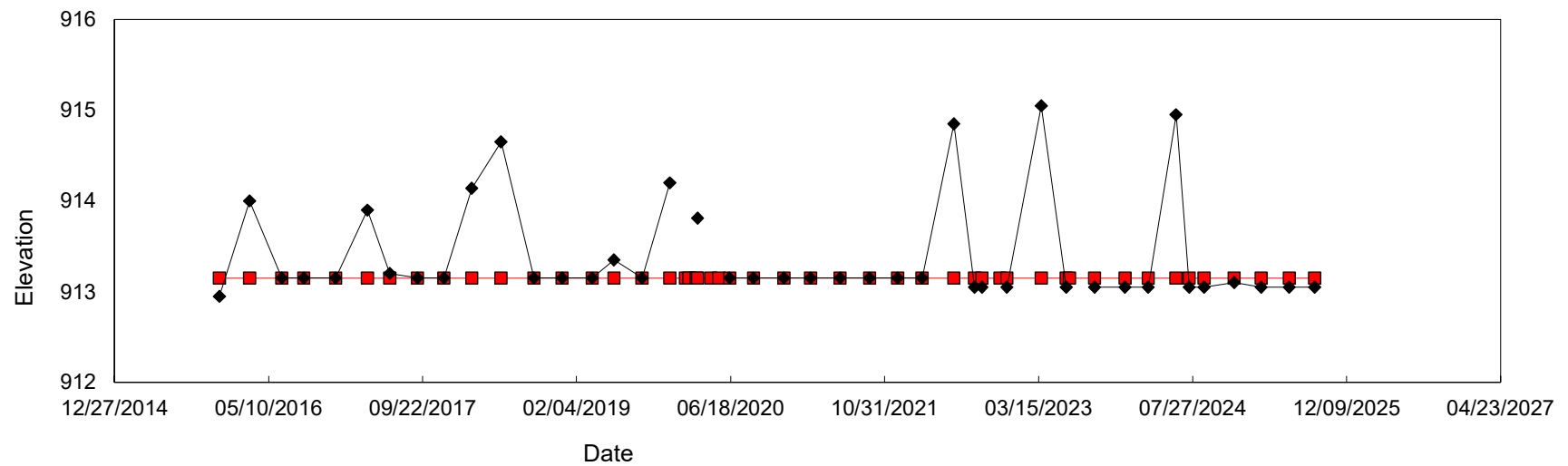
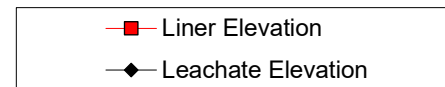


Leachate vs. Liner LPZ-3

— Liner Elevation
—◆— Leachate Elevation

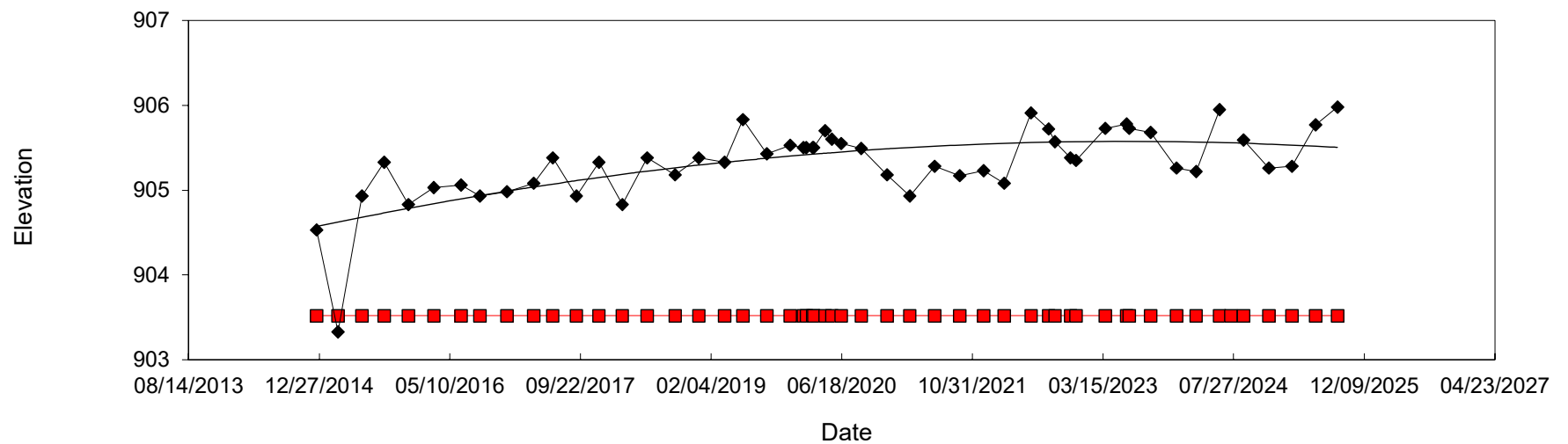


Leachate vs. Liner LPZ-4R



Leachate vs. Liner LPZ-5R

- Liner Elevation
- ◆— Leachate Elevation
- Poly. (Leachate Elevation)



Leachate vs. Liner LPZ-6R

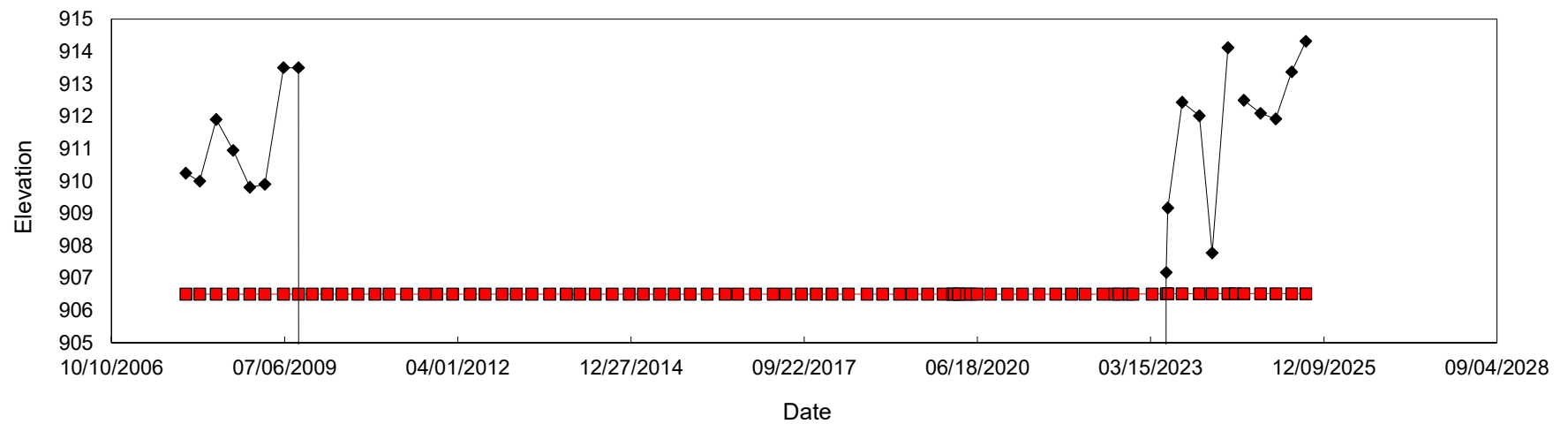
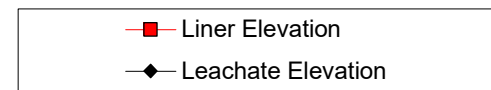


Table 13 – Gas Monitoring Summary

Table 13
Explosive Gas Monitoring Report
Annual Water Quality Report
Ames-Story Environmental Landfill
Permit No. 85-SDP-13-91C

SAMPLING DATE:	12/09/2024		03/07/2025		06/06/2025		09/03/2025	
Reference* Location	Combustible %LEL	Oxygen %	Combustible %LEL	Oxygen %	Combustible %LEL	Oxygen %	Combustible %LEL	Oxygen %
MW28/MW29	0	20.9	0	20.9	0	20.9	0	20.9
MW36/MW37	0	20.9	0	20.9	0	20.9	0	20.9
MW35	0	20.9	0	20.9	0	20.9	0	20.9
MW33/MW25	0	20.9	0	20.9	0	20.9	0	20.9
MW32/MW24	0	20.9	0	20.9	0	20.9	0	20.9
MW30/MW23	0	20.9	0	20.9	0	20.9	0	20.9
MW34	0	20.9	0	20.9	0	20.9	0	20.9
MW31	0	20.9	0	20.9	0	20.9	0	20.9
MW6/MW7/MW8	0	20.9	0	20.9	0	20.9	0	20.9
MW38/39	0	20.9	0	20.9	0	20.9	0	20.9
MW40/MW41	0	20.9	0	20.9	0	20.9	0	20.9
MW42/MW43	0	20.9	0	20.9	0	20.9	0	20.9

APPENDIX A

Field Sampling Forms

AMES-STORY ENVIRONMENTAL LANDFILL
PERMIT # 85-SDP-13-91P

3/7/2025

Sampled by: T. Whipple

Calm, flurries 32-38 degrees

IDNR Form 542-1322

Monitoring Well: MW-6 (up)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	942.88
Well Depth	21.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	942.88
Well Depth	21.70
Top Screen	931.05
Bottom Screen	921.18
Bottom Well	921.18
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	942.88
Bottom sample	938.88
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
3/7/2025	9:05	6.9	935.98

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			0
Paragraph f	TOX	0			
Supplemental	Sulfate	125			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	942.88	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	21.70	Before purging	3/7/2025	9:05	6.9	935.98		0.0	
Capped	YES	After purging				942.88			
Standing Water	NO	Top of Screen 10/13/1988				931.05			
Litter	NO					11.83	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 10/13/1988				921.18			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		21.20	921.68			
						0.50	feet sedimentation		
		Recovery				942.88			
		Recovery				942.88			
		Recovery				942.88			
		Recovery				942.88	pH	Conductivity	Temp.(C)
		Before Sampling				942.88			

IDNR Form 542-1322

Monitoring Well: **MW-7 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	943.21
Well Depth	53.00
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	943.21
Well Depth	53.00
Top Screen	899.55
Bottom Screen	890.21
Bottom Well	890.41
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	45
Top sample	898.21
Bottom sample	894.21
Turbidity(NTU)	45.20

Date	Time	Water Level	Water Elevation Notes
3/7/2025	9:20	20.38	922.83

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		45.2
Appendix I	Metals	250	250		45.2
Paragraph e		750		750	
Paragraph f	TOX	0			
Supplemental	Sulfate	120	120		45.2
Supplemental					
Supplemental					
Total			380	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	943.21	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	53.00	Before purging	3/7/2025	9:20	20.38	922.83	6	1.1	
Capped	YES	After purging		9:48	51.80	891.41			
Standing Water	NO	Top of Screen 10/13/1988				899.55			
Litter	NO					-8.14			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 10/13/1988				890.21			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		52.80	890.41			
						0.20			feet sedimentation
		Recovery				943.21			
		Recovery				943.21			
		Recovery				943.21			
		Recovery				943.21	pH	Conductivity	Temp.(C)
		Before Sampling				943.21			

IDNR Form 542-1322

Monitoring Well: MW-8 (up)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	942.76
Well Depth	71.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	942.76
Well Depth	71.70
Top Screen	881.05
Bottom Screen	871.06
Bottom Well	871.76
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	62
Top sample	880.76
Bottom sample	876.76
Turbidity(NTU)	1.69

Date	Time	Water Level	Water Elevation Notes
3/7/2025	9:55	34.10	908.66

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		1.69
Appendix I	Metals	250	250		1.69
Paragraph e		750		750	
Paragraph f	TOX	480			
Supplemental	Sulfate	125	125		1.69
Supplemental					
Supplemental					
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	942.76	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	71.70	Before purging	3/7/2025	9:55	34.10	908.66	10	1.6	no
Capped	YES	After purging		10:15	33.90	908.86			
Standing Water	NO	Top of Screen 10/13/1988				881.05			
Litter	NO					27.81	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 10/13/1988				871.06			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		71.00	871.76			
						0.70	feet sedimentation		
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00	pH	Conductivity	Temp.(C)
		Before Sampling				942.76	8.7	853	9.4

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Monitoring Well: **MW-28 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	946.02
Well Depth	22.30
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	946.02
Well Depth	22.30
Top Screen	933.55
Bottom Screen	923.55
Bottom Well	923.32
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	946.02
Bottom sample	942.02
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
3/7/2025		5.28	940.74

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			
Paragraph f	TOX	480			
Supplemental	Sulfate	125			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	946.02	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	22.30	Before purging	3/7/2025	0:00	5.28	940.74		0.0	no
Capped	YES	After purging				946.02			
Standing Water	NO	Top of Screen 10/13/1988				933.55			
Litter	NO					12.47			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 10/13/1988				923.32			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		22.45	923.57			
						0.25			feet sedimentation
		Recovery				946.02			
		Recovery				946.02			
		Recovery				946.02			
		Recovery				946.02	pH	Conductivity	Temp.(C)
		Before Sampling				946.02			

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Monitoring Well: **MW-29 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	945.61
Well Depth	53.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	945.61
Well Depth	53.50
Top Screen	902.55
Bottom Screen	892.11
Bottom Well	892.01
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	945.61
Bottom sample	941.61
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
3/7/2025		11.69	933.92

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			
Paragraph f	TOX	480			
Supplemental	Sulfate	125			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	945.61	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	53.50	Before purging	3/7/2025	0:00	11.69	933.92		0.0	
Capped	YES	After purging				945.61			
Standing Water	NO	Top of Screen 10/13/1988				902.55			
Litter	NO					43.06	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 10/13/1988				892.11			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		53.60	892.01			
						-0.10	feet sedimentation		
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00	pH	Conductivity	Temp.(C)
		Before Sampling				945.61			

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Monitoring Well: MW-36 (up)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	948.97
Well Depth	53.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	948.97
Well Depth	53.20
Top Screen	906.9
Bottom Screen	895.47
Bottom Well	895.47
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	948.97
Bottom sample	944.97
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
3/7/2025			948.97

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0.00
Appendix I	Metals	250			0.00
Paragraph e		750			0.00
Paragraph f	TOX	480			
Supplemental	Sulfate	125			0.00
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	948.97	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	53.50	Before purging	3/7/2025	0:00	0	948.97		0.0	
Capped	YES	After purging				948.97			
Standing Water	NO	Top of Screen 4/15/1996				906.90			
Litter	NO					42.07	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 4/15/1996				895.47			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		53.20	895.77			
						0.30	feet sedimentation		
		Recovery				948.97			
		Recovery				948.97			
		Recovery				948.97			
		Recovery				948.97	pH	Conductivity	Temp.(C)
		Before Sampling				948.97			

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Monitoring Well: MW-37 (up)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	949.49
Well Depth	30.60
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	949.49
Well Depth	30.60
Top Screen	929.03
Bottom Screen	919.79
Bottom Well	919.79
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	949.49
Bottom sample	945.49
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
3/7/2025			949.49

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			
Paragraph f	TOX	480			
Supplemental	Sulfate	125			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	949.49	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	30.60	Before purging	3/7/2025	0:00	0	949.49		0.0	
Capped	YES	After purging				949.49			
Standing Water	NO	Top of Screen 4/15/1996				929.03			
Litter	NO					20.46	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 4/15/1996				918.89			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		29.70	919.79			
						0.90	feet sedimentation		
		Recovery				949.49			
		Recovery				949.49			
		Recovery				949.49			
		Recovery				949.49	pH	Conductivity	Temp.(C)
		Before Sampling				949.49			

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Monitoring Well: MW-25 (dg)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	906.34
Well Depth	19.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	906.34
Well Depth	19.40
Top Screen	896.84
Bottom Screen	886.84
Bottom Well	886.84
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	14
Top sample	892.34
Bottom sample	888.34
Turbidity(NTU)	14.35

Date	Time	Water Level	Water Elevation Notes
3/7/2025	10:58	9.43	896.91

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	14.35
Appendix I	Metals	250	250	0	14.35
Paragraph e		750	0	750	
Paragraph f	TOX	0	0	0	
Supplemental	Sulfate	125	125	0	14.35
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	906.34	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	19.50	Before purging	3/7/2025	10:58	9.43	896.91	6	3.7	no
Capped	YES	After purging		11:15	9.45	896.89			
Standing Water	NO	Top of Screen 8/13/1990				896.84			
Litter	NO					0.05			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 8/13/1990				886.84			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		19.40	886.94			
						0.10			feet sedimentation
		Recovery				906.34			
		Recovery				906.34			
		Recovery				906.34			
		Recovery				906.34	pH	Conductivity	Temp.(C)
		Before Sampling				906.34	6.8	1688	8

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Monitoring Well: MW-33 (dg)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	906.32
Well Depth	28.20
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	906.32
Well Depth	28.50
Top Screen	880.66
Bottom Screen	878.12
Bottom Well	878.12
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	23
Top sample	883.32
Bottom sample	879.32
Turbidity(NTU)	3.49

Date	Time	Water Level	Water Elevation Notes
3/7/2025	11:19	9.6	896.72

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	3.49
Appendix I	Metals	250	250	0	3.49
Paragraph e		750	0	750	
Paragraph f	TOX	0	0	0	
Supplemental	Sulfate	125	125	0	3.49
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	906.32	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	28.20	Before purging	3/7/2025	11:19	9.6	896.72	11	3.6	no
Capped	YES	After purging		11:30	10.95	895.37			
Standing Water	NO	Top of Screen 8/13/1990				880.66			
Litter	NO					14.71			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 8/13/1990				878.12			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		28.50	877.82			
						-0.30			feet sedimentation
		Recovery				906.32			
		Recovery				906.32			
		Recovery				906.32			
		Recovery				906.32	pH	Conductivity	Temp.(C)
		Before Sampling				906.32	6.8	1806	7.9

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Monitoring Well: **MW-34 (dg)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	909.50
Well Depth	17.30
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	909.50
Well Depth	15.55
Top Screen	902.50
Bottom Screen	892.50
Bottom Well	892.20
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	11
Top sample	898.5
Bottom sample	894.5
Turbidity(NTU)	15.69

Date	Time	Water Level	Water Elevation Notes
3/7/2025	11:50	2.88	906.62

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	15.69
Appendix I	Metals	250	250	0	15.69
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	15.69
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	909.5	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	17.30	Before purging	3/7/2025	11:50	2.88	906.62	7	3.0	yes
Capped	YES	After purging		12:01	4.80	904.70			
Standing Water	NO	Top of Screen 4/15/1991				902.50			
Litter	NO					2.20			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 4/15/1991				892.20			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		16.10	893.40			
						1.20			feet sedimentation
		Recovery				909.50			
		Recovery				909.50			
		Recovery				909.50			
		Recovery				909.50	pH	Conductivity	Temp.(C)
		Before Sampling				909.50	6.9	854	6.4

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Monitoring Well: MW-35 (dg)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	916.19
Well Depth	20.60
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipmen	Waterra

NO PURGE METHOD

TOC	916.19
Well Depth	19.80
Top Screen	906.19
Bottom Screen	896.19
Bottom Well	895.59
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	14.5
Top sample	901.69
Bottom sample	897.69
Turbidity(NTU)	399.30

Date	Time	Water Level	Water Elevation Notes
3/7/2025	12:30	12.9	903.29

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	399.30
Appendix I	Metals	250	250	0	399.30
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	399.30
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	916.19	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	20.60	Before purging	3/7/2025	12:30	12.9	903.29	5	4.0	
Capped	YES	After purging		12:40	12.90	903.29			
Standing Water	NO	Top of Screen 4/15/1996				906.19			
Litter	NO					-2.90			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 4/15/1996				895.59			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		20.10	896.09			
						0.50			feet sedimentation
		Recovery				916.19			
		Recovery				916.19			
		Recovery				916.19			
		Recovery				916.19	pH	Conductivity	Temp.(C)
		Before Sampling				916.19	7.8	2760	4.7

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Monitoring Well: **MW-39 (dg)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	935.93
Well Depth	30.20
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	935.93
Well Depth	29.75
Top Screen	916.16
Bottom Screen	906.16
Bottom Well	905.73
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	24
Top sample	911.93
Bottom sample	907.93
Turbidity(NTU)	154.9

Date	Time	Water Level	Water Elevation Notes
3/7/2025	13:40	21.89	914.04

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	154.9
Appendix I	Metals	250	250	0	154.9
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	154.9
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	935.93	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	30.20	Before purging	3/7/2025	13:40	21.89	914.04	4	3.0	no
Capped	YES	After purging		13:53	25.00	910.93			
Standing Water	NO	Top of Screen 2/15/1995				916.16			
Litter	NO					-5.23			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 2/15/1995				905.73			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		29.75	906.18			
						0.45			feet sedimentation
		Recovery				935.93			
		Recovery				935.93			
		Recovery				935.93			
		Recovery				935.93	pH	Conductivity	Temp.(C)
		Before Sampling				935.93	6.9	2720	9.1

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Monitoring Well: **MW-40 (dg)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	933.07
Well Depth	20.00
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipmen	Waterra

NO PURGE METHOD

TOC	933.07
Well Depth	19.70
Top Screen	923.61
Bottom Screen	913.61
Bottom Well	913.07
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	14
Top sample	919.07
Bottom sample	915.07
Turbidity(NTU)	30.61

Date	Time	Water Level	Water Elevation Notes
3/7/2025	14:11	6.54	926.53

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	30.61
Appendix I	Metals	250	250	0	30.61
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	30.61
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	933.07	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	20.00	Before purging	3/7/2025	14:11	6.54	926.53	6	2.7	no
Capped	YES	After purging		14:26	11.20	921.87			
Standing Water	NO	Top of Screen 2/15/1995				923.61			
Litter	NO					-1.74			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 2/15/1995				913.07			
Equipment	Disposable Bailer	Bottom of Well	3/7/2025		19.70	913.37			
						0.30			feet sedimentation
		Recovery				933.07			
		Recovery				933.07			
		Recovery				933.07			
		Recovery				933.07	pH	Conductivity	Temp.(C)
		Before Sampling				933.07	7.1	851	6.6

AMES-STORY ENVIRONMENTAL LANDFILL
PERMIT # 85-SDP-13-91P

3/7/2025

Sampled by: T. Whipple

Calm, flurries 32-38 degrees

IDNR Form 542-1324

SW-3 (dg)	Date	Time	Type	Flowing	Quantity	Discolored	Odor	Litter
	3/7/2025	12:58	tile	yes	300 mL/min	No	No	No
						NTU	pH	Conductivity
						2.92	7.5	1629
								Temp.(C)
								6.6

;

MW Number	Top Casing Elevation	Depth to Water (ft)	Water Elevation
23	945.98		
24	939.44		
30	945.54		
31	941.43		
32	393.86		
38	936.59	27.5	909.09
41	933.46	17.4	916.06
42	940.64		
43	940.83		

dry

AMES-STORY ENVIRONMENTAL LANDFILL
PERMIT # 85-SDP-13-91P

8/28/2025

Sampled by: T. Whipple

Calm, sunny 80 degrees

IDNR Form 542-1322

Monitoring Well: MW-6 (up)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	942.88
Well Depth	21.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	942.88
Well Depth	21.70
Top Screen	931.05
Bottom Screen	921.18
Bottom Well	921.18
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	942.88
Bottom sample	938.88
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
8/28/2025	11:00	7.54	935.34

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			
Paragraph f	TOX	0			
Supplemental	Sulfate	125			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	942.88	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	21.70	Before purging	8/28/2025	11:00	7.54	935.34		0.0	
Capped	YES	After purging				942.88			
Standing Water	NO	Top of Screen 10/13/1988				931.05			
Litter	NO					11.83	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 10/13/1988				921.18			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		21.70	921.18			
						0.00	feet sedimentation		
		Recovery				942.88			
		Recovery				942.88			
		Recovery				942.88			
		Recovery				942.88	pH	Conductivity	Temp.(C)
		Before Sampling				942.88			

IDNR Form 542-1322

Monitoring Well: **MW-7 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	943.21
Well Depth	53.00
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	943.21
Well Depth	53.00
Top Screen	899.55
Bottom Screen	890.21
Bottom Well	890.41
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	943.21
Bottom sample	939.21
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
8/28/2025	11:05	19.65	923.56

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			
Paragraph f	TOX	0			
Supplemental	Sulfate	120			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	943.21	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	53.00	Before purging	8/28/2025	11:05	19.65	923.56		0.0	
Capped	YES	After purging				943.21			
Standing Water	NO	Top of Screen 10/13/1988				899.55			
Litter	NO					43.66			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 10/13/1988				890.21			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		52.80	890.41			
						0.20			feet sedimentation
		Recovery				943.21			
		Recovery				943.21			
		Recovery				943.21			
		Recovery				943.21	pH	Conductivity	Temp.(C)
		Before Sampling				943.21			

IDNR Form 542-1322

Monitoring Well: **MW-8 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	942.76
Well Depth	71.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	942.76
Well Depth	71.70
Top Screen	881.05
Bottom Screen	871.06
Bottom Well	871.76
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	942.76
Bottom sample	938.76
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
8/28/2025	11:10	32.90	909.86

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			
Paragraph f	TOX	480			
Supplemental	Sulfate	125			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	942.76	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	71.70	Before purging	8/28/2025	11:10	32.90	909.86		0.0	no
Capped	YES	After purging				942.76			
Standing Water	NO	Top of Screen 10/13/1988				881.05			
Litter	NO					61.71			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 10/13/1988				871.06			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		71.00	871.76			
						0.70			feet sedimentation
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00	pH	Conductivity	Temp.(C)
		Before Sampling				942.76			

IDNR Form 542-1322

Monitoring Well: **MW-28 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	946.02
Well Depth	22.30
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	946.02
Well Depth	22.30
Top Screen	933.55
Bottom Screen	923.55
Bottom Well	923.32
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	17.5
Top sample	928.52
Bottom sample	924.52
Turbidity(NTU)	2.23

Date	Time	Water Level	Water Elevation Notes
8/28/2025	12:14	6.4	939.62

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.23
Appendix I	Metals	250	250		2.23
Paragraph e		750		750	
Paragraph f	TOX	480			
Supplemental	Sulfate	125	120		2.23
Supplemental					
Supplemental					
Total			380	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	946.02	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	22.30	Before purging	8/28/2025	12:14	6.4	939.62	8	3.1	no
Capped	YES	After purging		12:24	6.91	939.11			
Standing Water	NO	Top of Screen 10/13/1988				933.55			
Litter	NO					5.56			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 10/13/1988				923.32			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		22.90	923.12			
						-0.20			feet sedimentation
		Recovery				946.02			
		Recovery				946.02			
		Recovery				946.02			
		Recovery				946.02	pH	Conductivity	Temp.(C)
		Before Sampling				946.02	6.6	1430	17.1

IDNR Form 542-1322

Monitoring Well: **MW-29 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	945.61
Well Depth	53.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	945.61
Well Depth	53.50
Top Screen	902.55
Bottom Screen	892.11
Bottom Well	891.51
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	47
Top sample	898.61
Bottom sample	894.61
Turbidity(NTU)	36.54

Date	Time	Water Level	Water Elevation Notes
8/28/2025	12:30	10.67	934.94

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		36.54
Appendix I	Metals	250	250		36.54
Paragraph e		750		750	
Paragraph f	TOX	480			
Supplemental	Sulfate	125	120		36.54
Supplemental					
Supplemental					
Total			380	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	945.61	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	53.50	Before purging	8/28/2025	12:30	10.67	934.94	8	1.1	
Capped	YES	After purging		12:39	33.10	912.51			
Standing Water	NO	Top of Screen 10/13/1988				902.55			
Litter	NO					9.96			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 10/13/1988				892.11			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		54.10	891.51			
						-0.60			feet sedimentation
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00			
		Recovery				0.00	pH	Conductivity	Temp.(C)
		Before Sampling				945.61	6.7	550	18

IDNR Form 542-1322

Monitoring Well: **MW-36 (up)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	948.97
Well Depth	53.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	948.97
Well Depth	53.20
Top Screen	906.9
Bottom Screen	895.47
Bottom Well	895.47
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	948.97
Bottom sample	944.97
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
8/28/2025		14.91	934.06

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0.00
Appendix I	Metals	250			0.00
Paragraph e		750			0.00
Paragraph f	TOX	480			
Supplemental	Sulfate	125			0.00
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	948.97	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	53.50	Before purging	8/28/2025	0:00	14.91	934.06		0.0	
Capped	YES	After purging				948.97			
Standing Water	NO	Top of Screen 4/15/1996				906.90			
Litter	NO					42.07	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 4/15/1996				895.47			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		53.60	895.37			
						-0.10	feet sedimentation		
		Recovery				948.97			
		Recovery				948.97			
		Recovery				948.97			
		Recovery				948.97	pH	Conductivity	Temp.(C)
		Before Sampling				948.97			

IDNR Form 542-1322

Monitoring Well: MW-37 (up)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	949.49
Well Depth	30.60
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	949.49
Well Depth	30.60
Top Screen	929.03
Bottom Screen	919.79
Bottom Well	919.79
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	
Top sample	949.49
Bottom sample	945.49
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation Notes
8/28/2025		6.81	942.68

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10			0
Appendix I	Metals	250			0
Paragraph e		750			
Paragraph f	TOX	480			
Supplemental	Sulfate	125			0
Supplemental					
Supplemental					
Total			0	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	949.49	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	30.60	Before purging	8/28/2025	0:00	6.81	942.68		0.0	
Capped	YES	After purging				949.49			
Standing Water	NO	Top of Screen 4/15/1996				929.03			
Litter	NO					20.46	feet above (+) or below (-) top screen		
Level Tape	Solinst	Bottom of Well 4/15/1996				918.89			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		29.90	919.59			
						0.70	feet sedimentation		
		Recovery				949.49			
		Recovery				949.49			
		Recovery				949.49			
		Recovery				949.49	pH	Conductivity	Temp.(C)
		Before Sampling				949.49			

IDNR Form 542-1322

Monitoring Well: MW-25 (dg)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	906.34
Well Depth	19.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipmen	Waterra

NO PURGE METHOD

TOC	906.34
Well Depth	19.40
Top Screen	896.84
Bottom Screen	886.84
Bottom Well	886.84
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	14
Top sample	892.34
Bottom sample	888.34
Turbidity(NTU)	3.1

Date	Time	Water Level	Water Elevation Notes
8/28/2025	14:16	9.7	896.64

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	3.1
Appendix I	Metals	250	250	0	3.1
Paragraph e		750	0	750	
Paragraph f	TOX	0	0	0	
Supplemental	Sulfate	125	125	0	3.1
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	906.34	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	19.50	Before purging	8/28/2025	14:16	9.7	896.64	5	3.1	no
Capped	YES	After purging		14:26	9.70	896.64			
Standing Water	NO	Top of Screen 8/13/1990				896.84			
Litter	NO					-0.20			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 8/13/1990				886.84			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		19.40	886.94			
						0.10			feet sedimentation
		Recovery				906.34			
		Recovery				906.34			
		Recovery				906.34			
		Recovery				906.34	pH	Conductivity	Temp.(C)
		Before Sampling				906.34	6.6	1575	18

IDNR Form 542-1322

Monitoring Well: **MW-33 (dg)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	906.32
Well Depth	28.20
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	906.32
Well Depth	28.50
Top Screen	880.66
Bottom Screen	878.12
Bottom Well	878.12
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	23
Top sample	883.32
Bottom sample	879.32
Turbidity(NTU)	2.8

Date	Time	Water Level	Water Elevation Notes
8/28/2025	14:30	12.12	894.2

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	2.8
Appendix I	Metals	250	250	0	2.8
Paragraph e		750	0	750	
Paragraph f	TOX	0	0	0	
Supplemental	Sulfate	125	125	0	2.8
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	906.32	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	28.20	Before purging	8/28/2025	14:30	12.12	894.20	8	3.1	no
Capped	YES	After purging		14:41	12.70	893.62			
Standing Water	NO	Top of Screen 8/13/1990				880.66			
Litter	NO					12.96			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 8/13/1990				878.12			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		28.50	877.82			
						-0.30			feet sedimentation
		Recovery				906.32			
		Recovery				906.32			
		Recovery				906.32			
		Recovery				906.32	pH	Conductivity	Temp.(C)
		Before Sampling				906.32	6.6	1585	17.9

IDNR Form 542-1322

Monitoring Well: MW-34 (dg)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	909.50
Well Depth	17.30
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	909.50
Well Depth	15.55
Top Screen	902.50
Bottom Screen	892.50
Bottom Well	892.20
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	11
Top sample	898.5
Bottom sample	894.5
Turbidity(NTU)	4.93

Date	Time	Water Level	Water Elevation Notes
8/28/2025	13:47	7.65	901.85

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	4.93
Appendix I	Metals	250	250	0	4.93
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	4.93
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	909.5	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	17.30	Before purging	8/28/2025	13:47	7.65	901.85	4	2.5	yes
Capped	YES	After purging		13:54	10.73	898.77			
Standing Water	NO	Top of Screen 4/15/1991				902.50			
Litter	NO					-3.73			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 4/15/1991				892.20			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		16.10	893.40			
						1.20			feet sedimentation
		Recovery				909.50			
		Recovery				909.50			
		Recovery				909.50			
		Recovery				909.50	pH	Conductivity	Temp.(C)
		Before Sampling				909.50	6.6	870	14.1

IDNR Form 542-1322

Monitoring Well: MW-35 (dg)

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	916.19
Well Depth	20.60
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	916.19
Well Depth	19.80
Top Screen	906.19
Bottom Screen	896.19
Bottom Well	895.59
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	15
Top sample	901.19
Bottom sample	897.19
Turbidity(NTU)	9.24

Date	Time	Water Level	Water Elevation Notes
8/28/2025	13:02	13.6	902.59

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	9.24
Appendix I	Metals	250	250	0	9.24
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	9.24
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	916.19	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	20.60	Before purging	8/28/2025	13:02	13.6	902.59	4	3.5	
Capped	YES	After purging		13:10	13.62	902.57			
Standing Water	NO	Top of Screen 4/15/1996				906.19			
Litter	NO					-3.62			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 4/15/1996				895.59			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		20.10	896.09			
						0.50			feet sedimentation
		Recovery				916.19			
		Recovery				916.19			
		Recovery				916.19			
		Recovery				916.19	pH	Conductivity	Temp.(C)
		Before Sampling				916.19	7	1580	19

IDNR Form 542-1322

Monitoring Well: **MW-39 (dg)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	935.93
Well Depth	30.20
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipm	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	935.93
Well Depth	29.75
Top Screen	916.16
Bottom Screen	906.16
Bottom Well	905.73
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	24
Top sample	911.93
Bottom sample	907.93
Turbidity(NTU)	3.95

Date	Time	Water Level	Water Elevation Notes
8/28/2025	11:07	13.72	922.21

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	3.95
Appendix I	Metals	250	250	0	3.95
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	3.95
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	935.93	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	30.20	Before purging	8/28/2025	11:07	13.72	922.21	5	1.9	no
Capped	YES	After purging		11:29	20.40	915.53			
Standing Water	NO	Top of Screen 2/15/1995				916.16			
Litter	NO					-0.63			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 2/15/1995				905.73			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		29.75	906.18			
						0.45			feet sedimentation
		Recovery				935.93			
		Recovery				935.93			
		Recovery				935.93			
		Recovery				935.93	pH	Conductivity	Temp.(C)
		Before Sampling				935.93	6.5	2560	20.3

IDNR Form 542-1322

Monitoring Well: **MW-40 (dg)**

Primary Sampling Method:
Secondary Sampling Method:

No-Purge for Arsenic and Sulfate
Purge & Sample for all analytes in IAC 567, Chapter 114

GENERAL INFORMATION

TOC	933.07
Well Depth	20.00
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equip	Solinst 429
Purge Equipment	Waterra

NO PURGE METHOD

TOC	933.07
Well Depth	19.70
Top Screen	923.61
Bottom Screen	913.61
Bottom Well	913.07
Sampler Length (ft)	4
Sampler Volume (mL)	440
Feet cordage	14
Top sample	919.07
Bottom sample	915.07
Turbidity(NTU)	3.66

Date	Time	Water Level	Water Elevation Notes
8/28/2025	11:45	6.38	926.69

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10	0	3.66
Appendix I	Metals	250	250	0	3.66
Paragraph e		750	0	750	
Paragraph f	TOX	480	0	0	
Supplemental	Sulfate	125	125	0	3.66
Supplemental			0	0	
Supplemental			0	0	
Total			385	750	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	933.07	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	20.00	Before purging	8/28/2025	11:45	6.38	926.69	7	3.2	no
Capped	YES	After purging		11:55	8.82	924.25			
Standing Water	NO	Top of Screen 2/15/1995				923.61			
Litter	NO					0.64			feet above (+) or below (-) top screen
Level Tape	Solinst	Bottom of Well 2/15/1995				913.07			
Equipment	Disposable Bailer	Bottom of Well	8/28/2025		19.70	913.37			
						0.30			feet sedimentation
		Recovery				933.07			
		Recovery				933.07			
		Recovery				933.07			
		Recovery				933.07	pH	Conductivity	Temp.(C)
		Before Sampling				933.07	6.5	875	7.2

AMES-STORY ENVIRONMENTAL LANDFILL
PERMIT # 85-SDP-13-91P

8/28/2025

Sampled by: T. Whipple

Calm, sunny 80 degrees

IDNR Form 542-1324

SW-3 (dg)	Date	Time	Type	Flowing	Quantity	Discolored	Odor	Litter
	8/28/2025	13:33	tile	yes	120 mL/min	No	No	No
						NTU	pH	Conductivity
						93.25	6.9	1600

;

MW Number	Top Casing Elevation	Depth to Water (ft)	Water Elevation
23	945.98	10.68	935.3
24	939.44	19.64	919.8
30	945.54	34.42	911.12
31	941.43	15.69	925.74
32	393.86	34.49	359.37
38	936.59	20.33	916.26
41	933.46	14.8	918.66
42	940.64	14.44	926.2
43	940.83	12.58	928.25

APPENDIX B

Laboratory Analytical Data



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

11C0697

Project Description

6004

For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248

Heather Murphy

Customer Relationship Specialist

Wednesday, March 26, 2025

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IC0697

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6004

Project / PO Number: N/A
Received: 03/11/2025
Reported: 03/26/2025

Sample Summary Report

<u>Sample Name</u>	<u>Laboratory ID</u>	<u>Client Matrix</u>	<u>Sample Type</u>	<u>Sample Begin</u>	<u>Sample Taken</u>	<u>Lab Received</u>
MW-7 (b)	1IC0697-01	Aqueous	GRAB		03/07/25 09:20	03/11/25 10:35
MW-8 (b)	1IC0697-02	Aqueous	GRAB		03/07/25 09:55	03/11/25 10:35
MW-25	1IC0697-03	Aqueous	GRAB		03/07/25 10:58	03/11/25 10:35
MW-34	1IC0697-04	Aqueous	GRAB		03/07/25 11:50	03/11/25 10:35
MW-35	1IC0697-05	Aqueous	GRAB		03/07/25 12:30	03/11/25 10:35
MW-39	1IC0697-06	Aqueous	GRAB		03/07/25 13:40	03/11/25 10:35
MW-40	1IC0697-07	Aqueous	GRAB		03/07/25 14:11	03/11/25 10:35
MW-33	1IC0697-08	Aqueous	GRAB		03/07/25 11:19	03/11/25 10:35
SW-3	1IC0697-09	Aqueous	GRAB		03/07/25 12:58	03/11/25 10:35



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

11C0697

Analytical Testing Parameters

Client Sample ID: MW-7 (b)					Collected By: Whipple, Todd				
Sample Matrix: Aqueous					Collection Date: 03/07/2025 9:20				
Lab Sample ID: 11C0697-01									
Determination of Conventional Chemistry Parameters		Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)									
COD, total		<20	20	mg/L	1		03/13/25 1018	03/13/25 1415	CES
TIMBERLINE									
Nitrogen, Ammonia		<1.00	1.00	mg/L	1		03/14/25 1343	03/14/25 1448	SDF
Determination of Inorganic Anions		Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A									
Chloride		84.5	10.0	mg/L	10		03/17/25 0000	03/17/25 1735	MID
Determination of Dissolved Metals		Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B									
Iron, dissolved		1.08	0.100	mg/L	1		03/19/25 1240	03/19/25 2111	JAR

Client Sample ID: MW-8 (b)						Collected By: Whipple, Todd			
Sample Matrix: Aqueous						Collection Date: 03/07/2025 9:55			
Lab Sample ID: 11C0697-02									
Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst	
EPA 410.4, Rv. 2 (1993)									
COD, total	97	20	mg/L	1	M2	03/17/25 0727	03/17/25 1545	CES	
TIMBERLINE									
Nitrogen, Ammonia	1.12	1.00	mg/L	1		03/14/25 1343	03/14/25 1603	SDF	
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst	
EPA 9056A									
Chloride	24.5	1.0	mg/L	1		03/17/25 0000	03/17/25 1351	MID	
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst	
EPA 6010B									
Iron, dissolved	0.113	0.100	mg/L	1		03/19/25 1240	03/19/25 2117	JAR	



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CERTIFICATE OF ANALYSIS

11C0697

Client Sample ID: MW-25
Sample Matrix: Aqueous
Lab Sample ID: 11C0697-03

Collected By: Whipple, Todd
Collection Date: 03/07/2025 10:58

Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)								
COD, total	<20	20	mg/L	1		03/13/25 1018	03/13/25 1415	CES
TIMBERLINE								
Nitrogen, Ammonia	<1.00	1.00	mg/L	1		03/14/25 1343	03/14/25 1451	SDF
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Chloride	29.3	1.0	mg/L	1		03/17/25 0000	03/17/25 1414	MID
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B								
Iron, dissolved	0.558	0.100	mg/L	1		03/19/25 1240	03/19/25 2123	JAR

Client Sample ID: MW-34
Sample Matrix: Aqueous
Lab Sample ID: 11C0697-04

Collected By: Whipple, Todd
Collection Date: 03/07/2025 11:50

Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)								
COD, total	40	20	mg/L	1		03/17/25 0727	03/17/25 1545	CES
TIMBERLINE								
Nitrogen, Ammonia	<1.00	1.00	mg/L	1		03/14/25 1343	03/14/25 1452	SDF
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Chloride	6.5	1.0	mg/L	1		03/17/25 0000	03/17/25 1436	MID
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B								
Iron, dissolved	<0.100	0.100	mg/L	1		03/19/25 1240	03/19/25 2129	JAR



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CERTIFICATE OF ANALYSIS

11C0697

Client Sample ID: MW-35
Sample Matrix: Aqueous
Lab Sample ID: 11C0697-05

Collected By: Whipple, Todd
Collection Date: 03/07/2025 12:30

Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)								
COD, total	<20	20	mg/L	1		03/13/25 1018	03/13/25 1415	CES
TIMBERLINE								
Nitrogen, Ammonia	<1.00	1.00	mg/L	1		03/14/25 1343	03/14/25 1454	SDF
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Chloride	462	10.0	mg/L	10		03/17/25 0000	03/17/25 2058	MID
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B								
Iron, dissolved	<0.100	0.100	mg/L	1		03/19/25 1240	03/19/25 2135	JAR

Client Sample ID: MW-39
Sample Matrix: Aqueous
Lab Sample ID: 11C0697-06

Collected By: Whipple, Todd
Collection Date: 03/07/2025 13:40

Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)								
COD, total	<20	20	mg/L	1		03/13/25 1018	03/13/25 1415	CES
TIMBERLINE								
Nitrogen, Ammonia	<1.00	1.00	mg/L	1		03/14/25 1343	03/14/25 1459	SDF
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Chloride	13.0	1.0	mg/L	1		03/17/25 0000	03/17/25 1521	MID
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B								
Iron, dissolved	1.30	0.100	mg/L	1		03/19/25 1240	03/19/25 2144	JAR



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CERTIFICATE OF ANALYSIS

11C0697

Client Sample ID: MW-40
Sample Matrix: Aqueous
Lab Sample ID: 11C0697-07

Collected By: Whipple, Todd
Collection Date: 03/07/2025 14:11

Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)								
COD, total	<20	20	mg/L	1		03/13/25 1018	03/13/25 1415	CES
TIMBERLINE								
Nitrogen, Ammonia	<1.00	1.00	mg/L	1		03/14/25 1343	03/14/25 1500	SDF
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Chloride	11.3	1.0	mg/L	1		03/17/25 0000	03/17/25 1628	MID
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B								
Iron, dissolved	<0.100	0.100	mg/L	1		03/19/25 1240	03/19/25 2154	JAR

Client Sample ID: MW-33
Sample Matrix: Aqueous
Lab Sample ID: 11C0697-08

Collected By: Whipple, Todd
Collection Date: 03/07/2025 11:19

Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)								
COD, total	<20	20	mg/L	1		03/17/25 0727	03/17/25 1545	CES
TIMBERLINE								
Nitrogen, Ammonia	1.98	1.00	mg/L	1		03/14/25 1343	03/14/25 1502	SDF
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Chloride	36.8	1.0	mg/L	1		03/17/25 0000	03/17/25 1651	MID
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B								
Iron, dissolved	10.2	0.100	mg/L	1		03/19/25 1240	03/19/25 2202	JAR



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CERTIFICATE OF ANALYSIS

11C0697

Client Sample ID:	SW-3	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 12:58
Lab Sample ID:	11C0697-09		

Determination of Conventional Chemistry Parameters	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)								
COD, total	<20	20	mg/L	1		03/13/25 1018	03/13/25 1415	CES
TIMBERLINE								
Nitrogen, Ammonia	<1.00	1.00	mg/L	1		03/14/25 1343	03/14/25 1503	SDF
Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Chloride	57.1	5.0	mg/L	5		03/20/25 0000	03/20/25 1944	MID
Determination of Dissolved Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 6010B								
Iron, dissolved	<0.100	0.100	mg/L	1		03/19/25 1240	03/19/25 2208	JAR



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CERTIFICATE OF ANALYSIS

1IC0697

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 410.4, Rv. 2 (1993)	1IC0615	1IC0615-BS1	
		1IC0697-07	MW-40
		1IC0697-01	MW-7 (b)
		1IC0697-09	SW-3
		1IC0697-05	MW-35
		1IC0697-03	MW-25
		1IC0615-MSD1	1IC0485-01
		1IC0615-BLK1	
		1IC0615-MS1	1IC0485-01
		1IC0697-06	MW-39
Method	Batch	Laboratory ID	Client / Source ID
TIMBERLINE	1IC0720	1IC0720-BLK1	
		1IC0720-BS1	
		1IC0720-MS1	1IC0721-01
		1IC0720-MSD1	1IC0721-01
		1IC0697-01	MW-7 (b)
		1IC0697-03	MW-25
		1IC0697-04	MW-34
		1IC0697-05	MW-35
		1IC0697-06	MW-39
		1IC0697-07	MW-40
		1IC0697-08	MW-33
		1IC0697-09	SW-3
		1IC0697-02	MW-8 (b)
Method	Batch	Laboratory ID	Client / Source ID
EPA 410.4, Rv. 2 (1993)	1IC0743	1IC0697-08RE1	MW-33
		1IC0743-BLK1	
		1IC0743-BS1	
		1IC0743-MSD1	1IC0697-02RE1
		1IC0697-04RE1	MW-34
		1IC0697-02RE1	MW-8 (b)
		1IC0743-MS1	1IC0697-02RE1
Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1IC0801	1IC0801-BLK1	
		1IC0801-MRL1	
		1IC0801-BS1	
		1IC0801-BSD1	

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CERTIFICATE OF ANALYSIS

1IC0697

EPA 9056A	1IC0801	1IC0801-MS1	1IC0220-02
		1IC0801-MSD1	1IC0220-02
		1IC0697-05	MW-35

Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1IC0896	1IC0896-BLK1	
		1IC0896-MRL1	
		1IC0896-BS1	
		1IC0896-BSD1	
		1IC0697-02	MW-8 (b)
		1IC0697-03	MW-25
		1IC0697-04	MW-34
		1IC0697-06	MW-39
		1IC0896-MS1	1IC0697-02
		1IC0896-MSD1	1IC0697-02
		1IC0697-07	MW-40
		1IC0697-08	MW-33
		1IC0697-01	MW-7 (b)
		1IC0896-BLK2	

Method	Batch	Laboratory ID	Client / Source ID
EPA 6010B	1IC0939	1IC0939-BLK1	
		1IC0939-BLK2	
		1IC0939-BS1	
		1IC0939-MS1	1IC0534-01
		1IC0939-MSD1	1IC0534-01
		1IC0697-01	MW-7 (b)
		1IC0697-02	MW-8 (b)
		1IC0697-03	MW-25
		1IC0697-04	MW-34
		1IC0697-05	MW-35
		1IC0697-06	MW-39
		1IC0697-07	MW-40
		1IC0697-08	MW-33
		1IC0697-09	SW-3

Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1IC1110	1IC1110-BLK1	
		1IC1110-MRL1	
		1IC1110-BS1	
		1IC1110-BSD1	
		1IC1110-MS1	1IC0520-01
		1IC1110-MSD1	1IC0520-01
		1IC0697-09	SW-3



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IC0697

EPA 9056A

1IC1110

1IC1110-BLK2

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Conventional Chemistry Parameters	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1IC0615 - Wet Chem Preparation - EPA 410.4, Rv. 2 (1993)										
Blank (1IC0615-BLK1)				Prepared: 03/13/25 10:18 Analyzed: 03/13/25 14:15						
COD, total	<20	20	mg/L							B1
LCS (1IC0615-BS1)				Prepared: 03/13/25 10:18 Analyzed: 03/13/25 14:15						
COD, total	110	27	mg/L	100		110	90-110			
Matrix Spike (1IC0615-MS1)				Source: 1IC0485-01 Prepared: 03/13/25 10:18 Analyzed: 03/13/25 14:15						
COD, total	121	27	mg/L	100	16.7	104	90-110			
Matrix Spike Dup (1IC0615-MSD1)				Source: 1IC0485-01 Prepared: 03/13/25 10:18 Analyzed: 03/13/25 14:15						
COD, total	120	27	mg/L	100	16.7	103	90-110	1.06	10	
Batch 1IC0720 - General Prep HPLC/IC - TIMBERLINE										
Blank (1IC0720-BLK1)				Prepared: 03/14/25 13:43 Analyzed: 03/14/25 14:33						
Nitrogen, Ammonia	<1.00	1.00	mg/L							
LCS (1IC0720-BS1)				Prepared: 03/14/25 13:43 Analyzed: 03/14/25 14:35						
Nitrogen, Ammonia	4.93	1.00	mg/L	5.00		98.6	90-114			
Matrix Spike (1IC0720-MS1)				Source: 1IC0721-01 Prepared: 03/14/25 13:43 Analyzed: 03/14/25 14:36						
Nitrogen, Ammonia	5.80	1.00	mg/L	5.00	0.480	106	84-115			
Matrix Spike Dup (1IC0720-MSD1)				Source: 1IC0721-01 Prepared: 03/14/25 13:43 Analyzed: 03/14/25 14:38						
Nitrogen, Ammonia	5.82	1.00	mg/L	5.00	0.480	107	84-115	0.299	20	
Batch 1IC0743 - Wet Chem Preparation - EPA 410.4, Rv. 2 (1993)										
Blank (1IC0743-BLK1)				Prepared: 03/17/25 07:27 Analyzed: 03/17/25 15:45						
COD, total	<20	20	mg/L							
LCS (1IC0743-BS1)				Prepared: 03/17/25 07:27 Analyzed: 03/17/25 15:45						
COD, total	92.1	27	mg/L	100		92.1	90-110			
Matrix Spike (1IC0743-MS1)				Source: 1IC0697-02RE1 Prepared: 03/17/25 07:27 Analyzed: 03/17/25 15:45						
COD, total	178	27	mg/L	100	96.7	80.9	90-110			M2
Matrix Spike Dup (1IC0743-MSD1)				Source: 1IC0697-02RE1 Prepared: 03/17/25 07:27 Analyzed: 03/17/25 15:45						
COD, total	156	27	mg/L	100	96.7	58.9	90-110	13.2	10	M2
Determination of Inorganic Anions	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1IC0801 - General Prep HPLC/IC - EPA 9056A										
Blank (1IC0801-BLK1)				Prepared: 03/17/25 00:00 Analyzed: 03/17/25 11:54						
Chloride	<1.0	1.0	mg/L							

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Determination of Inorganic Anions	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 11C0801 - General Prep HPLC/IC - EPA 9056A										
LCS (11C0801-BS1)	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 12:30									
Chloride	14.47	1.0	mg/L	15.4		94.1	80-120			
LCS Dup (11C0801-BSD1)	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 12:48									
Chloride	14.49	1.0	mg/L	15.4		94.2	80-120	0.104	10	
Matrix Spike (11C0801-MS1)	Source: 11C0220-02	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 14:01								
Chloride	430.9	10.0	mg/L	154	240.6	124	81-116			M1
Matrix Spike Dup (11C0801-MSD1)	Source: 11C0220-02	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 14:19								
Chloride	430.4	10.0	mg/L	154	240.6	123	81-116	0.118	10	M1
Batch 11C0896 - General Prep HPLC/IC - EPA 9056A										
Blank (11C0896-BLK1)	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 11:59									
Chloride	<1.0	1.0	mg/L							
Blank (11C0896-BLK2)	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 17:58									
Chloride	<1.0	1.0	mg/L							
LCS (11C0896-BS1)	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 12:44									
Chloride	16.11	1.0	mg/L	15.4		105	80-120			
LCS Dup (11C0896-BSD1)	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 13:06									
Chloride	16.21	1.0	mg/L	15.4		105	80-120	0.582	10	
Matrix Spike (11C0896-MS1)	Source: 11C0697-02	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 15:43								
Chloride	40.08	1.0	mg/L	15.4	24.55	101	81-116			
Matrix Spike Dup (11C0896-MSD1)	Source: 11C0697-02	Prepared: 03/17/25 00:00 Analyzed: 03/17/25 16:06								
Chloride	40.22	1.0	mg/L	15.4	24.55	102	81-116	0.354	10	
Batch 11C1110 - General Prep HPLC/IC - EPA 9056A										
Blank (11C1110-BLK1)	Prepared: 03/20/25 00:00 Analyzed: 03/20/25 17:07									
Chloride	<1.0	1.0	mg/L							
Blank (11C1110-BLK2)	Prepared: 03/20/25 00:00 Analyzed: 03/20/25 23:51									
Chloride	<1.0	1.0	mg/L							
LCS (11C1110-BS1)	Prepared: 03/20/25 00:00 Analyzed: 03/20/25 17:52									
Chloride	16.09	1.0	mg/L	15.4		105	80-120			
LCS Dup (11C1110-BSD1)	Prepared: 03/20/25 00:00 Analyzed: 03/20/25 18:15									
Chloride	16.11	1.0	mg/L	15.4		105	80-120	0.137	10	
Matrix Spike (11C1110-MS1)	Source: 11C0520-01	Prepared: 03/20/25 00:00 Analyzed: 03/20/25 18:59								
Chloride	180.0	5.0	mg/L	76.9	96.54	109	81-116			
Matrix Spike Dup (11C1110-MSD1)	Source: 11C0520-01	Prepared: 03/20/25 00:00 Analyzed: 03/20/25 19:22								
Chloride	180.7	5.0	mg/L	76.9	96.54	109	81-116	0.341	10	
Determination of Dissolved Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

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Determination of Dissolved Metals	Result	RL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Notes
Batch 11C0939 - Dissolved Metal Prep - EPA 6010B										
Blank (11C0939-BLK1)			Prepared: 03/19/25 12:40 Analyzed: 03/19/25 20:17							
Iron, dissolved	<0.100	0.100	mg/L							
Blank (11C0939-BLK2)			Prepared: 03/19/25 12:40 Analyzed: 03/19/25 20:23							
Iron, dissolved	<0.100	0.100	mg/L							
LCS (11C0939-BS1)			Prepared: 03/19/25 12:40 Analyzed: 03/19/25 20:28							
Iron, dissolved	2.34	0.100	mg/L	2.22		106	80-120			
Matrix Spike (11C0939-MS1)			Source: 11C0534-01 Prepared: 03/19/25 12:40 Analyzed: 03/19/25 20:40							
Iron, dissolved	2.32	0.100	mg/L	2.22	0.0339	103	75-125			
Matrix Spike Dup (11C0939-MSD1)			Source: 11C0534-01 Prepared: 03/19/25 12:40 Analyzed: 03/19/25 20:46							
Iron, dissolved	2.37	0.100	mg/L	2.22	0.0339	105	75-125	1.79	20	

Definitions

B1:	The target analyte was detected in the method blank at or above the method acceptance criteria. The sample concentration is below the method acceptance criteria.
M1:	Matrix spike recovery is above acceptance limits.
M2:	Matrix spike recovery is below acceptance limits.
RL:	Reporting Limit
RPD:	Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 2.4°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.

Reviewed and Approved By:

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
03/26/25 10:44



CHA
600 East 17th
Newton, IA 50
641-792-8451



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HLW Engineering
PM: Heather Murphy

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SITE INFORMATION

Sampler: TODD WHIPPLE
Project: Ames-Story Landfill-Spring COC1
6004

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

Mr. William Fedeler
Ames/Story Environmental Landfill
2111 Leopold Dr
Ames, IA 50010

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by / /

LAB USE ONLY

Work Order 1IC0697

Temperature

Turn-Cooler: No

☐ Custody Seal
☒ Containers Intact
☒ COC/Labels Agree
☐ Preservation Confirmed
☐ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses	Lab Sample Number
-001	MW-7 (b)	Aqueous	GRAB	3/7/25	9:20	3	Indfil-para-e	01
-001	MW-8 (b)	Aqueous	GRAB	3/7/25	9:55	3	Indfil-para-e	02
-001	MW-25	Aqueous	GRAB	3/7/25	10:58	3	Indfil-para-e	03
-001	MW-34	Aqueous	GRAB	3/7/25	11:50	3	Indfil-para-e	04
-001	MW-35	Aqueous	GRAB	3/7/25	12:30	3	Indfil-para-e	05
-001	MW-39	Aqueous	GRAB	3/7/25	13:40	3	Indfil-para-e	06
-001	MW-40	Aqueous	GRAB	3/7/25	14:11	3	Indfil-para-e	07

[Signature] 3/11/25
Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

Received for Lab By Date/Time

Remarks:

Original - Lab Copy Yellow - Sampler Copy



CHAIN OF C

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HLW Engineering
PM: Heather Murphy

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SITE INFORMATION

Sampler: TODD WHIPPLE

Project: Ames-Story Landfill-Spring COC1
6004

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by ___/___/___

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

Mr. William Fedeler
Ames/Story Environmental Landfill
2111 Leopold Dr
Ames, IA 50010

LAB USE ONLY

Work Order

IC.0697

Temperature

Turn-Cooler:

No

☐ Custody Seal
☐ Containers Intact
☐ COC/Labels Agree
☐ Preservation Confirmed
☐ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses	Lab Sample Number
-001	MW-33	Aqueous	GRAB	3/7/25	11:19	3	landfill-pore	08
-001	SW-3	Aqueous	GRAB	3/7/25	12:58	3	landfill-pore	09

Relinquished By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Received for Lab By

Date/Time

Original - Lab Copy Yellow - Sampler Copy

Remarks:



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1IC0698

Project Description

6004

For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248

Heather Murphy

Customer Relationship Specialist

Wednesday, March 26, 2025

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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CERTIFICATE OF ANALYSIS

1IC0698

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6004

Project / PO Number: N/A
Received: 03/11/2025
Reported: 03/26/2025

Sample Summary Report

<u>Sample Name</u>	<u>Laboratory ID</u>	<u>Client Matrix</u>	<u>Sample Type</u>	<u>Sample Begin</u>	<u>Sample Taken</u>	<u>Lab Received</u>
MW-7 (b)	1IC0698-01	Aqueous	GRAB		03/07/25 09:20	03/11/25 10:35
MW-8 (b)	1IC0698-02	Aqueous	GRAB		03/07/25 09:55	03/11/25 10:35
MW-25	1IC0698-03	Aqueous	GRAB		03/07/25 10:58	03/11/25 10:35
MW-34	1IC0698-04	Aqueous	GRAB		03/07/25 11:50	03/11/25 10:35
MW-35	1IC0698-05	Aqueous	GRAB		03/07/25 12:30	03/11/25 10:35
MW-39	1IC0698-06	Aqueous	GRAB		03/07/25 13:40	03/11/25 10:35
MW-40	1IC0698-07	Aqueous	GRAB		03/07/25 14:11	03/11/25 10:35
MW-33	1IC0698-08	Aqueous	GRAB		03/07/25 11:19	03/11/25 10:35
SW-3	1IC0698-09	Aqueous	GRAB		03/07/25 12:58	03/11/25 10:35
Field Duplicate	1IC0698-10	Aqueous	GRAB		03/07/25 00:00	03/11/25 10:35



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CERTIFICATE OF ANALYSIS

11C0698

Analytical Testing Parameters

Client Sample ID:	MW-7 (b)	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 9:20
Lab Sample ID:	11C0698-01		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Sulfate	81.7	1.0	mg/L	1		03/17/25 0000	03/17/25 1927	MID
Determination of Total Metals								
EPA 3005A/EPA 6020A								
Arsenic, total	0.0664	0.0040	mg/L	4		03/13/25 1439	03/17/25 1902	RVV
EPA 3010A/EPA 6010B								
Boron, total	<0.100	0.100	mg/L	1	M1	03/19/25 0717	03/20/25 0612	JAR

Client Sample ID:	MW-8 (b)	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 9:55
Lab Sample ID:	11C0698-02		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Sulfate	42.0	1.0	mg/L	1		03/17/25 0000	03/17/25 1950	MID
Determination of Total Metals								
EPA 3005A/EPA 6020A								
Arsenic, total	0.0094	0.0040	mg/L	4		03/13/25 1439	03/17/25 1908	RVV
EPA 3010A/EPA 6010B								
Boron, total	<0.100	0.100	mg/L	1		03/19/25 0717	03/20/25 0636	JAR

Client Sample ID:	MW-25	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 10:58
Lab Sample ID:	11C0698-03		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Sulfate	181	10.0	mg/L	10		03/20/25 0000	03/20/25 1334	MID
Determination of Total Metals								
EPA 3005A/EPA 6020A								
Arsenic, total	<0.0040	0.0040	mg/L	4		03/13/25 1439	03/17/25 1914	RVV
EPA 3010A/EPA 6010B								
Boron, total	0.984	0.100	mg/L	1		03/19/25 0717	03/20/25 0642	JAR



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CERTIFICATE OF ANALYSIS

11C0698

Client Sample ID:	MW-34	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 11:50
Lab Sample ID:	11C0698-04		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 9056A

Sulfate	102	10.0	mg/L	10		03/20/25 0000	03/20/25 1428	MID
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Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 3005A/EPA 6020A

Arsenic, total	0.0107	0.0040	mg/L	4		03/13/25 1439	03/17/25 1920	RVV
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EPA 3010A/EPA 6010B

Boron, total	0.140	0.100	mg/L	1		03/19/25 0717	03/20/25 0650	JAR
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Client Sample ID:	MW-35	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 12:30
Lab Sample ID:	11C0698-05		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 9056A

Sulfate	81.1	1.0	mg/L	1		03/17/25 0000	03/17/25 2057	MID
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Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 3005A/EPA 6020A

Arsenic, total	0.174	0.0040	mg/L	4		03/13/25 1439	03/17/25 1927	RVV
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EPA 3010A/EPA 6010B

Boron, total	<0.100	0.100	mg/L	1		03/19/25 0717	03/20/25 0707	JAR
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Client Sample ID:	MW-39	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 13:40
Lab Sample ID:	11C0698-06		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 9056A

Sulfate	613	50.0	mg/L	50		03/20/25 0000	03/20/25 1505	MID
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Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
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EPA 3005A/EPA 6020A

Arsenic, total	<0.0040	0.0040	mg/L	4		03/13/25 1439	03/17/25 1933	RVV
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EPA 3010A/EPA 6010B

Boron, total	0.180	0.100	mg/L	1		03/19/25 0717	03/20/25 1144	JAR
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CERTIFICATE OF ANALYSIS

11C0698

Client Sample ID:	MW-40	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 14:11
Lab Sample ID:	11C0698-07		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Sulfate	88.1	1.0	mg/L	1		03/17/25 0000	03/17/25 2142	MID
Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Arsenic, total	0.0078	0.0040	mg/L	4		03/13/25 1439	03/17/25 1939	RVV
EPA 3010A/EPA 6010B								
Boron, total	<0.100	0.100	mg/L	1		03/19/25 0717	03/20/25 0726	JAR

Client Sample ID:	MW-33	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 11:19
Lab Sample ID:	11C0698-08		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Sulfate	148	10.0	mg/L	10		03/20/25 0000	03/20/25 1446	MID
Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Arsenic, total	<0.0040	0.0040	mg/L	4		03/13/25 1439	03/17/25 1945	RVV
EPA 3010A/EPA 6010B								
Boron, total	0.503	0.100	mg/L	1		03/19/25 0717	03/20/25 1155	JAR

Client Sample ID:	SW-3	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025 12:58
Lab Sample ID:	11C0698-09		

Determination of Inorganic Anions	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 9056A								
Sulfate	297	50.0	mg/L	50		03/20/25 0000	03/20/25 1523	MID
Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Arsenic, total	<0.0040	0.0040	mg/L	4		03/13/25 1439	03/17/25 1951	RVV
EPA 3010A/EPA 6010B								
Boron, total	<0.100	0.100	mg/L	1		03/19/25 0717	03/20/25 0738	JAR

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CERTIFICATE OF ANALYSIS

11C0698

Client Sample ID:	Field Duplicate	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	03/07/2025
Lab Sample ID:	11C0698-10		

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Arsenic, total	0.278	0.0040	mg/L	4		03/13/25 1439	03/17/25 2010	RVV
EPA 3010A/EPA 6010B								
Boron, total	<0.100	0.100	mg/L	1		03/19/25 0717	03/20/25 0744	JAR



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CERTIFICATE OF ANALYSIS

1IC0698

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1IC0649	1IC0649-BLK1	
		1IC0649-BS1	
		1IC0649-MS1	1IC0827-24
		1IC0649-MSD1	1IC0827-24
		1IC0649-PS1	1IC0827-24
		1IC0698-01	MW-7 (b)
		1IC0698-02	MW-8 (b)
		1IC0698-03	MW-25
		1IC0698-04	MW-34
		1IC0698-05	MW-35
		1IC0698-06	MW-39
		1IC0698-07	MW-40
		1IC0698-08	MW-33
		1IC0698-09	SW-3
		1IC0698-10	Field Duplicate
Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1IC0896	1IC0896-BLK1	
		1IC0896-MRL1	
		1IC0896-BS1	
		1IC0896-BSD1	
		1IC0896-MS1	1IC0697-02
		1IC0896-MSD1	1IC0697-02
		1IC0896-BLK2	
		1IC0698-01	MW-7 (b)
		1IC0698-02	MW-8 (b)
		1IC0698-05	MW-35
		1IC0698-07	MW-40
Method	Batch	Laboratory ID	Client / Source ID
EPA 6010B	1IC0912	1IC0912-BLK1	
		1IC0912-BS1	
		1IC0698-01	MW-7 (b)
		1IC0912-MS1	1IC0698-01
		1IC0912-MSD1	1IC0698-01
		1IC0912-PS1	1IC0698-01
		1IC0698-02	MW-8 (b)
		1IC0698-03	MW-25
		1IC0698-04	MW-34
		1IC0698-05	MW-35



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IC0698

EPA 6010B	1IC0912	1IC0698-07	MW-40
		1IC0698-09	SW-3
		1IC0698-10	Field Duplicate
		1IC0698-06RE1	MW-39
		1IC0698-08RE1	MW-33

Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1IC1096	1IC1096-BLK1	
		1IC1096-MRL1	
		1IC1096-BS1	
		1IC1096-BSD1	
		1IC0698-03	MW-25
		1IC1096-MS1	1IC0698-03
		1IC1096-MSD1	1IC0698-03
		1IC0698-04	MW-34
		1IC0698-08	MW-33
		1IC0698-06	MW-39
		1IC0698-09	SW-3

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Inorganic Anions	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1IC0896 - General Prep HPLC/IC - EPA 9056A										
Blank (1IC0896-BLK1)				Prepared: 03/17/25 00:00 Analyzed: 03/17/25 11:59						
Sulfate	<1.0	1.0	mg/L							
Blank (1IC0896-BLK2)				Prepared: 03/17/25 00:00 Analyzed: 03/17/25 17:58						
Sulfate	<1.0	1.0	mg/L							
LCS (1IC0896-BS1)				Prepared: 03/17/25 00:00 Analyzed: 03/17/25 12:44						
Sulfate	34.95	1.0	mg/L	33.9		103	80-120			
LCS Dup (1IC0896-BSD1)				Prepared: 03/17/25 00:00 Analyzed: 03/17/25 13:06						
Sulfate	35.11	1.0	mg/L	33.9		104	80-120	0.457	10	
Matrix Spike (1IC0896-MS1)				Source: 1IC0697-02 Prepared: 03/17/25 00:00 Analyzed: 03/17/25 15:43						
Sulfate	81.43	1.0	mg/L	33.9	47.84	99.2	87-113			
Matrix Spike Dup (1IC0896-MSD1)				Source: 1IC0697-02 Prepared: 03/17/25 00:00 Analyzed: 03/17/25 16:06						
Sulfate	81.94	1.0	mg/L	33.9	47.84	101	87-113	0.621	10	
Batch 1IC1096 - General Prep HPLC/IC - EPA 9056A										
Blank (1IC1096-BLK1)				Prepared: 03/20/25 00:00 Analyzed: 03/20/25 12:03						
Sulfate	<1.0	1.0	mg/L							
LCS (1IC1096-BS1)				Prepared: 03/20/25 00:00 Analyzed: 03/20/25 12:39						
Sulfate	31.44	1.0	mg/L	33.9		92.8	80-120			
LCS Dup (1IC1096-BSD1)				Prepared: 03/20/25 00:00 Analyzed: 03/20/25 12:57						



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

11C0698

Determination of Inorganic Anions	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 11C1096 - General Prep HPLC/IC - EPA 9056A										
LCS Dup (11C1096-BSD1)				Prepared: 03/20/25 00:00 Analyzed: 03/20/25 12:57						
Sulfate	31.23	1.0	mg/L	33.9		92.2	80-120	0.664	10	
Matrix Spike (11C1096-MS1)				Source: 11C0698-03 Prepared: 03/20/25 00:00 Analyzed: 03/20/25 13:52						
Sulfate	514.5	10.0	mg/L	339	181.1	98.5	87-113			
Matrix Spike Dup (11C1096-MSD1)				Source: 11C0698-03 Prepared: 03/20/25 00:00 Analyzed: 03/20/25 14:10						
Sulfate	520.8	10.0	mg/L	339	181.1	100	87-113	1.20	10	
Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 11C0649 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (11C0649-BLK1)				Prepared: 03/13/25 14:39 Analyzed: 03/17/25 17:49						
Arsenic, total	<0.0040	0.0040	mg/L							
LCS (11C0649-BS1)				Prepared: 03/13/25 14:39 Analyzed: 03/17/25 17:55						
Arsenic, total	0.0914	0.0040	mg/L	0.100		91.4	80-120			
Matrix Spike (11C0649-MS1)				Source: 11C0827-24 Prepared: 03/13/25 14:39 Analyzed: 03/17/25 18:07						
Arsenic, total	0.0928	0.0040	mg/L	0.100	0.0011	91.7	75-125			
Matrix Spike Dup (11C0649-MSD1)				Source: 11C0827-24 Prepared: 03/13/25 14:39 Analyzed: 03/17/25 18:13						
Arsenic, total	0.0942	0.0040	mg/L	0.100	0.0011	93.1	75-125	1.49	20	
Post Spike (11C0649-PS1)				Source: 11C0827-24 Prepared: 03/13/25 14:39 Analyzed: 03/17/25 18:19						
Arsenic, total	0.0761		mg/L	0.0800	0.0011	93.7	80-120			
Batch 11C0912 - EPA 3010A Digestion (Water) - EPA 6010B										
Blank (11C0912-BLK1)				Prepared: 03/19/25 07:17 Analyzed: 03/20/25 05:55						
Boron, total	<0.100	0.100	mg/L							
LCS (11C0912-BS1)				Prepared: 03/19/25 07:17 Analyzed: 03/20/25 06:00						
Boron, total	0.214	0.100	mg/L	0.200		107	80-120			
Matrix Spike (11C0912-MS1)				Source: 11C0698-01 Prepared: 03/19/25 07:17 Analyzed: 03/20/25 06:18						
Boron, total	0.261	0.100	mg/L	0.200	ND	131	75-125			M1
Matrix Spike Dup (11C0912-MSD1)				Source: 11C0698-01 Prepared: 03/19/25 07:17 Analyzed: 03/20/25 06:24						
Boron, total	0.253	0.100	mg/L	0.200	ND	127	75-125	3.18	20	M1
Post Spike (11C0912-PS1)				Source: 11C0698-01 Prepared: 03/19/25 07:17 Analyzed: 03/20/25 06:30						
Boron, total	0.918		mg/L	0.800	0.0559	108	80-120			

Definitions

M1:	Matrix spike recovery is above acceptance limits.
RL:	Reporting Limit
RPD:	Relative Percent Difference



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IC0698

Cooler Receipt Log

Cooler ID: Default Cooler

Temp: 0.3°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. **The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.**

Reviewed and Approved By:

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
03/26/25 16:45



600 East 17th
Newton, IA 50
641-792-8451

CHA



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HLW Engineering
PM: Heather Murphy

Page 1 of

Printed: 2/11/2025 10:12:14A

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SITE INFORMATION

Sampler: Todd Whipple
Project: Ames-Story Landfill-COC2
6004

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

Mr. William Fedeler
Ames/Story Environmental Landfill
2111 Leopold Dr
Ames, IA 50010

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY

Work Order 1IC0698

Temperature _____

Turn-Cooler: No

☐ Custody Seal
☐ Containers Intact
☐ COC/Labels Agree
☐ Preservation Confirmed
☐ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses	Lab Sample Number
-001	MW-7 (b)	Aqueous	GRAB	<u>3/7/25</u>	<u>9:20</u>	<u>2</u>	ms-t-6020 so4-9056-w	b-t-6010 <u>01</u>
-001	MW-8 (b)	Aqueous	GRAB	<u>3/7/25</u>	<u>9:55</u>	<u>2</u>	ms-t-6020 so4-9056-w	b-t-6010 <u>02</u>
-001	MW-25	Aqueous	GRAB	<u>3/7/25</u>	<u>10:58</u>	<u>2</u>	ms-t-6020 so4-9056-w	b-t-6010 <u>03</u>
-001	MW-34	Aqueous	GRAB	<u>3/7/25</u>	<u>11:50</u>	<u>2</u>	ms-t-6020 so4-9056-w	b-t-6010 <u>04</u>
-001	MW-35	Aqueous	GRAB	<u>3/7/25</u>	<u>12:30</u>	<u>2</u>	ms-t-6020 so4-9056-w	b-t-6010 <u>05</u>
-001	MW-39	Aqueous	GRAB	<u>3/7/25</u>	<u>13:40</u>	<u>2</u>	ms-t-6020 so4-9056-w	b-t-6010 <u>06</u>
-001	MW-40	Aqueous	GRAB	<u>3/7/25</u>	<u>14:11</u>	<u>2</u>	ms-t-6020 so4-9056-w	b-t-6010 <u>07</u>

Todd Whipple 3/11/25
Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

Heather Murphy 3/11/25 10:35
Received for Lab By Date/Time

Original - Lab Copy Yellow - Sampler Copy

Remarks:



CHAIN

600 East 17th St
Newton, IA 50201
641-792-8451



1 I C 0 6 9 8

HLW Engineering
PM: Heather Murphy

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Page 12 of 12

SITE INFORMATION

Sampler: Todd Whipple
Project: Ames-Story Landfill-COC2
6004

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

Mr. William Fedeler
Ames/Story Environmental Landfill
2111 Leopold Dr
Ames, IA 50010

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY

Work Order

17C0698

Temperature

Turn-Cooler:

No

☐ Custody Seal
☐ Containers Intact
☐ COC/Labels Agree
☐ Preservation Confirmed
☐ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses	Lab Sample Number
-001	MW-33	Aqueous	GRAB	3/7/25	11:19	2	us-l-6020 b-l-6010 so4-9056-w	08
-001	SW-3	Aqueous	GRAB	3/7/25	12:50	2	us-l-6020 b-l-6010 so4-9056-w	09
-001	Field Duplicate	Aqueous	GRAB	3/7/25	✓	1	us-l-6020 b-l-6010 so4-9056-w	10

Relinquished By

Date/Time

Relinquished By

Date/Time

Remarks:

Received By

Date/Time

Received for Lab By

Date/Time

Original - Lab Copy Yellow - Sampler Copy



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Project Description

6004

For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248

Heather Murphy

Customer Relationship Specialist

Monday, September 8, 2025

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc.

600 East 17th Street South | Newton, IA 50208 | 641-792-8451 p | www.microbac.com



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6004

Project / PO Number: N/A
Received: 08/29/2025
Reported: 09/08/2025

Sample Summary Report

<u>Sample Name</u>	<u>Laboratory ID</u>	<u>Client Matrix</u>	<u>Sample Type</u>	<u>Sample Begin</u>	<u>Sample Taken</u>	<u>Lab Received</u>
MW-28 (b)	1IH2820-01	Aqueous	GRAB		08/28/25 12:14	08/29/25 10:40
MW-29 (b)	1IH2820-02	Aqueous	GRAB		08/28/25 12:30	08/29/25 10:40
MW-25	1IH2820-03	Aqueous	GRAB		08/28/25 14:16	08/29/25 10:40
MW-34	1IH2820-04	Aqueous	GRAB		08/28/25 13:47	08/29/25 10:40
MW-35	1IH2820-05	Aqueous	GRAB		08/28/25 13:02	08/29/25 10:40
MW-39	1IH2820-06	Aqueous	GRAB		08/28/25 11:07	08/29/25 10:40
MW-40	1IH2820-07	Aqueous	GRAB		08/28/25 11:45	08/29/25 10:40
MW-33	1IH2820-08	Aqueous	GRAB		08/28/25 14:30	08/29/25 10:40
SW-3	1IH2820-09	Aqueous	GRAB		08/28/25 13:33	08/29/25 10:40
Field Duplicate	1IH2820-10	Aqueous	GRAB		08/28/25 00:00	08/29/25 10:40



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Analytical Testing Parameters

Client Sample ID:	MW-28 (b)	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 12:14
Lab Sample ID:	1IH2820-01		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	422	10.0	mg/L		09/04/25 0000	09/04/25 1438	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	<0.0020	0.0020	mg/L		08/29/25 1526	09/03/25 1932	RVV
EPA 3010A/EPA 6010B							
Boron, total	0.488	0.100	mg/L		09/03/25 0720	09/04/25 0210	JAR

Client Sample ID:	MW-29 (b)	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 12:30
Lab Sample ID:	1IH2820-02		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	67.8	10.0	mg/L		09/04/25 0000	09/04/25 1452	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	0.0612	0.0020	mg/L		08/29/25 1526	09/03/25 1935	RVV
EPA 3010A/EPA 6010B							
Boron, total	<0.100	0.100	mg/L		09/03/25 0720	09/04/25 0231	JAR

Client Sample ID:	MW-25	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 14:16
Lab Sample ID:	1IH2820-03		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	222	10.0	mg/L		09/04/25 0000	09/04/25 1506	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	<0.0020	0.0020	mg/L		08/29/25 1526	09/03/25 1937	RVV
EPA 3010A/EPA 6010B							
Boron, total	0.586	0.100	mg/L		09/03/25 0720	09/04/25 0237	JAR



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Client Sample ID:	MW-34	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 13:47
Lab Sample ID:	1IH2820-04		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	199	10.0	mg/L		09/04/25 0000	09/04/25 1520	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	0.0059	0.0020	mg/L		08/29/25 1526	09/03/25 1940	RVV
EPA 3010A/EPA 6010B							
Boron, total	0.235	0.100	mg/L		09/03/25 0720	09/04/25 0243	JAR

Client Sample ID:	MW-35	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 13:02
Lab Sample ID:	1IH2820-05		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	34.1	10.0	mg/L		09/04/25 0000	09/04/25 1534	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	0.0364	0.0020	mg/L		08/29/25 1526	09/03/25 1942	RVV
EPA 3010A/EPA 6010B							
Boron, total	<0.100	0.100	mg/L		09/03/25 0720	09/04/25 0249	JAR

Client Sample ID:	MW-39	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 11:07
Lab Sample ID:	1IH2820-06		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	61.9	10.0	mg/L		09/04/25 0000	09/04/25 1548	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	<0.0020	0.0020	mg/L		08/29/25 1526	09/03/25 1945	RVV
EPA 3010A/EPA 6010B							
Boron, total	0.105	0.100	mg/L		09/03/25 0720	09/04/25 0255	JAR



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Client Sample ID:	MW-40	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 11:45
Lab Sample ID:	1IH2820-07		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	49.0	10.0	mg/L		09/04/25 0000	09/04/25 1752	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	0.0037	0.0020	mg/L		08/29/25 1526	09/03/25 1947	RVV
EPA 3010A/EPA 6010B							
Boron, total	0.123	0.100	mg/L		09/03/25 0720	09/04/25 0301	JAR

Client Sample ID:	MW-33	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 14:30
Lab Sample ID:	1IH2820-08		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	156	10.0	mg/L		09/04/25 0000	09/04/25 1806	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	<0.0020	0.0020	mg/L		08/29/25 1526	09/03/25 1950	RVV
EPA 3010A/EPA 6010B							
Boron, total	0.565	0.100	mg/L		09/03/25 0720	09/04/25 0308	JAR

Client Sample ID:	SW-3	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 13:33
Lab Sample ID:	1IH2820-09		

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Sulfate	317	10.0	mg/L		09/04/25 0000	09/04/25 1820	BMS
Determination of Total Metals							
EPA 3005A/EPA 6020A							
Arsenic, total	<0.0020	0.0020	mg/L		08/29/25 1526	09/03/25 1952	RVV
EPA 3010A/EPA 6010B							
Boron, total	<0.100	0.100	mg/L		09/03/25 0720	09/04/25 0314	JAR



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Client Sample ID:	Field Duplicate	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025
Lab Sample ID:	1IH2820-10		

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Arsenic, total	0.0040	0.0020	mg/L		08/29/25 1526	09/03/25 2000	RVV
EPA 3010A/EPA 6010B							
Boron, total	0.117	0.100	mg/L		09/03/25 0720	09/04/25 0320	JAR



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1IH1680	1IH1680-BLK1	
		1IH1680-BS1	
		1IH2820-01	MW-28 (b)
		1IH2820-02	MW-29 (b)
		1IH2820-03	MW-25
		1IH2820-04	MW-34
		1IH2820-05	MW-35
		1IH2820-06	MW-39
		1IH2820-07	MW-40
		1IH2820-08	MW-33
		1IH2820-09	SW-3
		1IH2820-10	Field Duplicate
		1IH1680-MS1	4IH0223-01
		1IH1680-MSD1	4IH0223-01
		1IH1680-PS1	4IH0223-01
Method	Batch	Laboratory ID	Client / Source ID
EPA 6010B	1II0090	1II0090-BLK1	
		1II0090-BS1	
		1II0090-MS1	1IH2540-01
		1II0090-MSD1	1IH2540-01
		1II0090-PS1	1IH2540-01
		1IH2820-01	MW-28 (b)
		1IH2820-02	MW-29 (b)
		1IH2820-03	MW-25
		1IH2820-04	MW-34
		1IH2820-05	MW-35
		1IH2820-06	MW-39
		1IH2820-07	MW-40
		1IH2820-08	MW-33
		1IH2820-09	SW-3
		1IH2820-10	Field Duplicate
Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1II0388	1IH2820-01	MW-28 (b)
		1IH2820-02	MW-29 (b)
		1IH2820-03	MW-25
		1IH2820-04	MW-34
		1IH2820-05	MW-35
		1IH2820-06	MW-39



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

EPA 9056A	1II0388	1II0388-MS1	1IH2820-06
		1II0388-MSD1	1IH2820-06
		1II0388-BLK1	
		1II0388-BS1	
		1II0388-BSD1	
		1IH2820-07	MW-40
		1IH2820-08	MW-33
		1IH2820-09	SW-3
		1II0388-MS2	1II0307-01
		1II0388-MSD2	1II0307-01
		1II0388-BLK2	
		1II0388-BS2	
		1II0388-BSD2	

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Inorganic Anions	Result	RL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Notes
Batch 1II0388 - General Prep HPLC/IC - EPA 9056A										
Blank (1II0388-BLK1)			Prepared & Analyzed: 09/04/25 16:57							
Sulfate	<1.0	1.0	mg/L							
Blank (1II0388-BLK2)			Prepared & Analyzed: 09/04/25 23:38							
Sulfate	<1.0	1.0	mg/L							
LCS (1II0388-BS1)			Prepared & Analyzed: 09/04/25 17:11							
Sulfate	36.04	1.0	mg/L		34.8	103	80-120			
LCS (1II0388-BS2)			Prepared & Analyzed: 09/04/25 23:52							
Sulfate	36.16	1.0	mg/L		34.8	104	80-120			
LCS Dup (1II0388-BSD1)			Prepared & Analyzed: 09/04/25 17:25							
Sulfate	36.09	1.0	mg/L		34.8	104	80-120	0.157	10	
LCS Dup (1II0388-BSD2)			Prepared & Analyzed: 09/05/25 00:06							
Sulfate	36.10	1.0	mg/L		34.8	104	80-120	0.166	10	
Matrix Spike (1II0388-MS1)		Source: 1IH2820-06		Prepared & Analyzed: 09/04/25 16:01						
Sulfate	251.2	5.0	mg/L		174	61.86	109	87-113		
Matrix Spike (1II0388-MS2)		Source: 1II0307-01		Prepared & Analyzed: 09/04/25 22:43						
Sulfate	396.6	5.0	mg/L		174	207.5	109	87-113		
Matrix Spike Dup (1II0388-MSD1)		Source: 1IH2820-06		Prepared & Analyzed: 09/04/25 16:15						
Sulfate	251.9	5.0	mg/L		174	61.86	109	87-113	0.294	10
Matrix Spike Dup (1II0388-MSD2)		Source: 1II0307-01		Prepared & Analyzed: 09/04/25 22:57						
Sulfate	398.8	5.0	mg/L		174	207.5	110	87-113	0.551	10
Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit	Notes
Batch 1IH1680 - EPA 3005A Total Recoverable Metals - EPA 6020A										



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1IH1680 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1IH1680-BLK1)				Prepared: 08/29/25 15:26 Analyzed: 09/03/25 19:22						
Arsenic, total	<0.0020	0.0020	mg/L							
LCS (1IH1680-BS1)				Prepared: 08/29/25 15:26 Analyzed: 09/03/25 19:30						
Arsenic, total	0.103	0.0020	mg/L	0.100		103	80-120			
Matrix Spike (1IH1680-MS1)				Source: 4IH0223-01 Prepared: 08/29/25 15:26 Analyzed: 09/03/25 20:05						
Arsenic, total	0.111	0.0020	mg/L	0.100	0.0032	108	75-125			
Matrix Spike Dup (1IH1680-MSD1)				Source: 4IH0223-01 Prepared: 08/29/25 15:26 Analyzed: 09/03/25 20:08						
Arsenic, total	0.110	0.0020	mg/L	0.100	0.0032	107	75-125	0.372	20	
Post Spike (1IH1680-PS1)				Source: 4IH0223-01 Prepared: 08/29/25 15:26 Analyzed: 09/03/25 20:10						
Arsenic, total	0.0231		mg/L	0.0200	0.0032	99.9	80-120			

Batch 1II0090 - EPA 3010A Digestion (Water) - EPA 6010B

Blank (1II0090-BLK1)				Prepared: 09/03/25 07:20 Analyzed: 09/04/25 00:35						
Boron, total	<0.100	0.100	mg/L							
LCS (1II0090-BS1)				Prepared: 09/03/25 07:20 Analyzed: 09/04/25 00:41						
Boron, total	0.202	0.100	mg/L	0.200		101	80-120			
Matrix Spike (1II0090-MS1)				Source: 1IH2540-01 Prepared: 09/03/25 07:20 Analyzed: 09/04/25 01:10						
Boron, total	0.503	0.100	mg/L	0.200	0.297	103	75-125			
Matrix Spike Dup (1II0090-MSD1)				Source: 1IH2540-01 Prepared: 09/03/25 07:20 Analyzed: 09/04/25 01:19						
Boron, total	0.528	0.100	mg/L	0.200	0.297	115	75-125	4.77	20	
Post Spike (1II0090-PS1)				Source: 1IH2540-01 Prepared: 09/03/25 07:20 Analyzed: 09/04/25 01:29						
Boron, total	1.19		mg/L	0.800	0.297	112	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 3.2°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2820

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.

Reviewed and Approved By:

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
09/08/25 15:44

CHAIN OF CUSTODY RECORD



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Phone: 641-792-8451

Page 1 of 2

Printed: 8/26/2025 3:31:20PM

Page 11 of 12

SITE INFORMATION

Sampler: TODD WHIPPLE

Project: **Ames-Story Landfill-COC2**
6004

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by ___/___/___

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

William Fedeler
Ames/Story Environmental Landfill
2111 Leopold Dr
Ames, IA 50010

LAB USE ONLY



1 I H 2 8 2 0

HLW Engineering
PM: Heather Murphy

Temperature: 3.2 ice °C

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	# Containers	Analyses	Lab Sample Number
01-001	MW-28 (b)	Aqueous	GRAB	8/28/25	12:14	2	b-t-6010 so4-9056-w	as-t-6020 01
02-001	MW-29 (b)	Aqueous	GRAB	8/28/25	12:30	2	b-t-6010 so4-9056-w	as-t-6020 02
03-001	MW-25	Aqueous	GRAB	8/28/25	14:16	2	b-t-6010 so4-9056-w	as-t-6020 03
04-001	MW-34	Aqueous	GRAB	8/28/25	13:47	2	b-t-6010 so4-9056-w	as-t-6020 04
05-001	MW-35	Aqueous	GRAB	8/28/25	13:02	2	b-t-6010 so4-9056-w	as-t-6020 05
06-001	MW-39	Aqueous	GRAB	8/28/25	11:07	2	b-t-6010 so4-9056-w	as-t-6020 06
07-001	MW-40	Aqueous	GRAB	8/28/25	11:45	2	b-t-6010 so4-9056-w	as-t-6020 07
08-001	MW-33	Aqueous	GRAB	8/28/25	14:30	2	b-t-6010 so4-9056-w	as-t-6020 08

Relinquished By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Received for Lab By

Date/Time

Remarks:

CHAIN OF CUSTODY RECORD



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Phone: 641-792-8451

Page 2 of 2

Printed: 8/26/2025 3:31:20PM

Page 12 of 12

SITE INFORMATION

Sampler: TODD WHIPPLEProject: **Ames-Story Landfill-COC2**
6004

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

William Fedeler
Ames/Story Environmental Landfill
2111 Leopold Dr
Ames, IA 50010

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY



1 I H 2 8 2 0

HLW Engineering
PM: Heather MurphyTemperature: 3.2 ice °C

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	# Containers	Analyses	Lab Sample Number
09-001	SW-3	Aqueous	GRAB	8/28/25	13:33	2	b-t-6010 so4-9056-w	as-t-6020 09
10-001	Field Duplicate	Aqueous	GRAB	8/28/25	✓	1	b-t-6010 so4-9056-w	as-t-6020 10

Relinquished By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Received for Lab By

Date/Time

Remarks:



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2825

Project Description

6004

For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248

Heather Murphy

Customer Relationship Specialist

Thursday, September 11, 2025

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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CERTIFICATE OF ANALYSIS

1IH2825

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6004

Project / PO Number: 52124
Received: 08/29/2025
Reported: 09/11/2025

Sample Summary Report

<u>Sample Name</u>	<u>Laboratory ID</u>	<u>Client Matrix</u>	<u>Sample Type</u>	<u>Sample Begin</u>	<u>Sample Taken</u>	<u>Lab Received</u>
MW-28 (b)	1IH2825-01	Aqueous	GRAB		08/28/25 12:24	08/29/25 10:40
MW-29 (b)	1IH2825-02	Aqueous	GRAB		08/28/25 12:39	08/29/25 10:40
MW- 25	1IH2825-03	Aqueous	GRAB		08/28/25 14:26	08/29/25 10:40
MW- 34	1IH2825-04	Aqueous	GRAB		08/28/25 13:54	08/29/25 10:40
MW- 35	1IH2825-05	Aqueous	GRAB		08/28/25 13:10	08/29/25 10:40
MW- 39	1IH2825-06	Aqueous	GRAB		08/28/25 11:29	08/29/25 10:40
MW- 40	1IH2825-07	Aqueous	GRAB		08/28/25 11:55	08/29/25 10:40
MW-33	1IH2825-08	Aqueous	GRAB		08/28/25 14:41	08/29/25 10:40
SW- 3	1IH2825-09	Aqueous	GRAB		08/28/25 13:33	08/29/25 10:40



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2825

Analytical Testing Parameters

Client Sample ID:	MW-28 (b)	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 12:24
Lab Sample ID:	1IH2825-01		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
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EPA 410.4, Rv. 2 (1993)

COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/08/25 1502	09/09/25 1051	BHF

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
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EPA 9056A

Chloride	135	10.0	mg/L			09/03/25 2132	BMS
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Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
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EPA 6010B

Iron, dissolved	<0.100	0.100	mg/L		09/03/25 1037	09/03/25 1958	JAR
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Client Sample ID:	MW-29 (b)	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 12:39
Lab Sample ID:	1IH2825-02		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
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EPA 410.4, Rv. 2 (1993)

COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/08/25 1502	09/09/25 1052	BHF

Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
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EPA 9056A

Chloride	47.4	10.0	mg/L			09/03/25 2146	BMS
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Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
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EPA 6010B

Iron, dissolved	0.436	0.100	mg/L		09/03/25 1037	09/03/25 2016	JAR
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CERTIFICATE OF ANALYSIS

1IH2825

Client Sample ID:	MW- 25	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 14:26
Lab Sample ID:	1IH2825-03		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)							
COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/08/25 1502	09/09/25 1054	BHF
Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Chloride	66.0	10.0	mg/L			09/03/25 1613	BMS
Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 6010B							
Iron, dissolved	1.75	0.100	mg/L		09/03/25 1037	09/03/25 2022	JAR

Client Sample ID:	MW- 34	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 13:54
Lab Sample ID:	1IH2825-04		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)							
COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/08/25 1502	09/09/25 1055	BHF
Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Chloride	19.2	10.0	mg/L			09/03/25 1627	BMS
Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 6010B							
Iron, dissolved	5.95	0.100	mg/L		09/03/25 1037	09/03/25 2031	JAR



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CERTIFICATE OF ANALYSIS

1IH2825

Client Sample ID:	MW- 35	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 13:10
Lab Sample ID:	1IH2825-05		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)							
COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/08/25 1502	09/09/25 1057	BHF
Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Chloride	107	10.0	mg/L			09/03/25 1641	BMS
Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 6010B							
Iron, dissolved	<0.100	0.100	mg/L		09/03/25 1037	09/03/25 2039	JAR

Client Sample ID:	MW- 39	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 11:29
Lab Sample ID:	1IH2825-06		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)							
COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/08/25 1502	09/09/25 1059	BHF
Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Chloride	9.9	1.0	mg/L		09/04/25 0000	09/04/25 1425	BMS
Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 6010B							
Iron, dissolved	<0.100	0.100	mg/L		09/03/25 1037	09/03/25 2045	JAR



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2825

Client Sample ID:	MW- 40	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 11:55
Lab Sample ID:	1IH2825-07		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)							
COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/09/25 1434	09/10/25 0942	BHF
Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Chloride	19.0	10.0	mg/L			09/03/25 2009	BMS
Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 6010B							
Iron, dissolved	0.465	0.100	mg/L		09/03/25 1037	09/03/25 2102	JAR

Client Sample ID:	MW-33	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 14:41
Lab Sample ID:	1IH2825-08		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)							
COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	1.73	1.00	mg/L		09/09/25 1434	09/10/25 0944	BHF
Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Chloride	43.0	10.0	mg/L			09/03/25 2159	BMS
Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 6010B							
Iron, dissolved	9.61	0.100	mg/L		09/03/25 1037	09/03/25 2108	JAR



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2825

Client Sample ID:	SW- 3	Collected By:	Whipple, Todd
Sample Matrix:	Aqueous	Collection Date:	08/28/2025 13:33
Lab Sample ID:	1IH2825-09		

Determination of Conventional Chemistry Parameters	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 410.4, Rv. 2 (1993)							
COD, total	<20	20	mg/L		09/10/25 0845	09/10/25 1434	KAC
TIMBERLINE							
Nitrogen, Ammonia	<1.00	1.00	mg/L		09/09/25 1434	09/10/25 0945	BHF
Determination of Inorganic Anions	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 9056A							
Chloride	49.6	10.0	mg/L			09/03/25 2213	BMS
Determination of Dissolved Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 6010B							
Iron, dissolved	<0.100	0.100	mg/L		09/03/25 1037	09/03/25 2114	JAR



Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2825

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6010B	1II0104	1II0104-BLK1	
		1II0104-BS1	
		1IH2825-01	MW-28 (b)
		1II0104-MS1	1IH2825-01
		1II0104-MSD1	1IH2825-01
		1IH2825-02	MW-29 (b)
		1IH2825-03	MW- 25
		1IH2825-04	MW- 34
		1IH2825-05	MW- 35
		1IH2825-06	MW- 39
		1IH2825-07	MW- 40
		1IH2825-08	MW-33
		1IH2825-09	SW- 3
Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1II0216	1IH2825-03	MW- 25
		1IH2825-04	MW- 34
		1IH2825-05	MW- 35
		1II0216-BLK1	
		1II0216-BS1	
		1II0216-BSD1	
		1IH2825-07	MW- 40
		1IH2825-01	MW-28 (b)
		1IH2825-02	MW-29 (b)
		1IH2825-08	MW-33
		1IH2825-09	SW- 3
		1II0216-MS2	1IH2825-09
		1II0216-MSD2	1IH2825-09
		1II0216-BLK2	
		1II0216-BS2	
		1II0216-BSD2	
		1II0216-MS1	1II0316-08
		1II0216-MSD1	1II0316-08
Method	Batch	Laboratory ID	Client / Source ID
EPA 9056A	1II0388	1IH2825-06RE1	MW- 39
		1II0388-MS1	1IH2820-06
		1II0388-MSD1	1IH2820-06
		1II0388-BLK1	
		1II0388-BS1	

Microbac Laboratories, Inc., Newton

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Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IH2825

EPA 9056A	1II0388	1II0388-BSD1	
		1II0388-MS2	1II0307-01
		1II0388-MSD2	1II0307-01
		1II0388-BLK2	
		1II0388-BS2	
		1II0388-BSD2	

Method	Batch	Laboratory ID	Client / Source ID
TIMBERLINE	1II0427	1II0427-BLK1	
		1II0427-BS1	
		1II0427-MS1	1IH2784-02
		1II0427-MSD1	1IH2784-02
		1IH2825-01	MW-28 (b)
		1IH2825-02	MW-29 (b)
		1IH2825-03	MW- 25
		1IH2825-04	MW- 34
		1IH2825-05	MW- 35
		1IH2825-06	MW- 39

Method	Batch	Laboratory ID	Client / Source ID
TIMBERLINE	1II0486	1II0486-BLK1	
		1II0486-BS1	
		1II0486-MS1	1IH2825-09
		1II0486-MSD1	1IH2825-09
		1IH2825-07	MW- 40
		1IH2825-08	MW-33
		1IH2825-09	SW- 3

Method	Batch	Laboratory ID	Client / Source ID
EPA 410.4, Rv. 2 (1993)	1II0534	1IH2825-03	MW- 25
		1IH2825-09	SW- 3
		1IH2825-08	MW-33
		1IH2825-02	MW-29 (b)
		1IH2825-01	MW-28 (b)
		1IH2825-07	MW- 40
		1IH2825-06	MW- 39
		1IH2825-04	MW- 34
		1II0534-MSD1	1IH2825-01
		1II0534-MS1	1IH2825-01
		1II0534-BS1	
		1II0534-BLK1	
		1IH2825-05	MW- 35



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Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Conventional Chemistry Parameters	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0427 - General Prep HPLC/IC - TIMBERLINE										
Blank (1II0427-BLK1)				Prepared: 09/08/25 15:02 Analyzed: 09/09/25 09:47						
Nitrogen, Ammonia	<1.00	1.00	mg/L							
LCS (1II0427-BS1)				Prepared: 09/08/25 15:02 Analyzed: 09/09/25 09:54						
Nitrogen, Ammonia	5.04	1.00	mg/L	5.56		90.6	90-114			
Matrix Spike (1II0427-MS1)				Source: 1IH2784-02 Prepared: 09/08/25 15:02 Analyzed: 09/09/25 09:56						
Nitrogen, Ammonia	4.36	1.00	mg/L	5.56	ND	78.4	84-115			M2
Matrix Spike Dup (1II0427-MSD1)				Source: 1IH2784-02 Prepared: 09/08/25 15:02 Analyzed: 09/09/25 09:58						
Nitrogen, Ammonia	5.33	1.00	mg/L	5.56	ND	95.9	84-115	20.0	20	
Batch 1II0486 - General Prep HPLC/IC - TIMBERLINE										
Blank (1II0486-BLK1)				Prepared: 09/09/25 14:34 Analyzed: 09/10/25 09:29						
Nitrogen, Ammonia	<1.00	1.00	mg/L							
LCS (1II0486-BS1)				Prepared: 09/09/25 14:34 Analyzed: 09/10/25 09:31						
Nitrogen, Ammonia	5.40	1.00	mg/L	5.56		97.2	90-114			
Matrix Spike (1II0486-MS1)				Source: 1IH2825-09 Prepared: 09/09/25 14:34 Analyzed: 09/10/25 09:32						
Nitrogen, Ammonia	5.46	1.00	mg/L	5.56	ND	98.2	84-115			
Matrix Spike Dup (1II0486-MSD1)				Source: 1IH2825-09 Prepared: 09/09/25 14:34 Analyzed: 09/10/25 09:34						
Nitrogen, Ammonia	5.29	1.00	mg/L	5.56	ND	95.2	84-115	3.03	20	
Batch 1II0534 - Wet Chem Preparation - EPA 410.4, Rv. 2 (1993)										
Blank (1II0534-BLK1)				Prepared: 09/10/25 08:45 Analyzed: 09/10/25 14:34						
COD, total	<20	20	mg/L							
LCS (1II0534-BS1)				Prepared: 09/10/25 08:45 Analyzed: 09/10/25 14:34						
COD, total	73.2	20	mg/L	75.0		97.6	90-110			
Matrix Spike (1II0534-MS1)				Source: 1IH2825-01 Prepared: 09/10/25 08:45 Analyzed: 09/10/25 14:34						
COD, total	117	27	mg/L	100	16.7	100	90-110			
Matrix Spike Dup (1II0534-MSD1)				Source: 1IH2825-01 Prepared: 09/10/25 08:45 Analyzed: 09/10/25 14:34						
COD, total	111	27	mg/L	100	16.7	94.0	90-110	5.58	10	
Determination of Inorganic Anions	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0216 - General Prep HPLC/IC - EPA 9056A										
Blank (1II0216-BLK1)				Prepared & Analyzed: 09/03/25 17:23						
Chloride	<1.0	1.0	mg/L							
Blank (1II0216-BLK2)				Prepared & Analyzed: 09/04/25 00:04						
Chloride	<1.0	1.0	mg/L							

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Determination of Inorganic Anions	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0216 - General Prep HPLC/IC - EPA 9056A										
LCS (1II0216-BS1)	Prepared & Analyzed: 09/03/25 17:36									
Chloride	16.17	1.0	mg/L	15.7		103	80-120			
LCS (1II0216-BS2)	Prepared & Analyzed: 09/04/25 00:18									
Chloride	16.05	1.0	mg/L	15.7		102	80-120			
LCS Dup (1II0216-BSD1)	Prepared & Analyzed: 09/03/25 17:50									
Chloride	16.03	1.0	mg/L	15.7		102	80-120	0.892	10	
LCS Dup (1II0216-BSD2)	Prepared & Analyzed: 09/04/25 00:32									
Chloride	16.01	1.0	mg/L	15.7		102	80-120	0.284	10	
Matrix Spike (1II0216-MS1)	Source: 1II0316-08	Prepared: 09/03/25 12:18 Analyzed: 09/04/25 03:04								
Chloride	134.6	5.0	mg/L	78.4	52.68	104	81-116			
Matrix Spike (1II0216-MS2)	Source: 1IH2825-09	Prepared & Analyzed: 09/03/25 22:27								
Chloride	134.1	5.0	mg/L	78.4	49.57	108	81-116			
Matrix Spike Dup (1II0216-MSD1)	Source: 1II0316-08	Prepared: 09/03/25 12:32 Analyzed: 09/04/25 03:18								
Chloride	139.3	5.0	mg/L	78.4	52.68	110	81-116	3.44	10	
Matrix Spike Dup (1II0216-MSD2)	Source: 1IH2825-09	Prepared & Analyzed: 09/03/25 22:41								
Chloride	130.3	5.0	mg/L	78.4	49.57	103	81-116	2.89	10	
Batch 1II0388 - General Prep HPLC/IC - EPA 9056A										
Blank (1II0388-BLK1)	Prepared & Analyzed: 09/04/25 16:57									
Chloride	<1.0	1.0	mg/L							
Blank (1II0388-BLK2)	Prepared & Analyzed: 09/04/25 23:38									
Chloride	<1.0	1.0	mg/L							
LCS (1II0388-BS1)	Prepared & Analyzed: 09/04/25 17:11									
Chloride	16.03	1.0	mg/L	15.7		102	80-120			
LCS (1II0388-BS2)	Prepared & Analyzed: 09/04/25 23:52									
Chloride	16.15	1.0	mg/L	15.7		103	80-120			
LCS Dup (1II0388-BSD1)	Prepared & Analyzed: 09/04/25 17:25									
Chloride	16.10	1.0	mg/L	15.7		103	80-120	0.390	10	
LCS Dup (1II0388-BSD2)	Prepared & Analyzed: 09/05/25 00:06									
Chloride	16.11	1.0	mg/L	15.7		103	80-120	0.248	10	
Matrix Spike (1II0388-MS1)	Source: 1IH2820-06	Prepared & Analyzed: 09/04/25 16:01								
Chloride	87.69	5.0	mg/L	78.4	6.96	103	81-116			
Matrix Spike (1II0388-MS2)	Source: 1II0307-01	Prepared & Analyzed: 09/04/25 22:43								
Chloride	225.2	5.0	mg/L	78.4	140.5	108	81-116			
Matrix Spike Dup (1II0388-MSD1)	Source: 1IH2820-06	Prepared & Analyzed: 09/04/25 16:15								
Chloride	88.12	5.0	mg/L	78.4	6.96	104	81-116	0.484	10	
Matrix Spike Dup (1II0388-MSD2)	Source: 1II0307-01	Prepared & Analyzed: 09/04/25 22:57								
Chloride	226.4	5.0	mg/L	78.4	140.5	110	81-116	0.547	10	

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Determination of Dissolved Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0104 - Dissolved Metal Prep - EPA 6010B										
Blank (1II0104-BLK1)				Prepared: 09/03/25 10:37 Analyzed: 09/03/25 19:46						
Iron, dissolved	<0.100	0.100	mg/L							
LCS (1II0104-BS1)				Prepared: 09/03/25 10:37 Analyzed: 09/03/25 19:52						
Iron, dissolved	2.36	0.100	mg/L	2.21		107	80-120			
Matrix Spike (1II0104-MS1)				Source: 1IH2825-01 Prepared: 09/03/25 10:37 Analyzed: 09/03/25 20:04						
Iron, dissolved	2.38	0.100	mg/L	2.21	ND	108	75-125			
Matrix Spike Dup (1II0104-MSD1)				Source: 1IH2825-01 Prepared: 09/03/25 10:37 Analyzed: 09/03/25 20:10						
Iron, dissolved	2.29	0.100	mg/L	2.21	ND	104	75-125	3.65	20	

Definitions

M2: Matrix spike recovery is below acceptance limits.
RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 3.2°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.

Reviewed and Approved By:

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
09/11/25 16:21

CHAIN OF CUSTODY RECORD



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Newton, IA 50208
Phone: 641-792-8451

Page 1 of 2

Printed: 8/26/2025 2:29:34PM

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SITE INFORMATION

Sampler: Todd WhippleProject: **Ames-Story Landfill-Fall-COC1**
6004

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by ___/___/___

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

William Fedeler
Ames/Story Environmental Landfill
2111 Leopold Dr
Ames, IA 50010

LAB USE ONLY



1 I H 2 8 2 5

HLW Engineering
PM: Heather MurphyTemperature: 3.2 ice °C

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	# Containers	Analyses	Lab Sample Number
01-001	MW-28 (b)	Aqueous	GRAB	8/28/25	12:24	3	Indfil-para-e	01
02-001	MW-29 (b)	Aqueous	GRAB	8/28/25	12:39	3	Indfil-para-e	02
03-001	MW-25	Aqueous	GRAB	8/28/25	14:26	3	Indfil-para-e	03
04-001	MW-34	Aqueous	GRAB	8/28/25	13:54	3	Indfil-para-e	04
05-001	MW-35	Aqueous	GRAB	8/28/25	13:10	3	Indfil-para-e	05
06-001	MW-39	Aqueous	GRAB	8/28/25	11:29	3	Indfil-para-e	06
07-001	MW-40	Aqueous	GRAB	8/28/25	11:55	3	Indfil-para-e	07
08-001	MW-33	Aqueous	GRAB	8/28/25	14:41	3	Indfil-para-e	08
09-001	SW-3	Aqueous	GRAB	8/28/25	13:33	3	Indfil-para-e	09

Relinquished By [Signature]

Date/Time

Relinquished By [Signature]

Date/Time

Received By

Date/Time

Received for Lab By [Signature]

Date/Time

Remarks:

Field Filtered Nitric container